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

AECOM

Kurnell Terminal SSD-5544 MOD-7

Appendix K - Technical Report - Updated Heritage Impact Assessment

16 Mar 2026

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Client: Ampol Australia Petroleum Pty Ltd

ABN: 17 000 032 128

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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) decided 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 facilitate the conversion and demolition works.

Ampol intends to consolidate operational infrastructure, remove redundant assets, and undertake remediation to address legacy refinery issues. Completion of these works (the proposed modification, MOD-7) would continue the viable, safe, reliable, and sustainable operation of the Kurnell Terminal. 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. This Updated HIA Report has been produced to address submissions received by agencies during the exhibition of the Modification Report and refinements to the proposed modification. It has been prepared to support the Submissions Report. 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). Additionally, there are four items of National, State and local heritage significance within close proximity of the Project Area being the Kamay Botany Bay National Park and Towra Point Reserve (State Heritage Register 01918), Kurnell Peninsula Headland (National Heritage Register 105812), Kamay Botany Bay: Botany Collection Sites (National Heritage Register 106162) and Kurnell Historic Site (LEP 2504).

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 to the Site or adjacent heritage items. 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 previously assessed 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) decided 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 facilitate 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. Completion of these works (the proposed modification, MOD-7) would continue the viable, safe, reliable, and sustainable operation of the Kurnell Terminal. The location within the Site that these works would occur is referred to as the Project Area.

A Modification Report was prepared to support a modification application to SSD-5544 and was placed on public exhibition for 23 days from Thursday 10 July 2025 until Friday 1 August 2025 in accordance with the *Environmental Planning & Assessment Act 1979* (EP&A Act).

The Heritage Impact Assessment (HIA) for the proposed modification was one of a number of technical documents that formed part of the Modification Report. This Updated HIA has been prepared to address submissions received by agencies during the exhibition of the Modification Report and refinements to the proposed modification. It has been prepared to support the Submissions Report.

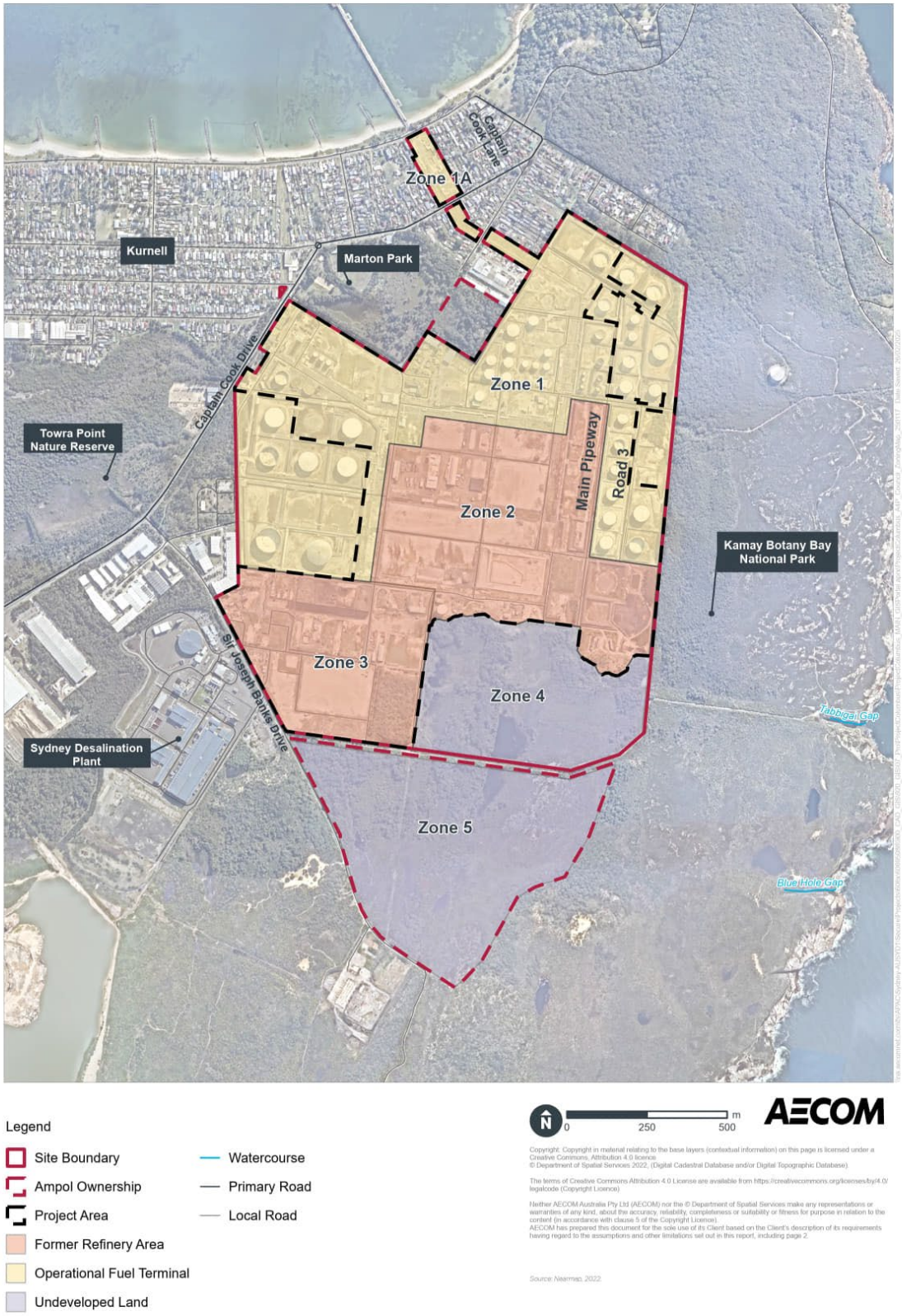


Figure 1-1 Ampol Kurnell Terminal (the Site)

1.2 The proposed modification

1.2.1 Key elements of the proposed modification

To support the continued viable, safe, reliable, and sustainable operation 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 system (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 in specific locations across the Site
- **Stage 4 – Demobilisation**: Demobilisation of construction and remediation equipment.

Depending on where different works are required across the Site, these stages may be completed sequentially or concurrently.

A summary of project elements requiring modification and how they relate to the approved project is provided in Table 1-1. Infrastructure to be removed is presented in Figure 1-2, whilst infrastructure to be relocated or upgraded is presented in Figure 1-3. The proposed modification works would be undertaken within the Project Area.

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 and 3 and exclude other parts of the Site from workers completing these works as required.
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 OWS system in Zone 1 via new OWS interception pits/ lines until Stage 3 remediation is complete • Divert potential leachate from Asbestos Contaminated Soils (ACS) Containment Cell in Zone 2 to Zone 1 OWS system • Install one new pump station and emergency storage tank adjacent to the ACS Containment Cell. Two indicative site options have been identified (refer to Figure 1-3) with specific siting to be selected during detailed design • Once Stage 3 remediation is complete in each specified area, isolate and remove redundant OWS infrastructure from identified areas in Zone 2 and Zone 3. Where complete removal is not feasible, existing pipes would be left in-situ.

Stage	Element	Approved project	Modified project
	Firewater systems (FWS)	Maintain location in Zones 1, 2, and 3	• Augment FWS infrastructure in Zone 1 and the south of Zone 2 • Excavate and install footings for the new firewater tank, pumphouse, and pipelines • Construct new firewater tank and pumphouse within the FWS Relocation Area. Two indicative site options have been identified (refer to Figure 1-3) with specific siting selected during detailed design • Connect relocated firewater tank and pumphouse to existing FWS via new pipework • Commission new firewater tank, pumphouse, and pipework to confirm operation of amended FWS • Isolate and remove redundant FWS infrastructure from Zones 2 and 3 when appropriate.
	Electrical assets	Maintain location in Zone 2 and 3	• Isolate and remove redundant electrical assets in Zones 2 and 3, including five substations.
	Structures	Maintain location in Zone 2 and 3	• Construct new ‘fit for purpose’ warehouse to house maintenance supplies and activities in Zone 1 • Construct new Oil Spill Equipment Storeroom within Zone 1 • Construct new storage shed to house boats and emergency aquatic spill response equipment in Zone 1A • Demolish identified structures in Zones 2 and 3.
Stage 3	Remediation	Removal of ACS from pipeways and either containment onsite or offsite disposal	• Remediate identified land in Zone 1 to reduce operational site safety risks (refer to Figure 1-3) • If required, remediate land in Zone 1 where infrastructure is proposed to be relocated or augmented • Undertake targeted remediation in Zones 2 and 3 (refer to Figure 1-4) • Return excavated areas to existing ground levels, with the exception of RPIP Mountain (which would be regraded) and removal of the bund in Source Area Excavation 5.
Stage 4	Demobilisation	Demobilisation of construction equipment.	• Demobilisation of construction and remediation equipment

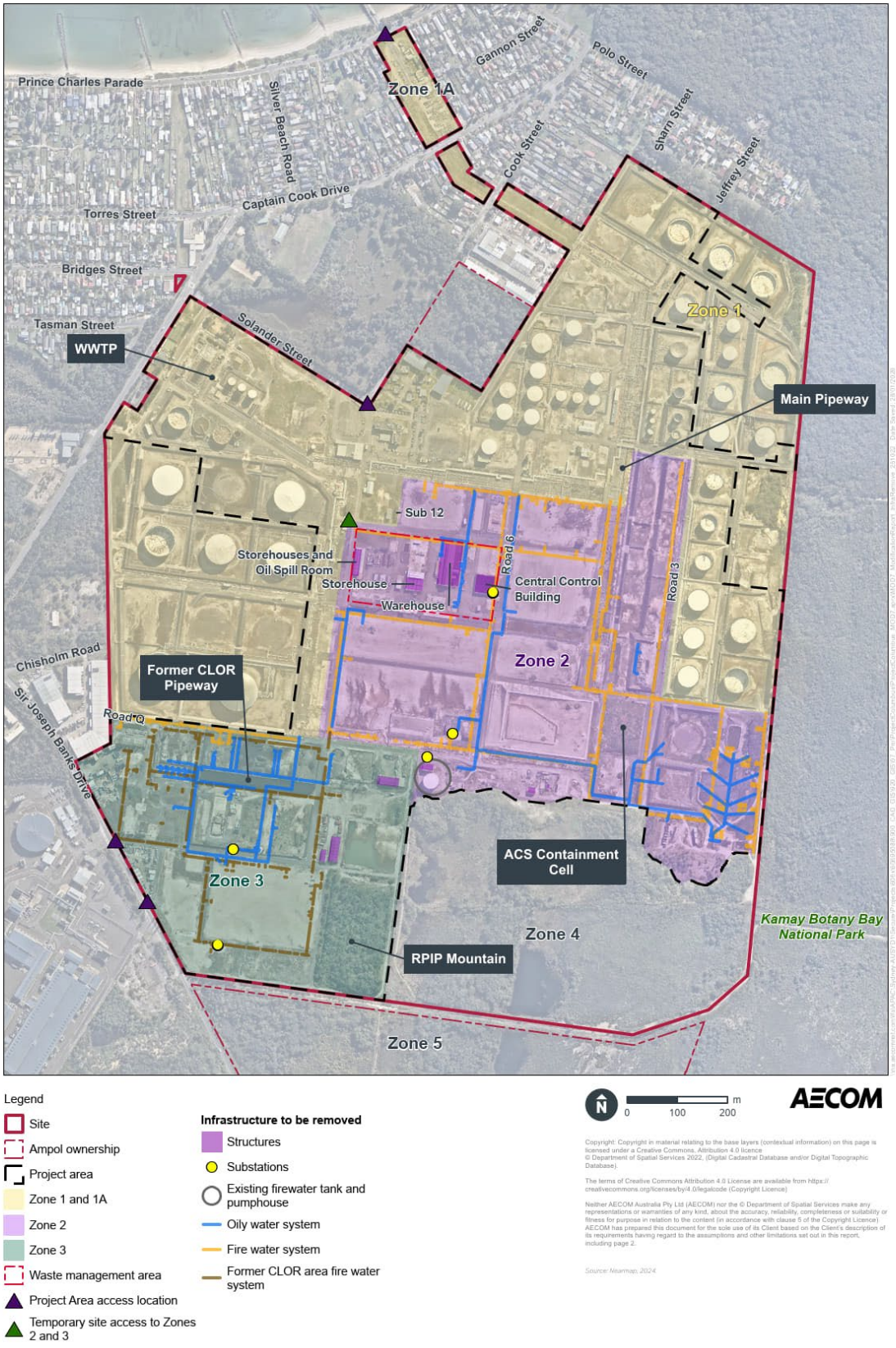


Figure 1-2 Proposed modification – infrastructure to be removed (Stage 2)

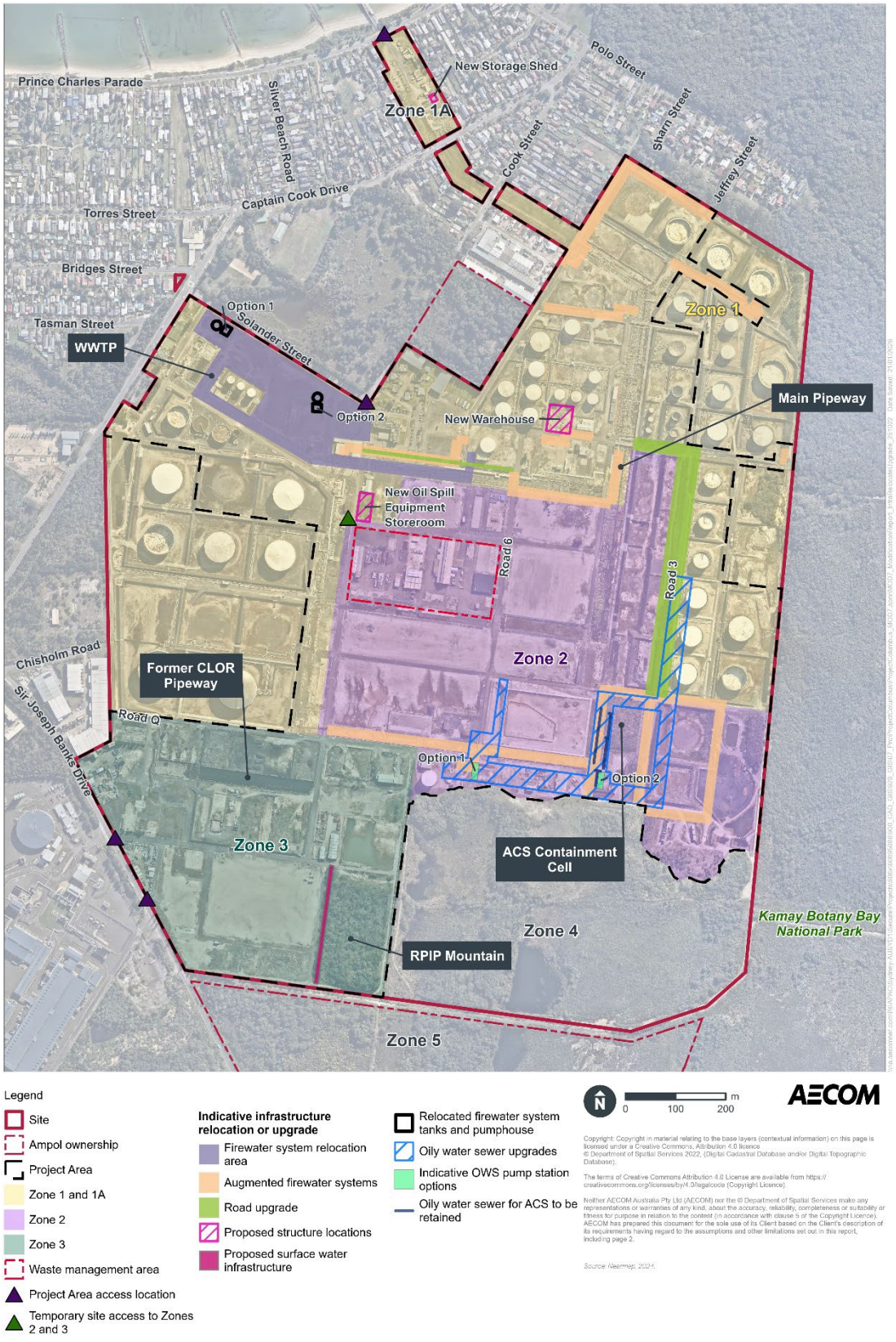


Figure 1-3 Proposed modification – infrastructure to be relocated (Stage 2)

Figure 1-4 Targeted remediation activities (Stage 3)

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

In line with Figure 1-3, relocated equipment would operate in the new locations.

1.2.2 Construction timeline and equipment

Works would be staged in accordance with the indicative program in Table 1-2. Construction and remediation are anticipated to commence in 2026 and be completed by 2030.

In line with the Interim Construction Noise Guideline (ICNG), construction works would comply with following hours:

- Monday to Friday – 7am to 6pm
- Saturday – 8am to 1pm
- Sunday and public holidays – No work is permitted.

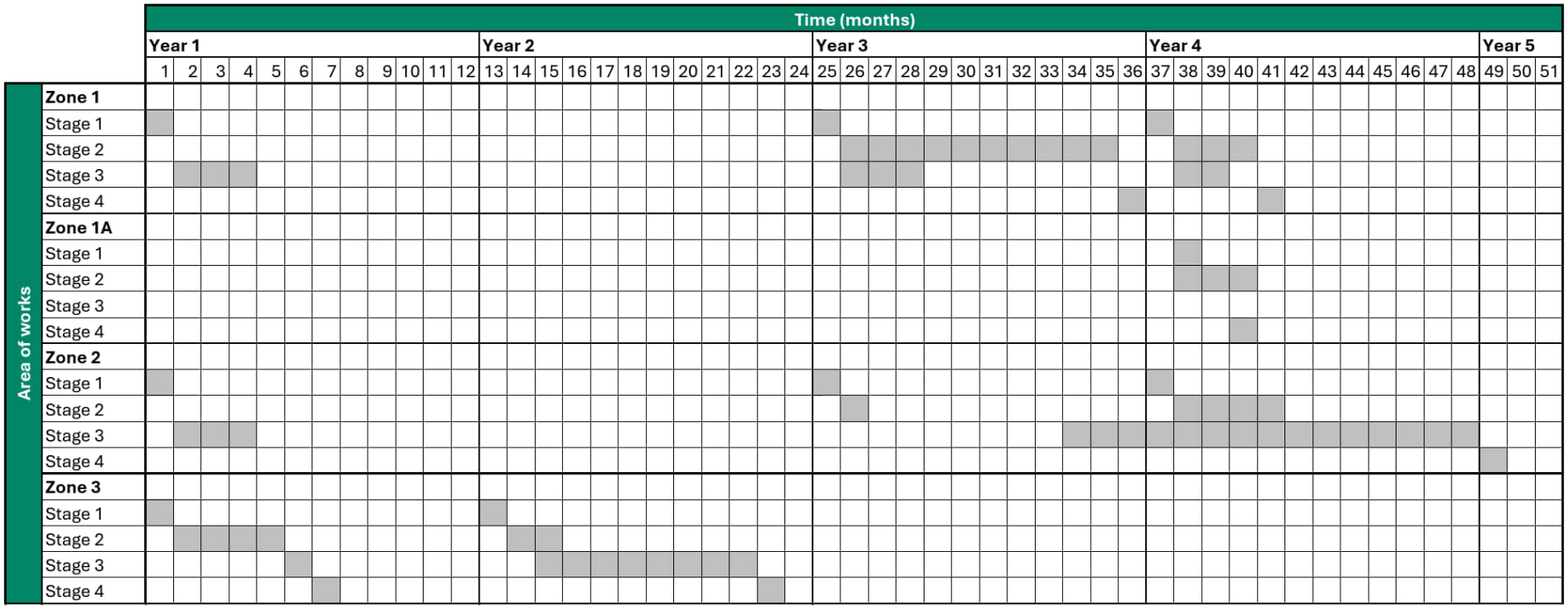
However, in line with Condition 20 of SSD-5544, construction works may be undertaken outside of the work hours identified above in the following circumstances:

- Works that are inaudible at nearest sensitive land receivers
- Works that are consistent with Ampol's existing maintenance procedures and are in accordance with EPL 837
- Works agreed to in writing by the EPA or 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.

In addition, the following activities may be required on a 24-hour basis to support construction activities:

- Biopiling blowers in identified Biopiling Areas (refer to Figure 1-4). Given their proposed location within the Site, noise from the blowers would be inaudible at the nearest noise sensitive receivers.
- Dewatering of excavations. Dewatering would only occur at night in locations where plant would not exceed night-time limits, i.e.:
    - Where it is located a minimum of at least 200 m within the Site boundary; or
    - Where it is located a minimum of 120 m within the Site boundary, if temporary noise barriers are positioned as near as practicable to the pumps and monitoring confirms that nighttime noise limits are not exceeded.

Table 1-2 Indicative program



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 of plant and equipment required per day		
	All stages except Stage 3		Stage 3 (Remediation) only
	Entire Site	Zone 1A	
Front end loader	6	2	6
Excavator	-	2	6
Excavator (including large hydraulic hammer)	6	-	-
Dump truck	6	2	6
Grader (up to 7 m blade)	2	1	4
Large crane (60 t)	4	1	-
Elevated work platform	6	4	-
Franna crane (30 t)	6	1	-
Cement truck	6	2	-
Bobcat	6	2	2
Water cart	6	2	6
Concrete crusher	1	-	-
Telehandler	6	-	-
Truck and dog (offsite disposal)	6	6	6
Truck and dog (imported fill)	-	6	12
Generator	2	1	2
Biopiling blower	-	-	8
Dewatering pump	6	-	6

1.3 Purpose of this report

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

2.0 Assessment methodology

2.1 Relevant legislation and guidelines

2.2 State

2.2.1 Heritage Act 1977

The *Heritage Act 1977* (as amended in 2024) 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 of the EP&A Act (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. 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 3 November 2025:

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

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

Table 2-1 Database search results of archaeological sites within the Project Area

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

In addition, the following items were identified within 100 m of the Project Area.

Table 2-2 Database search results for items in close proximity

Name	Address	Identifier	Database	Proximity
Kamay Botany Bay National Park and Towra Point Reserve	Captain Cook Drive, Kurnell	SHR#01918	State Heritage Register	40 m to the east (Kamay Botany Bay National Park only)
Kurnell Peninsula Headland	Cape Solander Drive, Kurnell	NHL 105812	National Heritage List	Adjacent to the east
Kamay Botany Bay: Botanical Collection Sites	Captain Cook Drive, Kurnell	NHL 106162	National Heritage List	Adjacent to the east
Kurnell Historic Site (in Kamay Botany Bay National Park)	Polo Street and Sir Joseph Banks Drive, Kurnell	2504	Sutherland Shire LEP 2015	40 m to the east

These sites are detailed below and shown in Figure 2-1. Whilst other heritage values are present within Kurnell, only those listed above have potential to be impacted by the proposed modification.

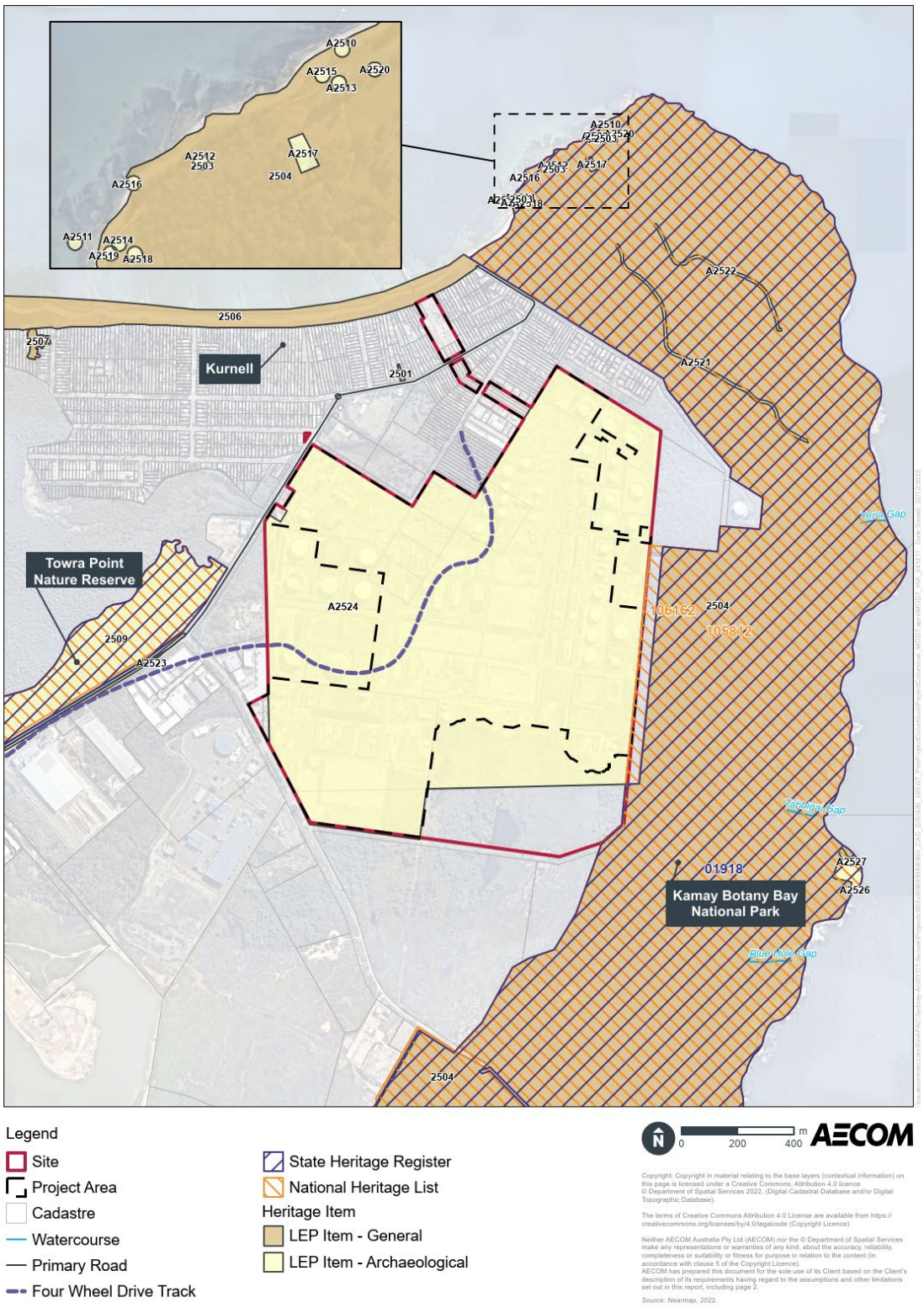


Figure 2-1 Heritage items

Australian Oil Refinery (A2524)

This industrial archaeological site covers the footprint of the former Australian Oil Refinery and is therefore 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 to Cronulla, it was replaced by Captain Cook Drive and 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 and in the cadastral plan in Marton Park (refer to Figure 2-1).

Kamay Botany Bay National Park and Towra Point Reserve (includes Kurnell Peninsula Headland, Kamay Botany Bay Collection Sites and the Kurnell Historic Site)

This item has two main areas: the Kamay Botany Bay National Park, located to the north and east of the Project Area, including the Kurnell Peninsula Headland, the Kamay Botany Bay Collection Sites and the Kurnell Historic Site, and the Towra Point Reserve, located on the shores of Botany Bay to the west of the Project Area (see Figure 2-1). No part of these sites are within the Project Area.

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 Updated 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, 1996b).

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	Thomas Holt Government purchases land on the eastern side of Kurnell Peninsula from John Connell’s grandsons
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 Development consent of Kurnell Refinery Conversion (SSD-5544)
2015-2017	Demolition of redundant buildings, tanks, and refinery equipment (MOD-1)
c. 2017	Development consent for ACS management works (MOD-2)
c. 2019	Demolition of Tank 101 (MOD-3); demolition of butane assets (MOD 4)
2019	Development consent for ACS Containment Cell and Cooling Water Outlet (CWO) Pipeline works (MOD-5)
2020	Development consent 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.

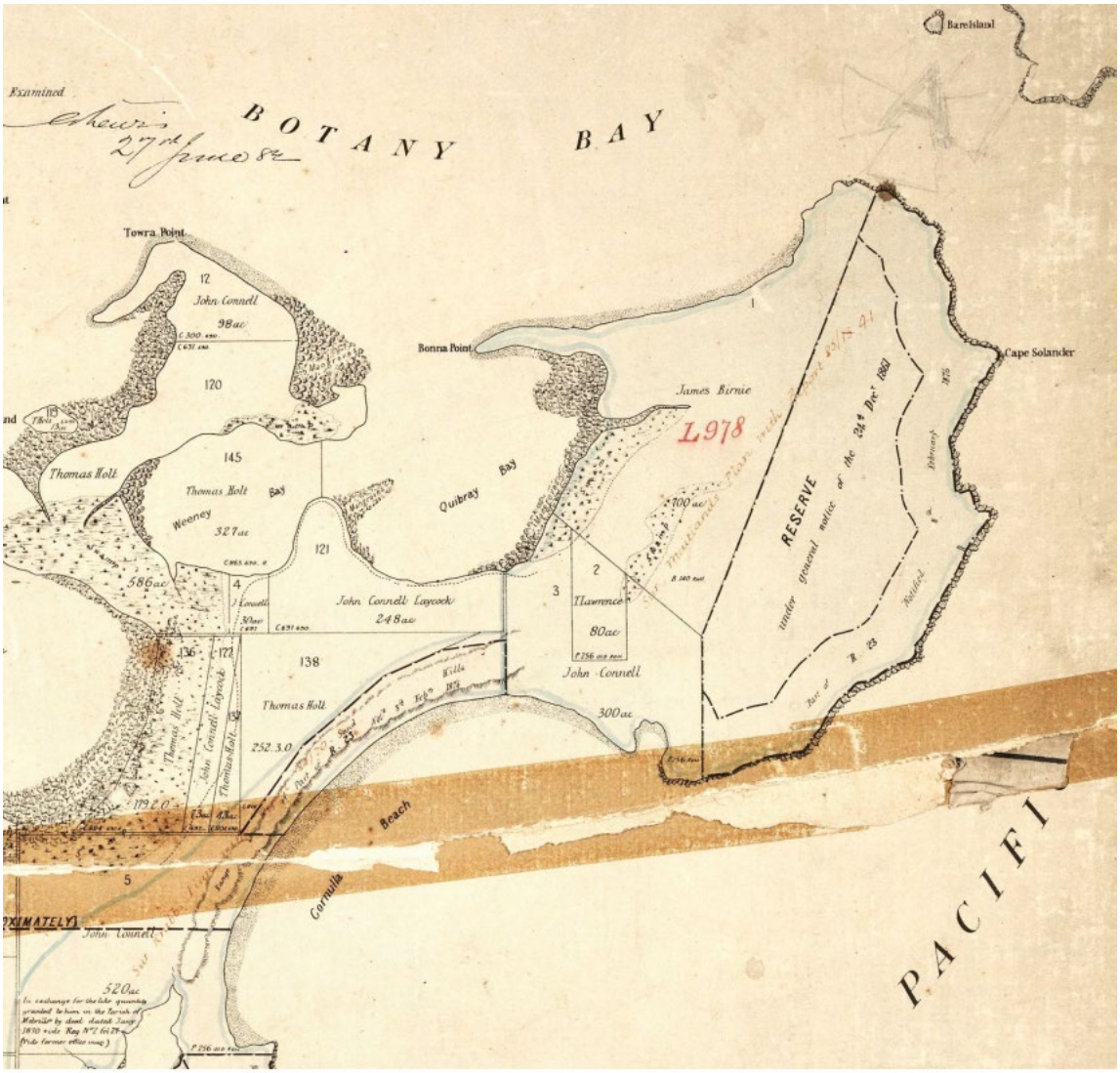


Figure 3-4 Detail of Parish Map of Sutherland, c. 1882 (Source: Historical Land Records Viewer, file Name: 14033901.jp2)

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).

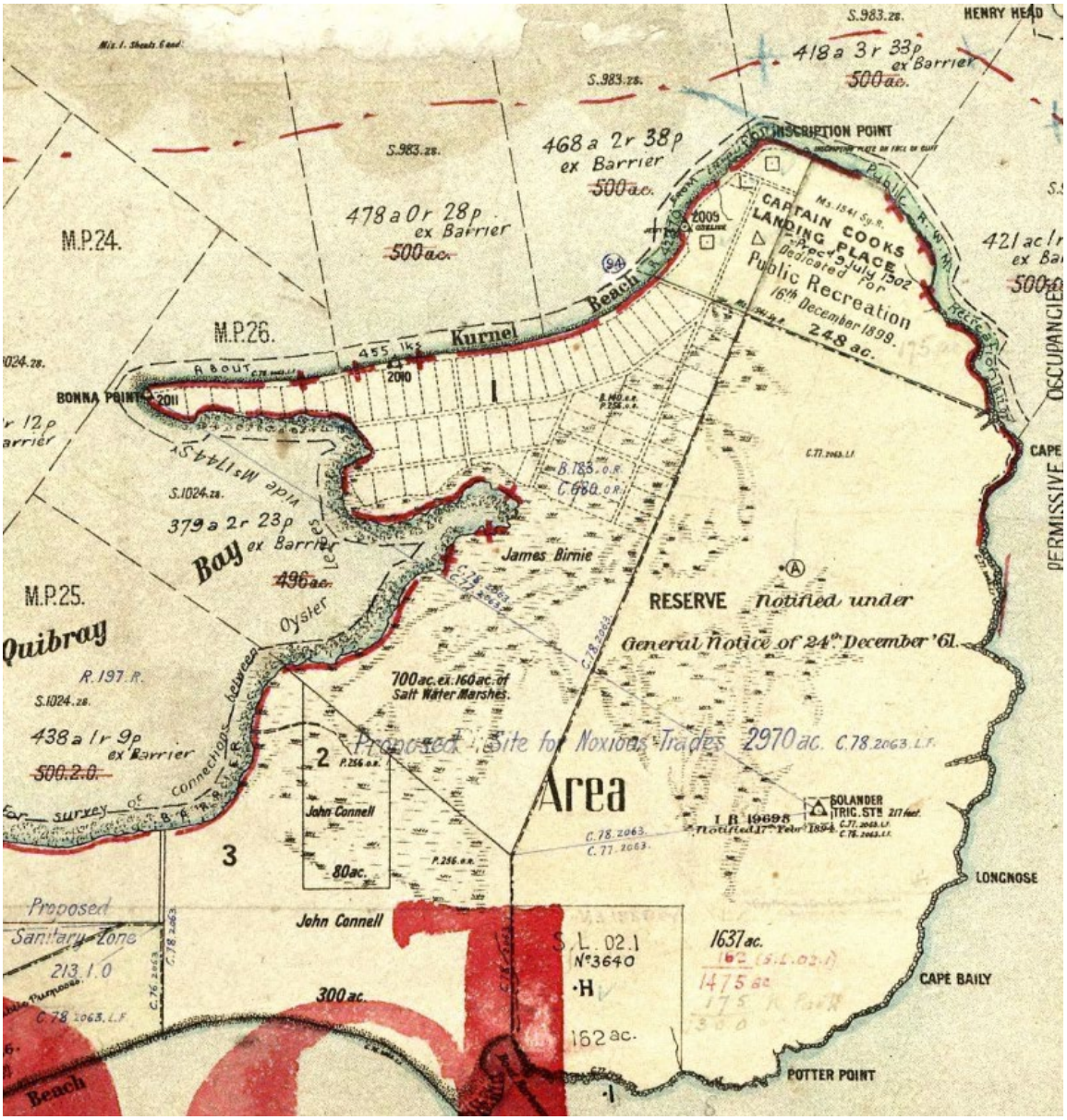


Figure 3-5 Detail of Parish Map of Sutherland, c. 1900-1913, showing the subdivision of the township of Kurnell (Source: Historical Land Records Viewer, File Name: 14039602.jp2)

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).

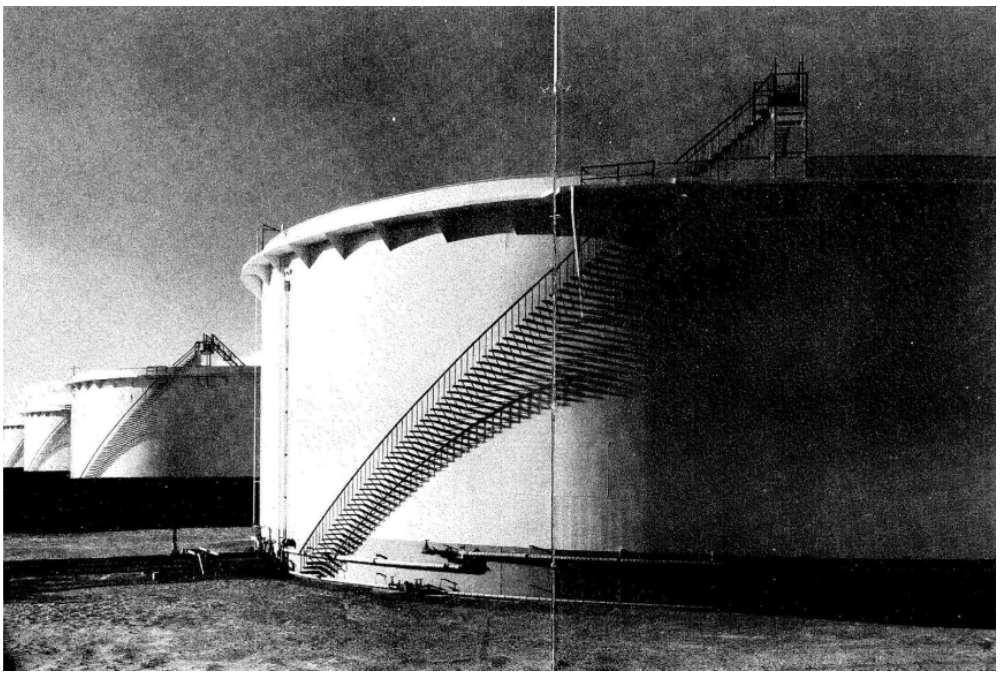


Figure 3-9 Four 6,300,000 gallons crude oil storage tanks, photo by Max Dupain and Kerry Dundas, c. 1956 (Source: Hill and Knowlton, 1956)

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.

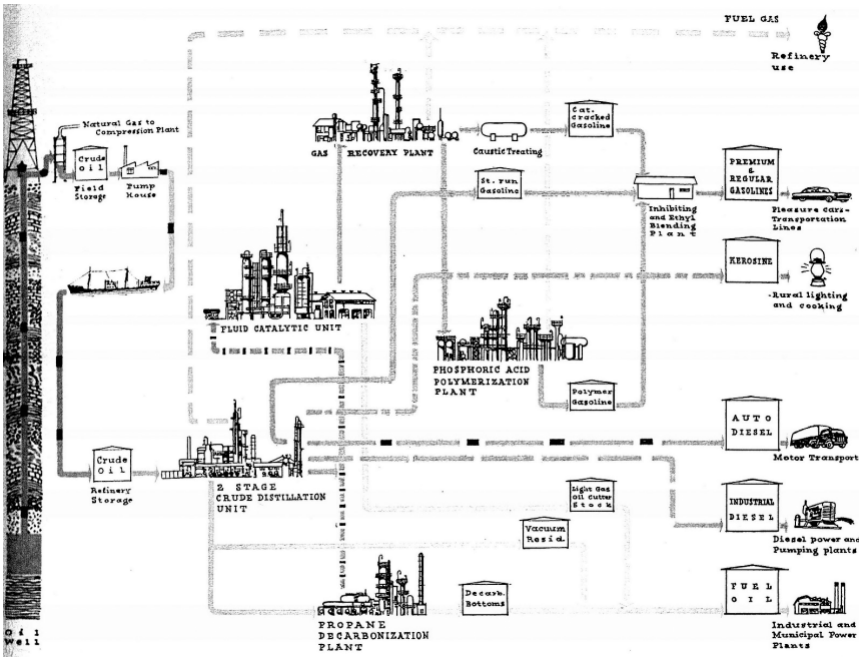


Figure 3-10 Flow diagram for the Australian Oil Refinery, c. 1956 showing the various processes and final products produced at that date (Source: Hill and Knowlton Pty Ltd, 1956:41)

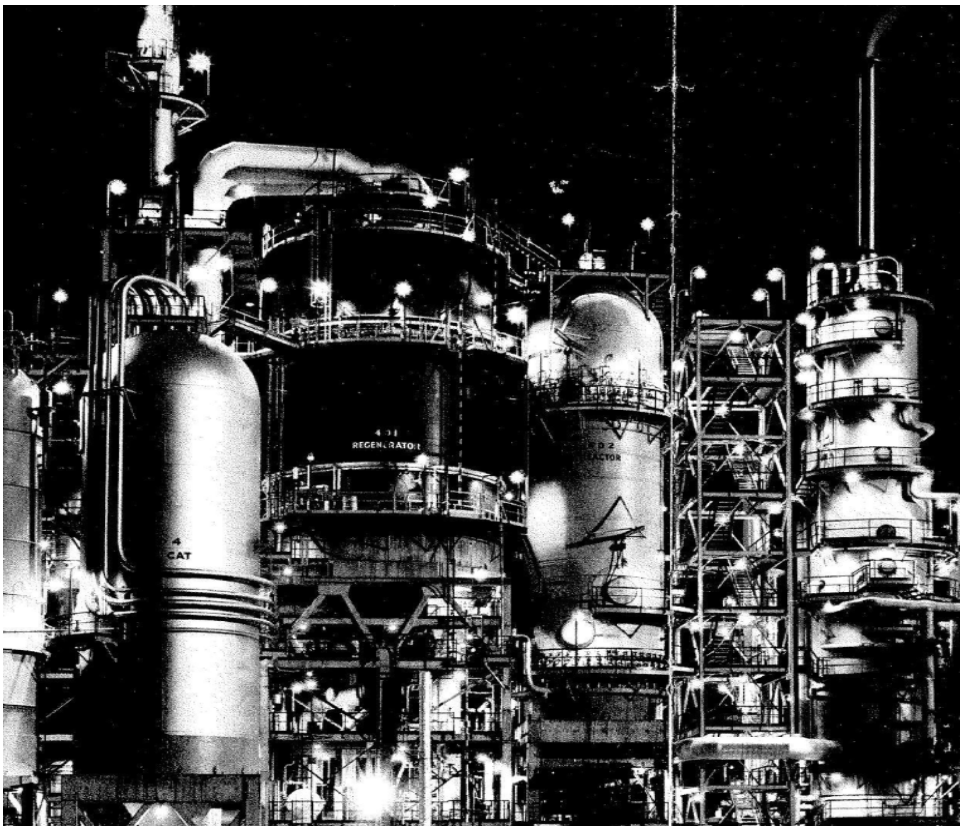


Figure 3-11 Fluid catalytic cracking unit, photo by Max Dupain and Kerry Dundas, c. 1956 (Source: Hill and Knowlton Pty Ltd, 1956:18-19)

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)

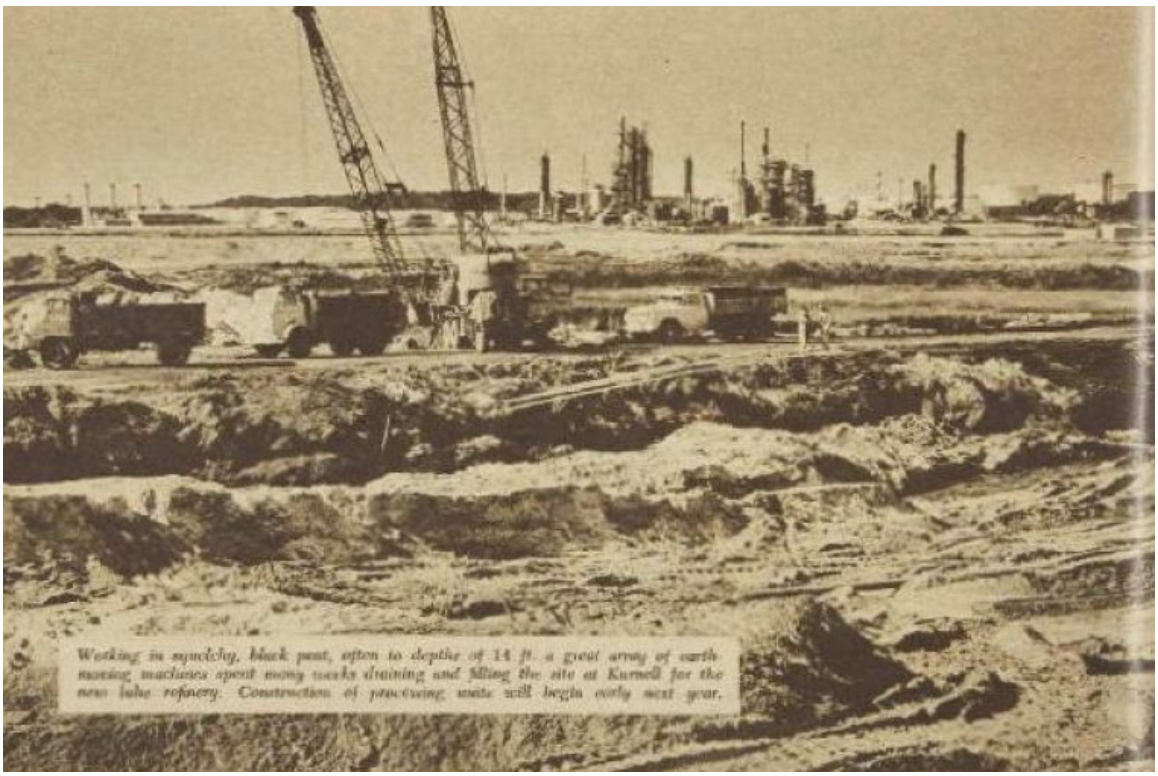


Figure 3-16 Site preparation for the ALOR, with the main refinery behind (Source: The Australian Women's Weekly, 20 December 1961 in Australian Museum Business Services, 2013:57)

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.

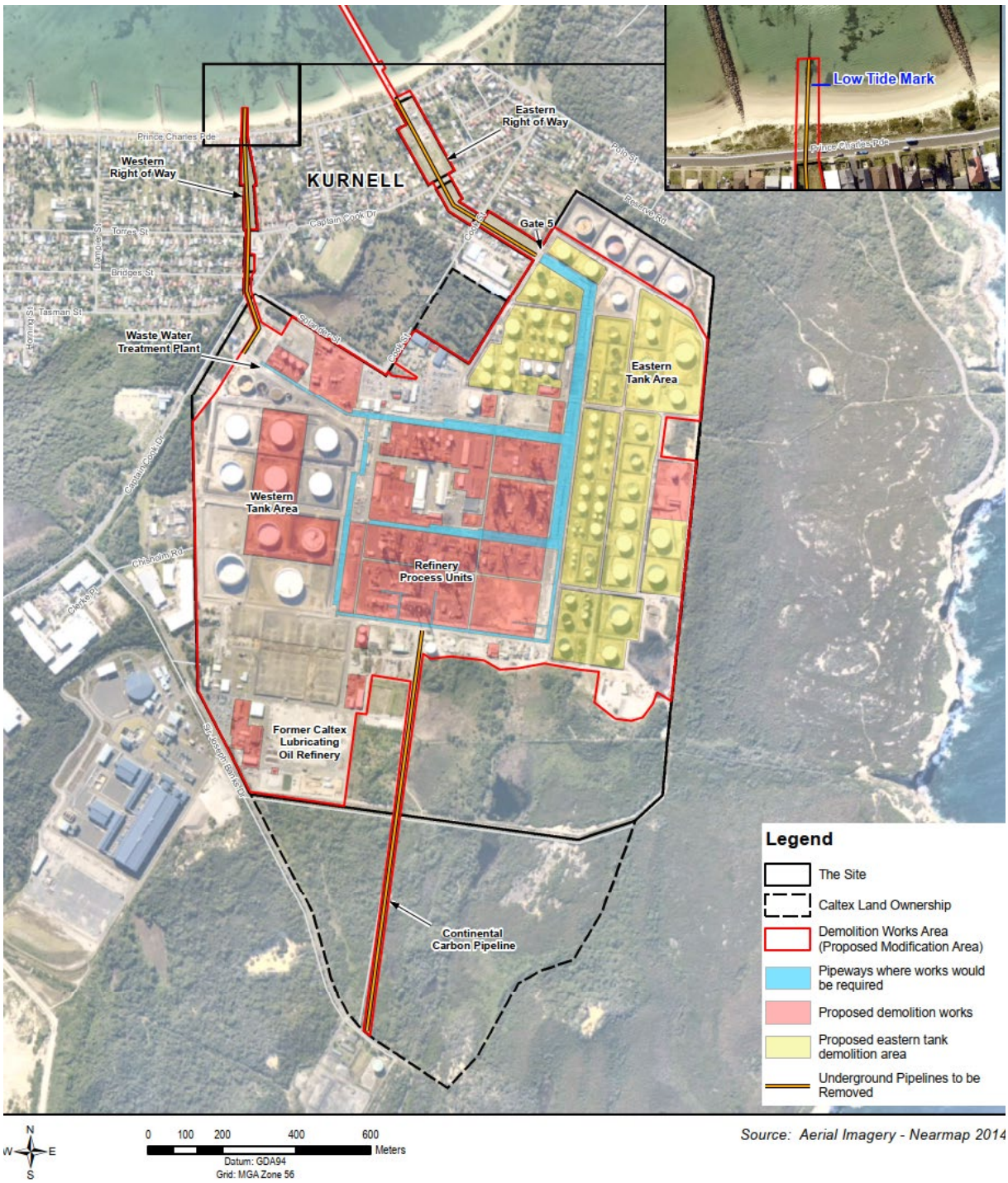


Figure 3-17 2014 Demolition works (shaded in red and yellow) and conversion works (in orange) (Source: Australian Museum Consulting, 2014a: 2)

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 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, however this could be as many as 1,300 during certain shutdown and maintenance periods. 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 Annexure 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 the Project Area. As indicated in Section 2.3.2, there are four heritage items located adjacent and approximately 40 m to the east of the Project Area (refer to Section 3.4.3).

In addition, there are two archaeological sites within the Project Area, 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 Annexure 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)

3.4.3 Nearby heritage items

There are four items of heritage significance within close proximity of the Project Area, one of State heritage significance, two of National heritage significance and one of local heritage significance. These are:

- Kamay Botany Bay National Park and Towra Point Reserve (State heritage significance)
- Kurnell Peninsula Headland (National heritage significance)
- Kamay Botany Bay: Botany Collection Sites (National heritage significance)
- Kurnell Historic Site.

Their heritage values are as follows:

Kamay Botany Bay National Park and Towra Point Reserve

The following Statement of Significance sets out the Kamay Botany Bay National Park and Towra Point Reserve heritage values, as summarised from the State heritage listing:

> *The Kamay Botany Bay National Park and Towra Point Reserve are of outstanding state heritage significance as a rare place demonstrating the continuous history of occupation of the east coast of Australia. The place holds clear and valuable evidence of Indigenous occupation prior to European settlement and the natural history of the State. It is also the place where the shared history of indigenous and non-Indigenous Australia began. It was the place where Lieutenant James Cook first stepped ashore to claim the country for Britain and plays a central role in the*

European history of arrival, the history of indigenous resistance, dispossession and devastation through illness, land grants, cultivation and development….

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

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

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

Kamay Botany Bay National Park and Towra Point Nature Reserve are of State heritage significance as they contain rare remnant vegetation and flora communities and is a critical link in the network of parks and reserves that conserve the biodiversity of NSW.

(NSW Office of Environment and Heritage, 2013)

Kurnell Peninsula Headland

This item is within the boundaries of the Kamay Botany Bay National Park. The following Statement of Significance is summarised from its NHL listing:

Kurnell Headland (comprising Botany Bay National Park and the Sydney Water land at Potter Point), Kurnell Peninsula, is of outstanding heritage value to the nation as the site of first recorded contact between Indigenous people and Britain in eastern Australia. The place symbolically represents the birthplace of a nation, and the dispossession of Indigenous people. The first landing at Kurnell Peninsula in April 1770 by Lt James Cook has been commemorated since 1822. The Meeting Place Precinct, including Captain Cook's Landing Place, features memorials and landscape planting celebrating the events… the story of Cook's first landing on the east coast of Australia is nationally important and an integral part of Australian recorded history and folklore.

Cook's running-survey of the east coast of Australia in 1770 and his survey of Botany Bay as a safe harbour, was an outstanding technical achievement, enabling the continental characteristics of Terra Australis *to be defined for the first time, with the exception of Bass Strait, building on the work of earlier maritime explorers. Cook's first landfall in Australia at Botany Bay informed the subsequent British declaration of* terra nullius *and began the process which led to British possession of the Australian continent by 1830. The headland area of Kurnell Peninsula, comprising most of Botany Bay National Park, and described by Cook in his Journal as a significant coastal landmark at the entrance to Botany Bay, is significant to the nation as the destination of the First Fleet under Captain Arthur Phillip in 1787.*

On this, Cook's first of three voyages to the Pacific, Joseph Banks was botanist, assisted by Daniel Solander and the artists Sydney Parkinson, Alexander Buchan and Herman Sporing, were to produce botanical, zoological and ethnographic drawings. Banks and Solander collected 83 specimens whilst at Botany Bay, many of which are now the type specimens of species and genera, including Banksia*, named after Joseph Banks. Kurnell Headland was the first site on the eastern coast of the Australian continent to be explored by scientists from Britain, with many of the first type-specimens of flora collected at the Kurnell Peninsula landing site by both Banks and Solander. Cape Banks and Point Solander have defined the entrance to Botany Bay since 1770. Cook's naming of Botany Bay would result in its adoption as an emotive term for a distant destination, which came to be associated with convictism for much of the nineteenth century.*

(Department of Climate Change Energy the Environment and Water, 2005)

Kamay Botany Bay: Botanical Collection Sites

The heritage values of this item are contained within the NHL listing for Kurnell Peninsula Headland, but its national heritage importance merits a specific listing as the site of collection of botanical samples by Banks and Solander. The following Statement of Significance is reproduced from its NHL listing:

> *Kamay Botany Bay has outstanding heritage value to the nation as the place where botanist Sir Joseph Banks and naturalist Dr Daniel Solander collected plant specimens in 1770 as part of the first landing of the Endeavour in Australia. Banks and Solander collected a large number of iconic Australian plant species, including some that later became type-specimens which have important scientific and research value. The plant collection sites at Kamay Botany Bay, together with the collected plant material, represent the symbolic and actual integration of Australian flora into western science. The Botany Bay plant collections revolutionised the international systematic biology discipline, shaped European perceptions of Australia and provided a benchmark for the Australian environment as well as catalysing and informing subsequent botanical studies of Australia.*
>
> (Department of Climate Change Energy the Environment and Water, 2017)

Kurnell Historic Site

This item shares its boundaries with the Kamay Botany Bay National Park and contains the same heritage values.

3.5 Archaeological assessment

Division 9 of the *Heritage Act 1977* contain provisions protecting all relics in the State of NSW. A *relic* is defined in Section 4 of that Act as:

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

The guideline, *Assessing Significance for Historical Archaeological Sites and Relics,* proposes the following criteria and guidance in establishing whether archaeological relics meet the threshold for State or local heritage significance and is based on the NSW heritage significance criteria for built heritage (NSW Heritage Branch, 2009). This assessment also conforms to the Archaeological Assessment Guidelines (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996a).

Table 3-3 Criteria and guidance for historical archaeological sites and relics of State or local heritage significance

Criterion	Guidance questions
Archaeological Research Potential	• To which contexts (historical, archaeological and research-based) is it anticipated that the site would yield important information? • Is the site likely to contain the mixed remains of several occupations and eras, or is it expected that the site has the remains of a single occupation or a short time-period? • Is the site rare or representative in terms of the extent, nature, integrity and preservation of deposits (if known)? • Are there are large number of similar sites? • Is this type of site already well-documented in the historical record? • Has the site type already been previously investigated with results available? • Is the excavation of this site likely to enhance or duplicate the data set?
Associations with individuals, events or groups of historical importance	• Does the archaeological site link to any NSW Historic Themes? Will the site contain relics and remains which may illustrate a significant pattern in State or local history? • Is the site widely recognised? • Does the site have symbolic value?

Criterion	Guidance questions
	• Is there are community of interest (past or present) which identifies with, and values the specific site? • Is the site likely to provide material expression of a particular event or cultural identity? • Is the site associated with an important person? (the role of the person in State or local history must be demonstrated/known) • What is the strength of association between the person and the site? • Did the person live or work at the site? During the phase of their career for which they are most recognised? Is it likely to be evident in the archaeology/physical evidence of the site? • Did a significant event or discovery take place at the site? Is that evident or likely to be evident in the archaeology/physical evidence of the site?
Aesthetic or technical significance	• Does the site/is the site likely to have aesthetic value? • Does the site/is the site likely to embody distinctive characteristics? • Does the site/is the site likely to embody a distinctive architectural or engineering style or pattern/layout? • Does the site demonstrate a technology which is the first or last of its kind? • Does the site demonstrate a range of, or change in, technology?
Ability to demonstrate the past through archaeological remains	• Does the site contain well-preserved or rare examples of technologies or occupations which are typical of particular historic periods or eras of particular significance? • Was it a long term or short-term use? • Does the site demonstrate a short period of occupation and therefore represents only a limited phase of the operations of a site or technology or site? Or does the site reflect occupation over a long period? • Does the site demonstrate continuity or change? • Are the remains at the site highly intact, legible and readily able to be interpreted?

The HMS for the Site contained the following review of its potential for relics within the meaning of the *Heritage Act 1977*:

> *Based on the historical background research and physical analysis of the site, there is unlikely to be any intact subsurface archaeological deposits which pre-date the refinery within its curtilage. there may be some archaeological resources associated with the original construction of the refinery or later modifications, but these are unlikely to add to an understanding of the place that is not provided by the extensive documentation detailing the early construction and modifications of the site. However, if significant archaeological deposits or relics are inadvertently discovered or disturbed, they should be assessed in accordance with the relics provisions of the Heritage Act or, in the case of Aboriginal objects, in accordance with the* National Parks and Wildlife Act 1974.
>
> (Australian Museum Consulting, 2014b:129)

It is noted that the HMS was prepared prior to the demolition of sections of the former refinery and represents an assessment of the archaeological potential of the refinery in its pre-demolition state. Based on the historical background of the Site, it is agreed that the extensive construction of the oil refinery would have removed all traces of archaeological material on the Site that pre-date the refinery. Post-demolition, the archaeological resource is now likely to contain the following potential archaeological features:

- Subsurface infrastructure relating to the oil refinery, such as pipes
- Potential remains of earlier buildings associated with the oil refinery.

The assessment in Table 3-4 addresses each of the criteria for assessing the significance of the archaeological resource within the Site.

Table 3-4 Assessment of archaeological significance

Criterion	Assessment
Archaeological research potential	It is considered that all archaeological material would post-date the construction of the refinery. There is high potential for subsurface remains to be present that relate to the construction and operation of the refinery dating from the 1950s onwards. However, given the relatively recent nature of these features, they are well-documented, thereby greatly reducing the scope for research potential. It is considered that the archaeological resource **does not** meet this criterion.
Associations with individuals, events, or groups of historical importance	The archaeological deposits would relate to the construction of the oil refinery, and may be of some significance to the Caltex (now Ampol) company, or to workers who worked there. However, it is considered that this applies to the Site in general, rather than reflected in the archaeological resource. It is also considered that these individuals and groups are not of sufficient importance to meet the threshold of local or State archaeological significance. It therefore **does not** meet this criterion.
Aesthetic or technical significance	The archaeological resource is likely to comprise infrastructure and remains of former buildings typical of an oil refinery. These continue to be well represented and as indicated above, the technical elements of the Site are very well-documented. There is no aesthetic significance attached to this item. It therefore **does not** meet this criterion.
Ability to demonstrate the past through archaeological remains	The archaeological resource has the ability to demonstrate the former layout and technical elements of the former oil refinery. However, it is noted that some of this has been removed since its closure, and was recorded prior to its closure. The item therefore lacks the intactness, legibility, and interpretive value necessary to meet this criterion. It is therefore considered that it **does not** meet this criterion.

Pursuant to the above assessment, it is concluded that the existing archaeological resource does not meet the threshold for local or State archaeological significance and are therefore not considered relics within the meaning of Section 4 of the *Heritage Act 1977*.

4.0 Assessment of construction impacts

The proposed modification includes a series of works, as described in Table 1-1.

Proposed ground disturbances are shown in Figure 4-1. Ground disturbance is anticipated to result from the following activities:

- Diversion and subsequent removal of OWS infrastructure in Zones 2 and 3. These works would require excavation for new OWS interception pits/ lines to a depth of 3.5 mbgl, a new pump station and emergency storage tank within an area of 12 by 34 m and benched to 4.5 mbgl, as well as excavation to remove redundant OWS infrastructure to a depth of 3 mbgl.
- Augmentation, installation, and removal of FWS infrastructure in Zones 1 to 3. Where FWS is augmented or removed, excavation would be required to a depth of 1 mbgl. The FWS tank, and pump system/ pumphouse, and firewater pipework would be relocated to the FWS Relocation Area. Excavation to a depth of 1 mbgl to construct new foundations for the firewater pipework along the length of the pipelines, the firewater tank, and the pumphouse. The firewater tank would require a base of 380 m^2 (diameter of 22 m) and the pumphouse would require a base of 11 m by 18 m.
- Isolation and removal of redundant electrical assets in Zones 2 and 3, including five substations. These works would require excavation to a depth of 2 mbgl.
- Construction of new warehousing and storage facilities in Zones 1 and 1A, including a maintenance warehouse, oil spill equipment storeroom, and a storage shed for boats and aquatic spill response kits. These works would require excavation to a depth of 1 mbgl to construct footings.
- Demolition of existing structures would occur in Zones 2 and 3, and excavation would be required up to a depth of 2 mbgl.
- Remediation activities within Zone 1 to 3 to address legacy ground contamination identified in specific locations across the Site to support the ongoing viable, safe, reliable, and sustainable use of the Kurnell Terminal. Works would involve subsurface disturbance to remove or treat contaminated soils within works areas in Zone 1 (refer to Excavation 7 in Figure 4-1) and Source Areas in Zones 2 and 3 (refer to Excavations 1 to 6). In Excavations 1 to 6, excavation may be required to depths of up 4.9 mbgl, but would be largely determined by the depth to groundwater. All remediated areas would be reinstated to existing ground levels, with the exception of RPIP Mountain, which would be regraded.

These impacts are considered in the following sections.

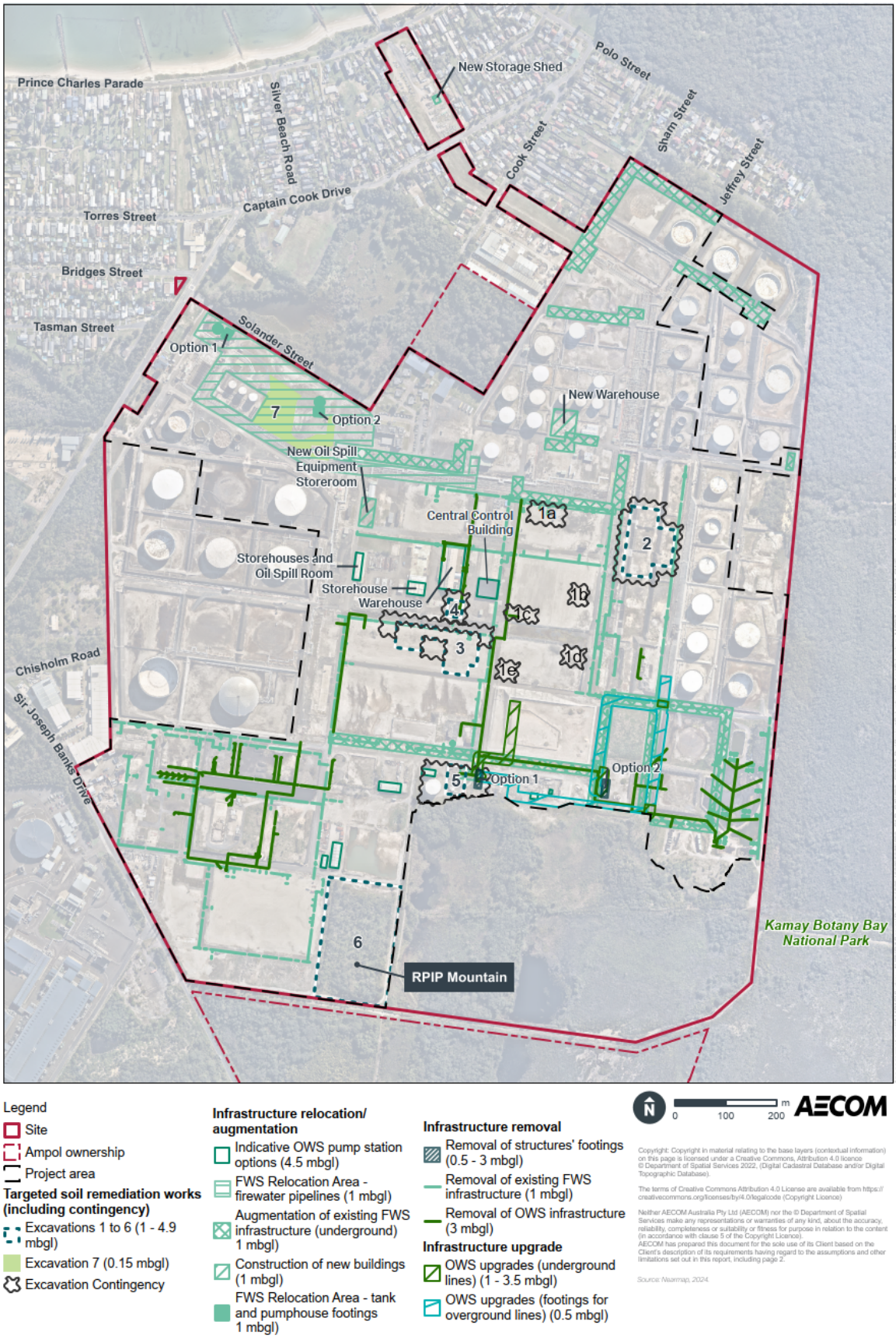


Figure 4-1 Location of ground disturbance across Site

4.1 Demolition of existing structures

4.1.1 Overview

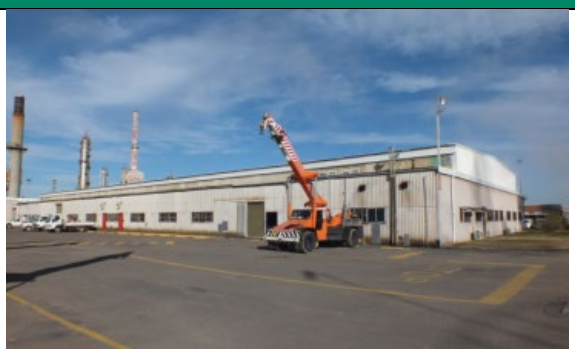
Ten structures are proposed to be demolished as part of the proposed modification. These are listed below, along with their heritage significance, as defined in Table 3-2:

- 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 4-2 Warehouse, 2014**  **Figure 4-3 Warehouse, 2024**	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 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.

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

Building/ feature name and location	Image (2014 and 2024)	Description (2014)
	 **Figure 4-7 Oil spill room, 2024**	
Central Control Building (Area 2, Road 6)	 **Figure 4-8 Central Control Building, 2014**  **Figure 4-9 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 approved project related to the conversion of the Site from an oil refinery to a finished fuel terminal, requiring a much smaller footprint. The three buildings identified for demolition in this assessment (storehouse, workshop, and Central Control Building) are located outside the footprint of the finished fuel terminal. As they were assessed of being of high heritage significance owing to their status as original buildings associated with the oil refinery, they were retained as examples of such buildings

(Australian Museum Consulting, 2014a:39). The 2014 HIA prepared for the demolition stage of the approved project stated that the reasons for retention of the workshop and storehouse were:

> *The proposed retention and adaptation of the Main Workshop and Storehouse to new uses within the terminal would help to preserve some authentic physical evidence of the industrial history of the site, and as such would have some ongoing technical and representative value… That being said, many of the significant neighbouring workshop and amenities buildings, including the original Cafeteria, Old Laboratory, the Training Centre (Old Garage) and Reliability (Old Inspection) Building are to be demolished, which will have a major, irreversible adverse impact on the physical fabric, historic integrity spatial integrity, and presentative value of the Australian Oil Refinery Site.*
>
> (Australian Museum Consulting, 2014a:39)

In relation to the Central Control Building, it was noted that:

> *Retention and adaptive reuse of the c. 1989 Central Control Building (CCB/Bunker) would… preserve evidence of more recent technological change on the site.*
>
> (Australian Museum Consulting, 2014a:37)

The heritage significance of these three buildings is recognised, and it is noted that these buildings are the last of the industrial buildings remaining on the Site. Other buildings at the north of the Site are still extant but relate to administration , rather than the operations of the terminal.

However, as indicated by the 2014 HIA, it is considered that their high to moderate heritage significance now relates to their intangible characteristics, in particular, to their former roles 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 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 removal of these buildings outweighs the financial burden and operational challenges of retaining these three structures.

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.

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

In addition to demolition of existing structures, infrastructure works would include:

- Removal of redundant OWS systems (including all pits and pipework) from Zones 2 and 3, except for a connection to the ACS Containment Cell wastewater sump and a proposed OWS diversion line from west of the ACS Containment Cell toward Zone 1
- Augmentation or removal of FWS infrastructure in Zones 2 and 3, and where required, replaced and augmented in Zone 1
- Decommissioning, augmentation or removal of electrical assets.

Potential impacts relating to these works are considered below.

4.2.1 Oily water sewer

As can be seen from Figure 1-3, the proposed location options for the OWS pump pit and emergency storage tank 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.

4.2.2 Firewater system

In relation to the removal of the FWS in Zones 2, and 3 (Figure 1-2) and augmentation through the centre of Zone 2 (Figure 1-3), the HMS (Australian Museum Consulting, 2014b) noted that the pipelines of the former Australian Oil Refinery are considered to be of heritage significance. However, it is also noted that with the shutdown of the refinery, these pipelines would lose their significance and, over time, present an environmental and safety hazard (Australian Museum Consulting, 2014b). It is considered that these pipelines may be removed or augmented without heritage constraint.

The firewater tank proposed to be demolished in the south of Zone 2 (Figure 1-2) is not listed as a heritage item and its removal is not considered to have an impact on the heritage significance of the item.

The FWS Relocation Area (Figure 1-3) was formerly used as the Liquefied Petroleum Gas (LPG) storage area during the refinery's operations and was not considered to be of heritage significance. The FWS may be relocated to this area without heritage constraint.

The FWS in Zone 1 to be augmented (Figure 1-3) 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 refinery and terminal. Augmentation would be required for safety reasons, and the works would not detract from any retained heritage significance.

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 Australian Oil Refinery, and therefore has no heritage protection (Australian Museum Consulting, 2014b:154).

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 1-3) to house maintenance supplies and small-scale terminal maintenance activities. 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 1-3). 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 (Figure 1-3) to store boats and emergency aquatic spill response kits. 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 1-3). 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 Construction impacts on items nearby to the Project Area

The proposed modification works would be located wholly within the Project Area and would therefore not directly impact items outside the Project Area. However, some of the proposed modification works have the potential to cause indirect impacts to nearby heritage items, including:

- Visual impacts
- Impacts to biodiversity
- Impacts from vibration.

Of these, only vibration from the operation of any plant or machinery used during the construction phase has the potential to impact nearby heritage items. While construction equipment would be an additional visual element on the site during construction, it is temporary and therefore would not result in a significant visual impact from a heritage perspective. Further, as described in the Updated Biodiversity Development Assessment Report (Appendix I of the Submissions Report), there would be no offsite impacts to biodiversity values.

In relation to impacts through vibration, as the nearby heritage items are not built items, it is considered highly unlikely that there would be any adverse impact to these items through vibration. In addition, the closest vibration-causing activity to the eastern boundary of the site is the removal of OWS, which is located 60 metres from that boundary. These activities are located at least 60 metres west of those items and therefore unlikely to cause any adverse impacts.

4.6 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.
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

5.1 Operational impacts within the Project Area

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

In line with Figure 1-3, relocated equipment would operate in the 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. There would be no additional impact from the operational phase of the proposed modification.

5.2 Operational impacts on items nearby to the Project Area

Operational activities would continue to be located wholly within the Project Area and therefore would not directly impact items of heritage significance outside the Project Area.

However, often there is a perception that indirect impacts to nearby heritage items could result from:

- Visual impacts
- Impacts to biodiversity
- Impacts from vibration.

Of these, only visual impacts from structures built during the construction phase would occur during the operational phase. No adverse impacts from vibration or upon biodiversity are expected during operation.

In relation to visual impacts, the HIA for the original approval notes the following regarding significant views to and from the Kurnell Peninsula Headland and the Meeting Place precinct:

> *Although the refinery infrastructure detracts from the experience of significant views of the Kurnell Peninsula Headland from Botany Bay, there are no direct views between the Meeting Place Precinct of the Kurnell Peninsula Headland and the main Refinery Site, and only limited distant views from the Cape Bailey Lighthouse, and from the coastal walking track* (in the Kamay-Botany Bay National Park). *The proposed works would not alter the existing landscape setting of the Kurnell Peninsula Headland, insofar as there will be little or no change to the bulk or vertical scale of the existing refinery infrastructure, or otherwise impact on the existing view corridors associated with the national heritage values of the place.*
>
> (Australian Museum Business Services, 2013:91)

It is noted that in relation to these works, while much of the infrastructure noted in the 2013 HIA has since been demolished, other large infrastructure elements are still extant, such as the fuel tanks. The construction of new buildings (refer to Section 4.3) would be comparatively of a smaller scale, and therefore not represent a change to the existing bulk or vertical scale of extant infrastructure. Any new or relocated equipment would be surrounded by existing terminal infrastructure and consistent with the existing industrial landscape. Views of new infrastructure are not anticipated to be visible from the National Park or Towra Point Reserve due to vegetation screening, site topography and other onsite and offsite built structures. There would be little or no adverse change to the existing views.

In conclusion there would be no adverse visual impact on the surrounding heritage items during the operation 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).

The following offsite projects were considered to have met the above criteria, with the potential to have cumulative impacts with the proposed modification:

- Kamay Ferry Wharves (350 m north of the Project Area)
- Breen Resource Recovery Facility (2 km west of the Project Area)
- Woolooware to Kurnell Tower Replacement Project (120 m south west of the Project Area)
- Kurnell Planning Proposal (800 m south west of the Project Area).

The locations of the projects are shown on Figure 6-1.

Since lodgement of the Modification Report, one project, Kurnell Stormwater Separation Improvement Project, has since finished construction and has been removed from the cumulative impact assessment. Kamay Ferry Wharves has also completed construction. However, as ferry services have not yet commenced, the project continues to be included in the operational cumulative impact assessment. No cumulative impacts were identified for these projects upon non-Aboriginal heritage values, and therefore the baseline assessment of this Updated HIA has not changed.

Kamay Ferry Wharves has also completed construction. However, as ferry services have not yet commenced, the project continues to be included in the operational cumulative impact assessment.

6.1 Construction

None of the shortlisted projects occupy the Site. As such, no cumulative historic heritage 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. There are no known impacts during operation and therefore no cumulative historic heritage impacts are expected.

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	Non-Aboriginal 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	Non-Aboriginal Heritage	The Heritage Management Strategy (HMS) and the **relevant** management strategies within it would continue to be implemented.
J6	Non-Aboriginal Heritage	The sculptural panels by Bert Flugelman would be retained and preserved.
J10	Non-Aboriginal Heritage	A Stop Works procedure would be implemented should any **unexpected finds of** Aboriginal Heritage **or non-Aboriginal heritage importance** ~~items~~ be found **including** historical archaeological relics. Works would cease at the vicinity of the item until an assessment is carried out by a qualified heritage professional and ~~OEH~~ **Heritage NSW** would be notified as soon as possible
J11	Non-Aboriginal 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	Non-Aboriginal 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	Non-Aboriginal 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

This Updated HIA Report has reviewed the proposed modification and identified potential non-Aboriginal heritage impacts. Specifically, this report has been prepared to mitigate the potential impacts of the construction and operation of the proposed modification, and to identify appropriate safeguards and management measures to address the impacts identified.

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 to the Site or nearby heritage items. It is noted that the Site is an archaeological site (A2524). Much of the remaining built heritage is decontextualised from their original setting and purpose.

Notwithstanding this, the heritage significance of the three buildings proposed to be demolished (Workshop, Storehouse and Central Control Building) is recognised. However, it is considered that their high to moderate heritage significance assessed in 2014, prior to the demolition of surrounding infrastructure, now relates to their intangible characteristics. in particular, to their role in the operations of the former refinery, rather than their current 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.

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Annexure 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)

Annexure 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 with 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 (now Ampol) 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**
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

Criterion	Assessment
	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. However, the three buildings proposed to be demolished (the Storehouse, the Workshop and the Central Control Building) are now in poor condition. Their architecture is simple, with few features that can be readily interpreted as belonging to the time of its original construction. As original buildings of the oil refinery they are of historical importance and were photographically recorded both internally and externally in 2014. However, none of the buildings possess any significant aesthetic or technical qualities and are therefore not considered to be of aesthetic or technical significance. 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.

Criterion	Assessment
	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**
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