

ASSESSMENT REPORT

Section 96(2) Modification Kurnell Refinery Conversion (SSD 5544 MOD 1) Demolition and Removal of Redundant Refinery Process Units, Tanks, Pipelines and Infrastructure

1. PROJECT BACKGROUND

On the 7 January 2014, the Planning Assessment Commission (PAC) approved a development application from Caltex Refineries (NSW) Pty Ltd (the Applicant) to convert the Kurnell Refinery into a finished fuel product import and distribution terminal.

The Kurnell Refinery is located on the Kurnell Peninsula within the Sutherland Shire local government area. The site has an area of approximately 187 hectares and can be accessed via Captain Cook Drive.

The site is bound by the Kamay Botany Bay National Park to the east, the community of Kurnell to the north and north-west, light industrial development to the west and largely undeveloped land to the south (See **Figure 1**). The closest sensitive receiver to the site is located approximately 30m north of the site on Cook Street.



Figure 1: Site Context and Surrounding Uses

In May 2011, the Applicant conducted a review of its refining operations and found that the refining of oil at the Kurnell site was no longer considered viable, primarily due to the increased competition from larger and more modern refineries in Asia. In July 2012, the Applicant announced that it would be converting the Kurnell Refinery into a finished fuel product import and distribution terminal (the Caltex Terminal). The Caltex Terminal would no longer process crude oil but would import finished and processed fuels for storage and distribution to market customers. The conversion works were considered necessary to ensure operations within Australia remain viable while also guaranteeing a safe, reliable and sustainable supply of petroleum fuels to NSW and the ACT.

The conversion works would be carried out in two stages:

1. Conversion of existing infrastructure to allow the site to operate as a terminal and shutdown of the refinery; and
2. Demolition and removal of redundant tanks, pipes and infrastructure within the Caltex Terminal and on Silver Beach, Kurnell Wharf and various road reserves along Captain Cook Drive, Prince Charles Parade and Cook Street.

The conversion works commenced in the first half of 2014 and are expected to take two years to complete. In late 2014, the Kurnell Refinery ceased operations and began operating as the Caltex Terminal.

The conversion works have resulted in the redundancy of a number of refinery process units, tanks, pipes, buildings and other infrastructure across the site. These structures have been depressurised, de-inventoried and are currently left in-situ. The demolition works, the subject of this modification, are the next phase of the conversion works.

1.1 Contamination Legacies at the Site

It should be noted that this modification request does not include any remediation of the site. As some areas within the site are potentially contaminated due to past operations, any remediation works would be the subject of a future development application to the Department or Council (if required).

In this regard, the Environment Protection Authority (EPA) has issued the Applicant with a Preliminary Investigation Order (PIO) under the *Contaminated Land Management Act 1997* to investigate the potential contamination legacies of the site. Although the Applicant has completed a number of discrete incident based remediation works, a full scale remediation of the site has not yet been undertaken.

The proposed demolition and removal of redundant refinery process units, tanks and infrastructure would enable the Applicant to progress with a full site characterisation assessment of the site which would be required prior to a detailed investigation and prior to undertaking any remediation works.

2. PROPOSED MODIFICATION

On 24 November 2014, the Applicant submitted a modification request (SSD 5544 MOD 1) and supporting Statement of Environmental Effects (SEE) prepared by URS Pty Ltd under section 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The modification request seeks to facilitate the demolition and removal of redundant infrastructure as part of the conversion works. The demolition works are linked to the ongoing process of converting the site from an operation that contains both oil refining and liquid fuel land uses to an operation where the dominant land use is that of a 'liquid fuel depot'.

The demolition works are proposed to be undertaken in stages and in accordance with the development consent and the site's Environment Protection Licence (EPL).

The demolition works would be carried out primarily within the Caltex Terminal site itself as well as in the following locations (as shown in **Figure 1**):

- Silver Beach;
- Kurnell Wharf;
- Continental Carbon Pipeway; and
- road reserves along Captain Cook Drive, Prince Charles Parade and Cook Street.

The major components of the modification are shown in **Figure 2** and summarised in **Table 1**. The modification is described in full in URS's Statement of Environmental Effects (SEE), which supports the modification application and is attached in Appendix C.

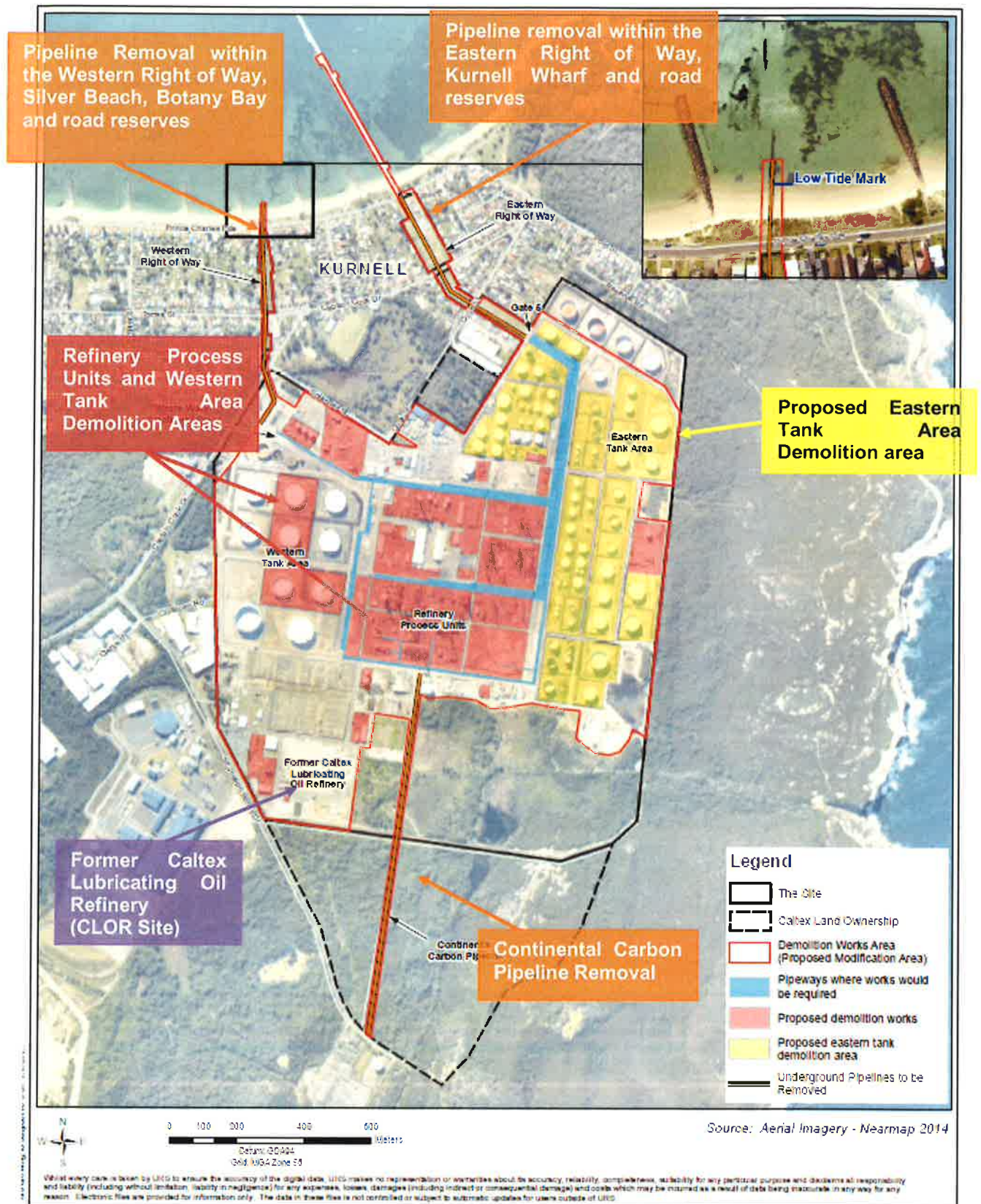


Figure 2: Proposed Demolition Works at the Caltex Terminal, Silver Beach and Botany Bay

Table 1: Proposed demolition works

Demolition Works	Description
Caltex Terminal (Terminal Site)	
<i>Refinery process units and Associated Infrastructure</i>	• Demolition and removal of pipelines from the process unit area and refinery process units. • Removal of redundant cabling and underground services including the Oily Water Sewer. • Excavation work will be carried out and would extend down to 2 metres below ground level (mbgl).
<i>Tanks and Associated Infrastructure</i>	• Disconnection and removal of a number of tanks and vessels from both the eastern and western tank areas. • Removal of redundant infrastructure associated with the tanks (such as water draw equipment and pipelines). • Excavation work would be carried out to a depth of 1 mbgl.
<i>Buildings</i>	• Demolition and removal of a number of redundant buildings related to the operation of the refinery as shown in Figure 2. • Removal of foundations and services associated with the redundant buildings.
<i>Services</i>	• Removal of redundant cabling and underground services such as connection points and underground pipes to the oily water sewer beneath the refinery process units. • Removal of redundant sewer lines and cabling from redundant buildings that included amenities.
Western Right of Way and Silver Beach	
<i>Cooling Water Outlet Pipeline</i>	• Removal of two cooling water outlets from the Caltex Terminal, the Western Right of Way (ROW), under Silver Beach and into Botany Bay. • The pipeline is approximately 1.8m in diameter and would be excavated down to at least 2 mbgl, the pipeline removed and the surface returned to grade. • Where the pipeline crosses Captain Cook Drive, Bridges Street, Torres Street and Prince Charles Parade, the roads would be excavated, the pipeline removed and the roads restored. • The pipeline would also be removed from beneath Silver Beach north of Prince Charles Parade up to 20 m seaward from the low tide mark (see Figure 2) in Botany Bay and backfilled. Beyond 20m from the low tide mark, the rest of the pipeline would remain in situ.
Eastern Right of Way	
<i>Cooling Water Intake Pipeline and Product Pipelines</i>	• Removal of two cooling water intake pipelines running from the pumphouse on Kurnell Wharf through the Eastern ROW to the Caltex Terminal and three redundant product lines running through the Eastern ROW; • The removal would require work to be carried out on Caltex owned land and road reserves on Cook Street, Captain Cook Drive and Prince Charles Parade. • The pipelines passing through the Eastern ROW and road reserves would be excavated down to 2 mbgl, the pipelines removed and the surface returned to grade or the roads repaired. • To the north of Prince Charles Parade, where the pipelines move from underground to aboveground and onto Kurnell Wharf, only the two cooling water intake pipelines would be removed from their supports, removed in sections and moved by a barge crane to a truck located on the wharf.
Continental Carbon Pipeline – Caltex owned land	
<i>Continental Carbon Pipeline</i>	• The Continental Carbon Pipeline runs from the southern section of the terminal site owned by Caltex to the Continental Carbon Facility 600m away. • The pipeline would be excavated down to at least 2 mbgl, removed and the surface returned to grade. • Some above works would be undertaken with the removal of a redundant steam pipeline.

2.1 Demolition Staging

The demolition works are scheduled to take place in conjunction with the conversion works. The Applicant has estimated that it is likely to take two years to complete the demolition works, with the works scheduled to start in second half of 2015 as shown in **Table 2** below.

Table 2: Staging of demolition works

Task	Indicative Date
Conversion Works	
Detailed Engineering & Design Start	Mid 2012
Engineering & Design Completed	Second half 2013
Tank Conversions Start	Q1 2014
Installation of Piping, Pumps and Associated Infrastructure	Q1 2014
Construction on Piping Completed	Q2 2014
Kurnell Refinery Shutdown	Q4 2014
Kurnell Refinery Decommissioning Process Units	First half 2015
Kurnell Refinery Decommissioning Tanks and Lines	2015 – Mid 2016
Continued Tank Conversions	End 2014 – End 2016
CONVERSION TO TERMINAL COMPLETED	December 2016
Demolition Works*	
Demolition of Refinery Process Units	Mid 2015 – Mid 2017
Demolition of Tanks	Mid 2016 – End 2017
Pipeline Removal	Start 2016 – End 2017
Demolition of Buildings	Mid 2016 – End 2017
Concrete Crushing	End 2017

* Dependant on timing of modification approval

2.2 Demolition Methods

The Applicant proposes a number of demolition techniques, depending on height, thickness and complexity of the structure. This includes the following:

- simple structures less than 30 metres (m) in height and less than 32 millimetres (mm) in thickness would be dismantled using an excavator and shear;
- complex structures less than 30m in height would be cut into pieces using oxy-fuel blow torches;
- simple structures taller than 30m and less than 32mm in thickness would be demolished via a controlled fall technique using cables, an excavator and crane to induce a controlled fall; and
- complex structures taller than 30m would be dismantled in segments via a crane and oxy-cutter.

2.3 Demolition Materials Management

The demolition works would result in a number of waste streams which would be recycled or reused onsite or disposed at a licensed facility. Demolition material including scrap metal and building materials would be stored at the former Caltex Lubricating Oil Refinery (CLOR) site prior to disposal or recycling.

Concrete Crushing

Concrete produced during the demolition works would be crushed at the end of the demolition program on the former CLOR site. The concrete would be used as aggregate to cover areas where structures and buildings have been removed.

Spoil Management

The Applicant proposes to undertake excavation works within the terminal site and along the pipeline routes within the Eastern, Western and Continental Carbon Pipeline Right of Ways (ROWs). Soils that are excavated are proposed to be temporarily stockpiled and may be used as backfill material, provided they are fit for use. Where soil is unable to be used as backfill material, the Applicant proposes to stockpile it at the CLOR site to be appropriately banded and managed.

3. STATUTORY CONTEXT

3.1 Authority to Determine

The consent for the conversion works was granted under Part 4, Division 4.1 of the EP&A Act. Therefore, the Minister for Planning is the approval authority for this modification request.

However, as reportable political donations were made by the Applicant, the application will be determined by the PAC in accordance with the Minister's Instrument of Delegation, dated 14 September 2011.

3.2 Modification

The Department formed the view that the development consent, if modified under section 96(2) of the EP&A Act to approve the demolition works, will result in a development that is substantially the same.

This is supported by the following reasons:

- the land will continue to be used for the approved liquid fuel depot; and
- the works if carried out will not change the purpose of the development or the land use being a liquid fuel depot.

In this regard, the demolition works would assist in facilitating the conversion of the site to an import and distribution terminal. Further, there would be no change to the nature or capacity of processes to be carried out within the Caltex Terminal.

3.3 Exhibition and Notification

Under clause 119 of the *Environmental Planning and Assessment Regulation 2000*, a section 96(2) modification request must be notified or advertised for a period of at least 14 days.

After accepting the SEE for the request, the Department:

- made it publically available from 28 November 2014 to 12 December 2014:
 - on the Department's website;
 - at the Department's Information Centre (Bridge Street, Sydney);
 - at the Nature Conservation Council's Office (Sydney);
 - at Sutherland Shire Council; and
 - at Cronulla Library.
- notified relevant State Government authorities and Sutherland Shire Council by letter; and
- advertised the exhibition in the Daily Telegraph, Sydney Morning Herald and St George/Sutherland Shire Leader.

As no public submissions were received for the SSD application, the Department did not notify any previous public submitters. However, consultation was undertaken by the Applicant with the local community of Kurnell as part of its regular three monthly meeting regarding the Kurnell operations.

3.4 Consultation

The Department received 12 submissions from government agencies. Full copies of all submissions are included at Appendix C and summarised below.

Sutherland Shire Council (Council) did not object to this proposal but raised a number of issues relating to demolition impacts on existing heritage items, dune erosion as a result of pipeline works on Silver Beach and traffic impacts during the pipeline removal works in Council owned road reserves.

The **Environment Protection Authority (EPA)** did not object to the proposal subject to resolution of issues relating to demolition techniques, soil, groundwater and contamination, waste management, surface water, noise and vibration and air quality.

The **NSW Office of Water (NOW)** did not object to the proposal but sought further clarification on groundwater monitoring at the terminal site and stormwater and groundwater discharge at Marton Park Wetland.

The **Office of Environment and Heritage (OEH)** did not object to the proposal and was satisfied that the demolition works within the terminal site would not affect any endangered ecological communities (EECs). However, the OEH commented on the potential for the Continental Carbon Pipeline removal to potentially affect EECs and management measures proposed for these works. OEH did not raise any issues in relation to heritage impacts of the proposed demolition works.

Fire and Rescue NSW (FRNSW) did not raise any objections to the proposal but requested additional information on the emergency procedures and mitigation measures for hazardous scenarios that would be in place during the demolition works.

Port Authority of NSW did not object to the proposal but commented that the removal of the Cooling Water Outlet Pipeline may require Harbour Master approval as it may involve disturbance of the bed of a 'special port' of Botany Bay.

WorkCover did not object to the proposal and advised that all WorkCover related issues were resolved prior to submission of the SEE.

NSW Health did not raise any objections to the proposal but commented on the air quality and asbestos issues that may arise from the demolitions works.

Roads and Maritime Services raised no objections to the proposal.

The **Rural Fire Service (RFS)** did not have any comments on the proposal.

Sydney Water did not have any comments on the proposal.

Ausgrid did not have any comments on the proposal.

No **public submissions** were received.

3.4 Response to Submissions

On 5 May 2015, the Applicant provided a response to the issues raised in submissions which has been made publicly available on the Department's website.

The Response to Submissions (RTS) provided additional mitigation and management measures for managing the issues identified in section 4.1 above. The RTS also included a supplementary report to the Flora and Fauna Assessment to address OEH's submission relating to the removal of the Continental Carbon Pipeline. Air dispersion modelling for the concrete crusher was also undertaken to address air quality issues raised by the EPA.

The Department has considered the issues raised in the submissions, and the Applicant's response to these issues, in its assessment of the proposal. The Department also notes there were also delays midway through the assessment period due to the Applicant needing to obtain landowners consent from RMS for the pipeline removal works in Botany Bay.

4. ASSESSMENT

In assessing the merits of the modification, the Department has considered the:

- Statement of Environmental Effects (SEE) for the modification (see Appendix B);
- RTS for the modification (See Appendix B);
- Secretary's assessment report for the original approval;
- existing approval conditions;
- agency and Council submissions (see Appendix C);
- relevant environmental planning instruments, policies and guidelines; and
- requirements of the Act, including the objects of the Act.

The Department considers the key issues associated with the proposal are soil and groundwater impacts, demolition hazards and risk, and noise impacts which are discussed in detail below. Other issues are considered in **Table 3**.

4.1 Soil and Groundwater Impacts

The proposed demolition works have the potential to cause soil and groundwater impacts to the surrounding environment.

As the terminal site has operated as a refinery since the 1950s, there is potential for soil and groundwater contamination to be present on site. As such, the proposed demolition activities and associated ground disturbance activities have the potential to disturb these areas, thereby causing potential soil and groundwater contamination issues.

To date, the Applicant has undertaken a range of investigations and mapped areas of where potential contaminants could occur. This includes areas with the following contaminants:

- total petroleum hydrocarbons (TPHs);
- polycyclic aromatic hydrocarbons (PAHs);
- benzene, toluene, ethylbenzene and xylene (BTEX); and
- asbestos.

The Applicant has a number of processes and monitoring programs in place to manage known contaminants at the terminal site and has completed a number of discrete incident based remediation works in response to requirements of the EPA.

As previously discussed in section 1.1, this application does not include remediation of the terminal site. Remediation of the terminal site is subject to ongoing discussion with the EPA and the Department and will be addressed at a later stage. This application will, however, ensure the ongoing management of any soil and groundwater impacts that may arise during the demolition works.

Soil Impacts

The demolition works would involve the excavation and temporary stockpiling of soils within the Caltex Terminal, Silver Beach and the Eastern, Western and Continental Carbon Pipeline ROWs. The SEE stated that approximately 150,000 tonnes of soil would be excavated over a 2.5 year period as a result of the removal of redundant refinery process units, tanks, pipelines and infrastructure. In addition, soils may be excavated down to a depth of 2m below ground level (see **Figure 3**) with contaminated soils likely to be encountered in the former refinery process unit areas and tank areas within the terminal site.

The SEE discussed a range of potential soil impacts that could occur as a result of the excavation works including:

- contaminated soils, asbestos and potential acid sulfate soils being encountered by workers during excavation works;
- generation of dust and odours affecting on-site and off-site receptors;
- erosion and sedimentation issues arising from the stockpiling of soils; and
- contaminant migration to underlying groundwater sources due to ground disturbance works.

The SEE indicated that during excavation works, visual and olfactory (smell) inspections would be undertaken to identify potentially contaminated soils. Excavated materials would be separated into temporary stockpiles according to odours, stains and other environmental indicators. To ensure that erosion impacts and sedimentation issues are minimised, the Applicant proposes to manage stockpiles by ensuring:

- excavation activities are staged in order to minimise the length of time excavation areas are left open and temporary stockpiles are required;
- silt fences and sediment traps are installed;
- stockpiles are restricted to cleared areas; and
- dust generation is minimised via watering down techniques.

Soils that are considered to be contaminated would be temporarily stored at the former CLOR site which is located in the south west section of the terminal site (See **Figure 3**). These soils would be classified and appropriately banded and managed in the short term in accordance with the terminal site's existing EPL. Where contaminated soils cannot be appropriately managed on-site, it would be taken off-site for disposal at an appropriately licensed facility. The SEE estimates that less than 2,000 tonnes of contaminated soil which cannot be appropriately managed on-site would be taken to a waste disposal facility.

Where no contamination issues are identified, the Applicant proposes to reuse the excavated material as backfill to bring the excavated areas back to grade. The SEE states that the majority of excavated material would be considered suitable for reuse.

The Applicant has committed to preparing and implementing a Demolition Environmental Management Plan (DEMP) for the demolition works to manage any potential soil impacts. The DEMP would include a number of sub-plans including but not limited to:

- Contamination Management Plan (CMP) which would be updated to include the measures for managing contaminated soils during the demolition works; and
- Soil and Water Management Plan (SWMP) which would outline measures for managing excavated soils and stockpiles.

The SEE also notes that asbestos may be encountered in building material, structures, pipelines and within the excavated materials. The Applicant indicated that it would remove as much asbestos as possible from the redundant structures during the decommissioning process (which would occur prior to demolition) which is accessible. However, where asbestos is difficult to access and remove, the Applicant would manage the asbestos in-situ until such time as the material can be safely accessed and removed. All asbestos is proposed to be taken offsite to an appropriate waste facility for disposal. As part of the demolition works, the Applicant has committed to amending its existing Asbestos Management Plan (AMP) to include measures for identifying, managing and removing asbestos during the demolition works.

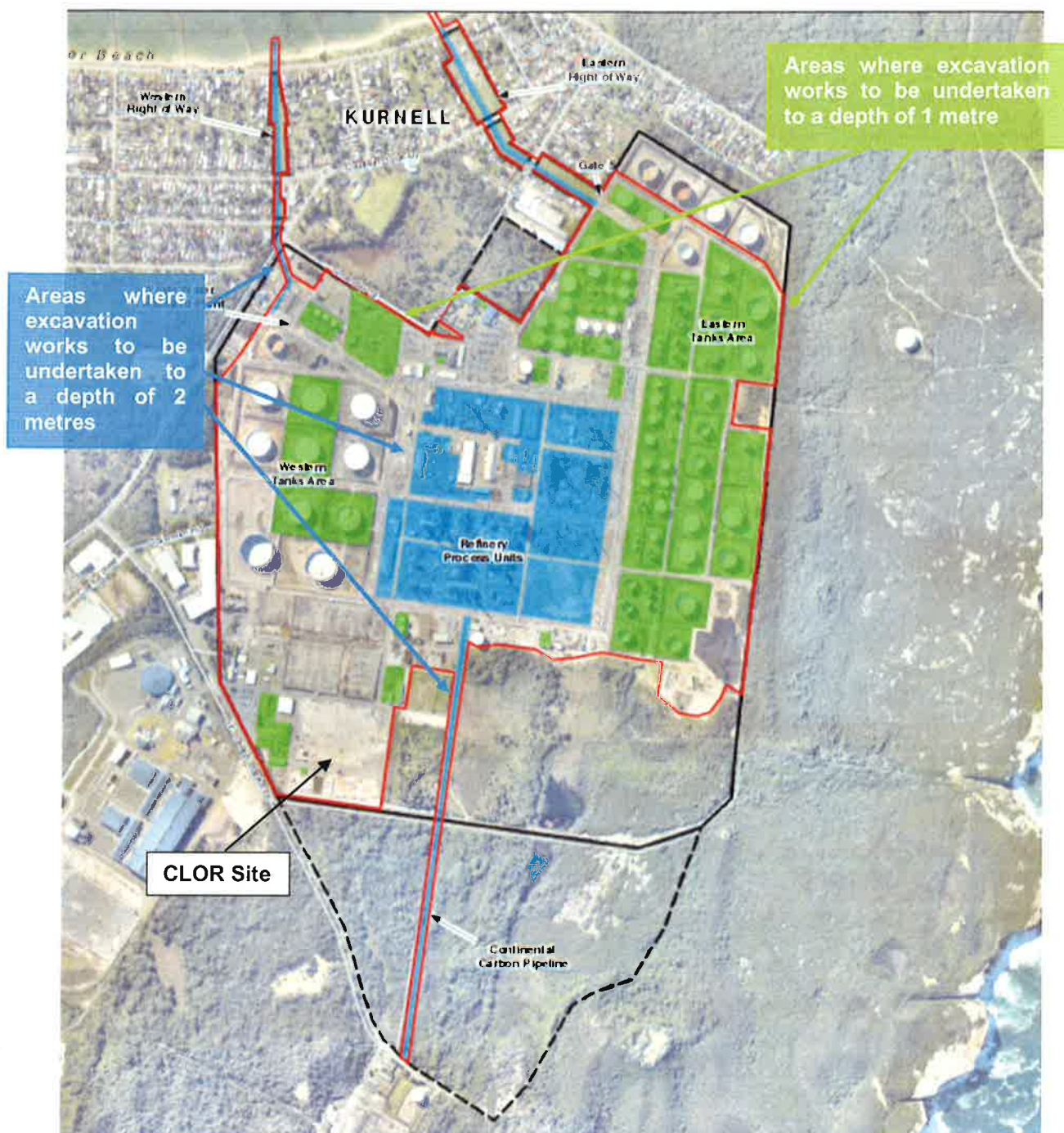


Figure 3: Location of potential ground disturbance activities

The EPA did not object to the Applicant's overall approach to managing potential soil impacts but sought additional information on the soil classification criteria for soils proposed to be reused as backfill and how stockpiles would be managed during heavy rainfall events. Following consultation with the EPA, the Applicant refined its soil classification methods so that in addition to visual and olfactory inspections, potentially contaminated soils would undergo testing against National Environmental Protection Measures (NEPM) soil criteria. The Applicant also clarified that stockpiles containing contaminated soils would be placed on plastic sheeting and appropriately bunded to ensure that contamination impacts are minimised during heavy rainfall events.

The Department is satisfied with the Applicant's approach to managing the potential soil impacts and notes that the works are temporary and would be undertaken in discrete sections to minimise the excavation areas and stockpiles required at any one time. The Department also considers that the management and temporary stockpiling of contaminated soils in the CLOR site is appropriate for the duration of the demolition works given that the terminal site is likely to undergo remediation at a later

stage. Remediation of the terminal site would be dealt with in a future development application to be discussed with the EPA.

The Department is also satisfied that soils which are suitable for reuse can be used as backfill within the terminal site. However, it also considers that any soils to be used for backfilling activities in the Eastern and Western ROWs should only be Virgin Excavated Natural Materials (VENM) or any other material approved in writing by the EPA to ensure that potentially contaminated soils are not used.

As such, the Department has recommended a number of modifying conditions for the Applicant to:

- prepare and implement a SWMP which would include measures to minimise erosion and sediment disturbance;
- update and implement a contamination management plan to include the measures outlined in the Applicant's SEE and RTS; and
- ensure that only VENM is used in the Eastern and Western ROWs or material approved by the EPA and keep accurate records of the volume and type of fill to be used.

Overall, the Department's assessment concludes that the impacts associated with soils are acceptable and can be appropriately managed through the existing and proposed conditions of consent.

Groundwater Impacts

Groundwater at the terminal site is contained within a unconfined aquifer generally at around 2 to 2.5m below ground level flowing generally to the northwest towards Botany Bay (See **Figure 4**). Infiltration of stormwater to soil and potentially to the groundwater occurs in parts of the site that are impervious and unpaved. Groundwater normally discharges to shallow surface water bodies and swamp areas in the southern half of the terminal site and to Marton Park Wetland to the north of the terminal site.

As discussed above, the demolition works would involve some ground disturbance activities including the removal of foundations, redundant slabs, redundant infrastructure and pipelines which may be undertaken to a depth of 1- 2m below ground level. These activities may lead to known contaminants in the soil migrating down into the aquifer and potentially affecting groundwater quality. However, the SEE noted that while there is potential for contamination to be mobilised to groundwater, the increased infiltration at the terminal site may also result in natural attenuation processes such as the natural breakdown or dilution of hydrocarbons before it interacts with groundwater.

Dewatering Activities

The demolition works may involve temporary dewatering activities which are estimated to be less than 3 megalitres a year of groundwater for the entire project. The SEE indicated that it is unlikely that groundwater would be intercepted in the demolition areas particularly as some excavation works (such as the Eastern and Western tank areas) would be undertaken to depth of 1m below ground level. However, groundwater may be intercepted in areas closer to Botany Bay (i.e. Eastern and Western ROWs). As such, the Applicant has stated that any groundwater encountered during the demolition works would be treated at the terminal site's Waste Water Treatment Plant (WWTP) to ensure that any contamination does not affect surface water resources.

As mentioned in the previous section above, the Applicant has committed to preparing a Soil and Water Management Plan which would further outline the groundwater management requirements for the works. The plan would include but not be limited to the following:

- measures for dewatering, storage, movement and treatment of groundwater encountered in excavations; and
- procedures for dewatering, including the need to liaise with NOW to ensure the necessary water licenses are obtained, if required.

The EPA and NOW did not raise any issues in relation to dewatering activities on the terminal site. The Department accepts that any groundwater that is intercepted would be treated at the WWTP before being appropriately discharged offsite. An existing condition in the consent already requires the Applicant to include details of the testing, dewatering, storage, movement and treatment of any groundwater that is intersected during the construction works in a Groundwater Management Plan. The Department is satisfied that this existing condition will adequately manage any potential impacts from dewatering activities during the demolition works.

The NOW did not object to the proposed modification but sought further details on the quantity of groundwater proposed to be discharged offsite to areas like the Marton Park Wetland during the demolition works and groundwater reporting requirements. The Applicant confirmed that the demolition works would be largely confined to catchment areas within the terminal site. However, the Applicant would implement a plan for corrective action in the event that any unexpected increase in contaminants of potential concern was observed in the groundwater monitoring during the demolition works. If such a plan is required, it would form part of the DEMP and may include measures such as identifying the source and pathway relationship, additional monitoring requirements or treatment of the contamination and would be discussed with the EPA. The NOW was satisfied with this approach and the EPA did not raise any concerns.

The Department is satisfied that potential groundwater impacts would be monitored by the Applicant through its quarterly groundwater monitoring program which would assist in the development of appropriate management and mitigation measures.

To ensure that groundwater contamination is managed, the Department has recommended a new condition requiring the Applicant to include details of the procedures for corrective action to be undertaken (which should include identifying the source pathways and additional monitoring requirements) in the Soil and Water Management Plan, in the event that an increase in contaminants of potential concern is identified in the groundwater from the quarterly groundwater monitoring program.

Overall, the Department's assessment concludes that it is satisfied that the proposed and existing conditions of consent would adequately manage any groundwater risks associated with the demolition works.

4.2 Demolition Hazards and Risk

Hazard Risk Analysis

The proposed demolition works present various potential hazards and risk related issues which require detailed consideration, particularly with the existing operations on the site.

As the terminal site is identified as a Major Hazard Facility (MHF), a Hazard and Risk Analysis (HRA) was prepared by Planager Pty Ltd (on behalf of the Applicant), which assessed the risks to people and property from potentially significant incidents that could occur during the demolition works. In addition, the HRA also considered the potential for the demolition works to increase the overall risk profile of the existing development at the site.

The HRA identified the possible causes of potential incident scenarios and their consequences to public safety and the biophysical environment. A total of 20 demolition hazards were identified, of which five scenarios (referred to as process safety related hazards in the HRA) could have potential impacts to the surrounding operating equipment. Other scenarios were identified in the HRA and included general health and safety related hazards and hazards resulting in loss of amenity to the Caltex workforce and community.

The HRA concluded that the overall risk associated with the demolition works would be low provided that the Applicant implements all of its recommendations which include but are not limited to:

- demolition activities to be planned with regards to the on-going terminal activities. A plan detailing the coordination of the demolition activities in conjunction with terminal operations would be required when high risk demolition activities are to occur;
- preparing a demolition work plan when an individual tank is to be demolished while other tanks in the shared tank farm areas are in operation; and
- developing an access control plan when the demolition operator is involved with heavy machinery/vehicles and has limited visibility.

The Applicant has committed to implementing all of the risk reduction measures identified in the HRA in addition to continuing to manage the site as a MHF. The Department notes that WorkCover did not object to the proposal as any concerns were addressed in ongoing meetings with the Applicant as part of managing the site as a MHF.

The Department considers the HRA to be a high level assessment of the demolition hazards and risks associated with the development. To ensure the ongoing safety and management of risks during the demolition works, the Department recommends a new condition requiring the Applicant to prepare

a Demolition Safety Study that would be submitted to the Department for approval prior to the commencement of the demolition works. This study will require detailed hazard control plans and task based risk assessments to be developed for the demolition works to ensure that demolition related hazards are controlled and the risks are minimised.

Firewater System and Emergency Procedures

The SEE states that the terminal site's fire protection system which includes an extensive firewater ring main and fire hydrant system would remain in place during the demolition works. However, where redundant refinery process units and tanks are proposed to be removed, sections of the firewater system that feed those areas may no longer be required and may be removed.

The Department understands that the Applicant will review the terminal site's firewater system to ensure that firefighting capabilities of the terminal site would not be impacted by the demolition works. As such, the Department has included a new condition for the Applicant to submit its review of the firewater system to the Department for approval prior to the commencement of demolition works.

FRNSW and WorkCover did not raise any objections to the proposed modification but FRNSW advised that in the event of a fire or hazardous material incident occurring during the demolition works, first responders need to easily access information to ensure that effective control measures are quickly implemented. FRNSW also noted that one scenario in the HRA (Scenario 5 – introduction of ignition sources into classified hazardous areas) would be potentially difficult to mitigate and recommended that more specific controls measures be developed.

The Applicant clarified that the terminal site currently has safeguards in place to mitigate Scenario 5 including a transition emergency response plan, comprehensive firefighting equipment and training and controls for the introduction of ignition sources into classified hazardous areas. In addition, the Applicant has also ensured that emergency procedures would be available to emergency personnel at key locations including the main site access and at the demolition areas. The Department is satisfied with this response and agrees with FRNSW that emergency procedures should be readily accessible. A new condition has been recommended that reflects this.

The Department's assessment concludes that the incremental risk from the demolition works would have a negligible impact on the overall risk from the site and would not introduce an unacceptable additional risk to surrounding land uses. However, to ensure safe operations during the demolition works, the Department has recommended a number of new hazard related conditions in addition to existing conditions requiring the Applicant to:

- implement all the recommendations in the HRA;
- prepare and implement a demolition safety study and include detailed hazard control plans for high risk activities and task based risk assessments of the process safety related hazards;
- undertake a review of the firewater system for the terminal site; and
- update existing plans under the existing consent to address impacts arising from the demolition works including the fire safety study and emergency plan.

4.3 Noise

The existing development consent includes conditions to manage noise and vibration impacts during the conversion works and during operation as a finished fuel import and distribution terminal. A Noise and Vibration Impact Assessment (NVIA) was undertaken by Wilkinson Murray which assessed the potential noise and vibration impacts from the proposed demolition works within the terminal site and from works within the Eastern and Western ROWs. The NVIA applied the criteria set out in the Interim Noise Construction Guidelines (ICNG) to set the demolition noise management levels for the demolition works.

The demolition works are proposed to occur between 7:00am and 10:00pm, 7 days a week, while the terminal is in operation. However, the pipeline removal works along the Eastern and Western ROWs would be restricted to 7:00am and 6:00pm, Monday to Saturday with no work on Sundays due to the proximity of residents.

Key demolition noise impacts are likely to include emissions associated with demolition machinery and equipment. Within the main terminal site, the equipment likely to contribute to noise emissions includes large excavators, oxycutters, mobile cranes, the concrete crusher and jackhammers. During removal of the pipelines in the Eastern and Western ROWs, the machinery and equipment likely to contribute to noise emissions include mobile cranes, backhoes, oxycutters and the use of a boat and barge for works on Kurnell Wharf.

Removal of pipelines in the Eastern and Western ROWs

Under the ICNG, the demolition noise management levels for the closest residential receiver to the terminal site is 46 dB(A) (R2 – 30D Cook Street) while for all other residences in Kurnell the noise management level is 50 dB(A).

The SEE stated that the predicted noise levels for the pipeline removal works within the Eastern and Western ROWs, Kurnell Wharf and Silver Beach are likely to exceed the demolition noise management levels at the closest residential receivers along the pipeline routes.

The NVIA predicted that under a worst case scenario, noise levels from the works within the Eastern and Western ROWs are likely to be around 55-65 dB(A) which is above the ICNG management level of 50 dB(A). However, the predicted noise levels are less than 75 dB(A) which is the noise level classified in the ICNG as 'highly noise affected' where a strong community reaction to noise may occur.

While the Department acknowledges that the works could impact nearby receivers, the Department considers the NVIA to be a conservative assessment as it considered all equipment and machinery to be operating simultaneously. The Applicant also indicated that the works along the ROWs would be undertaken in a progressive and staged manner over a six month period and that the impact on any individual receptor would not be continuous and would only occur for a maximum of two weeks at any one time as works progress. In addition, no public submissions were received in relation to noise impacts during the demolition works.

However, in order to manage any potential community concerns, the Applicant has committed to preparing a demolition Noise and Vibration Management Plan (NVMP) as part of the DEMP to manage noise along the ROWs and within the terminal site. The plan would include a range of management and mitigation measures including but limited to:

- confining high noise generating activities along the ROWs between 7:00am and 6:00pm, Monday to Saturday;
- using low noise emission plant and equipment;
- consultation with affected residents and the EPA prior to the commencement of high noisy activities to address any community concerns;
- monitoring of demolition noise; and
- maintaining a complaints register and complaints line, investigating any noise complaints immediately.

The EPA noted in its submission that appropriate respite periods should also be implemented to minimise potential noise impacts from the pipeline removal works on the Kurnell community. The Applicant has agreed to the use of appropriate respite periods during noisy or prolonged activities as part of its noise mitigation strategy.

The Department accepts that the high noise generating works along the Eastern and Western ROWs would be temporary in nature and is satisfied that noise impacts can be appropriately managed through a NVMP that would include measures such as appropriate respite periods and ongoing consultation with affected residents prior to and during noisy works such as pipeline cutting and jackhammering. Importantly, the Department notes that the works are not likely to exceed the 75 dB(A) 'highly noise affected' classification and that no public submissions were received on the application. Accordingly, the Department has included a number of recommended modifying conditions for the Applicant to:

- update and implement a noise and vibration management plan for the demolition works including reasonable and feasible mitigation measures such as those identified in the Applicant's SEE and RTS;
- restrict high noise generating works between 7:00am and 6:00pm, Monday to Saturday with no work permitted on Sundays; and
- ensure that a community hotline is available during the demolition works.

The Department is otherwise satisfied that the existing conditions of consent relating to noise would adequately manage the demolition works.

Terminal site works

The noise emissions from the terminal site were modelled assuming a worst case scenario that the following works would be undertaken at the same time:

- the refinery process units and associated pipework being demolished and removed;
- redundant tanks within the Eastern and Western Tank Area being demolished;
- removal of the continental carbon pipeline; and
- demolition of buildings and concrete crushing.

On this basis, the assessment found that there would be an exceedance of 4 dB(A) of the 46 dB(A) noise management level at the closest receptor (R2 - 30D Cook Street). However, the predicted noise levels overall do not exceed the 75 dB(A) 'highly noise affected' management level as defined in the ICNG.

In practice, the Applicant confirmed that not all demolition activities would be carried out at the same time and would be staged over a 2.5 year period. As such, the noise predictions again represent a worst case and unlikely scenario. As mentioned above, the Applicant has committed to preparing a NVMP which would include appropriate measures to manage noise generated by the terminal site works. In addition, the Applicant would ensure that any demolition works within 500 m of 30D Cook Street would be restricted to 7:00am and 6:00pm Monday to Saturday as per existing condition C19 to minimise impacts at that location.

Council and the EPA raised no concerns in relation to noise impacts from the terminal site.

The Department has considered the Applicant's position and accepts that it is unlikely that all demolition activities would be taking place at the same time. As such, it is considered that any potential exceedances can be adequately managed through feasible and reasonable mitigation measures, including those identified in the Applicant's SEE and RTS. This is reflected in the Department's modifying instrument.

As part of the modification application, the Applicant also requested to amend the Daytime $L_{Aeq(15\text{ min})}$ construction noise limits under condition C16 for R2 – 30D Cook Street to reflect the noise criterion of 46 dB(A) established in the NVIA for the original DA. The Department accepts that there was a misdescription in establishing the original noise limits in the original consent and that the noise limits in the consent should reflect the noise limits in the NVIA for the original DA. The amendment is reflected in the modifying instrument

Overall, the Department's assessment concludes that the noise impacts from the demolition works are acceptable and can be appropriately managed through the existing and proposed conditions of consent.

4.4 Other issues

The Department's assessment of other issues is provided in **Table 3**.

Table 3: Assessment of modification

Issue	Assessment	Recommendation
Air Quality and Odour	• The existing consent includes requirements for the Applicant to manage air quality impacts during the conversion works and operation of the terminal. • The closure of the refinery has resulted in a significant reduction in odour and air emissions for NO_x, CO, SO₂ and particulate matter (PM₁₀) and an approximate halving of total volatile organic compounds (VOC) emissions. • The SEE included a qualitative assessment of the air quality impacts during the demolition works. • Demolition related activities that may generate air emissions include the removal of concrete/foundations, excavation works, concrete crushing, demolition materials handling. • Given the works would be occurring over a large area and that the demolition activities would be staged over a period of time (approx. 2 years), air emissions generated during the demolition works would be significantly less than during operation of the refinery.	Recommended conditions requiring the Applicant to: • carry out all reasonable and feasible measures to minimise dust during demolition works; and • update and implement the Air Quality Management Plan incorporating the management measures outlined in the SEE.

Issue	Assessment	Recommendation
	- The Applicant proposes to manage air emissions through a number of mitigation measures such as conducting odour and VOC monitoring, storing contaminated soils away from sensitive receptors, excavation to be conducted in appropriate weather and managing soils exposure particularly along the Eastern and Western ROWs. - The EPA and NSW Health raised no concerns but recommended that appropriate dust suppression measures should be implemented to minimise air emissions. - The Applicant has committed to updating its existing Air Quality Management Plan (AQMP) to include measures specific to the demolition works. The Department, EPA and NSW Health are satisfied that air emissions can be adequately managed through the AQMP. - Given the temporary nature of the demolition works in the context of the existing site operations, the Department's assessment concludes that it is satisfied that the potential for the proposed modification to create adverse air quality or odour impacts would be minimised by implementation of the Applicant's proposed management measures combined with recommended conditions of consent and the existing EPL.	
Stormwater and Flooding	- Stormwater generated on site is collected in the terminal site's stormwater system which captures runoff from 'non-process' areas of the site such as building roofs and roadways before being discharged offsite. - Stormwater that has come in contact with petroleum products in the refinery process areas is sent to the terminal site's oily water management system and the Waste Water Treatment Plant (WWTP) for treatment before being discharged offsite. - During demolition works, stormwater may be impacted by soil erosion, leaks from plant and equipment and disturbance of contaminated soils during excavation works. - The EPA raised concerns about the potential for contaminated water from these areas leaving the site. - The Applicant has advised that following discussions with the EPA, any stormwater and groundwater ponded in the excavation areas around the terminal site would be sent to the WWTP during and following the demolition works. - The Applicant has an existing stormwater management plan in place for the terminal site but intends to include additional measures in the Soil and Water Management Plan (SWMP) such as bunding and erosion and sediment controls. - With respect to flooding impacts, the SEE stated that the risk profile of the terminal would not significantly change from that which currently exists during and following demolition works because the existing tank farm bunds would remain intact and where redundant infrastructure would be removed, the existing ground levels would remain the same. - The Department's assessment concludes that stormwater impacts would be minor provided that the existing stormwater treatment systems are used to manage the demolition works. The Department also considers that the flood risk at the site would not increase as a result of the demolition works. The Department has included a recommended condition requiring the Applicant to update the SWMP to address stormwater and flooding impacts demolition works.	Recommended conditions for the Applicant to: update and implement a Soil and Water Management Plan to include measures to manage stormwater and flooding impacts.
Waste Management	- The Applicant currently manages waste in accordance with the EPA's <i>Waste Classification Guidelines</i> and its existing EPL. - The terminal site currently has a waste management system in place and on-site waste management facilities in operation such as a waste water treatment plant, landfarm, empty drum storage area and metal recycling area. - The demolition works would result in a number of waste streams such as steel, mixed building and demolition waste, concrete, excavated soil (contaminated and uncontaminated) and asbestos.	Recommended conditions requiring the Applicant to: prepare a demolition waste management plan to include strategies for resource handling, storage, stockpiling and use and reuse

Issue	Assessment	Recommendation
	- The Applicant would recycle approximately 44,600 tonnes of steel and alloys, other mixed building and demolition waste and concrete. Some of these materials would either be reused on site or recycled offsite by a licensed waste contractor. - To manage and mitigate potential waste impacts, the Applicant has committed to preparing and implementing a Demolition Waste and Resource Management Plan which would include strategies for resource handling, storage, stockpiling and use and reuse management measures and disposal of asbestos and hazardous materials. - The EPA did not raise any issues but recommended a number of conditions regarding: - the identification of waste materials in structures to be demolished; and - appropriate sorting of waste to maximise opportunities for reuse and recycling. - Council did not raise any issues. - The Department agrees with the EPA's recommendations and considers that the Applicant's commitment to reuse and recycle demolition waste materials where possible would reduce the amount of waste that would need to be disposed offsite. - The Department's assessment concludes that waste impacts could be adequately managed by the Applicant, subject to conditions.	- measures during demolition works; - ensure that all waste materials identified in the structures to be demolished are removed and lawfully disposed of prior to demolition; - ensure that the reuse of materials onsite is fit for purpose and does not result in adverse impacts to the environment; and - ensure that all waste materials are sorted and opportunities for reuse and recycling are maximised.
Coastal Areas and Works on Silver Beach	<u>Botany Bay</u> - The cooling water outlet pipeline extends 400m out into Botany Bay. The Applicant proposes to remove the first 20m of the pipeline beyond the low tide mark to minimise the impact on any established seagrass communities that are located in the area. - The pipeline removal works may lead to an increase in suspended sediments in the water column and the release of contaminants into the water column. - The SEE stated that the demolition works would present a low to negligible risk to threatened aquatic species, communities and habitats largely because the works would occur in shallow water and would be of short duration (approximately 2 weeks). - The SEE also indicated that during backfilling, sediment concentrations in the water column are predicted to be very minor and would be managed through the use of silt curtains. Plant and equipment would be visually inspected prior to use to ensure there are no discharges into the surrounding environment. - The Applicant has committed to preparing and implementing a Cooling Water Outlet Management Plan (CWOMP) to manage the removal of the pipeline and backfilling activities on Botany Bay. - The EPA and Council did not raise any concerns around the pipeline removal process but noted that measures should be in place to manage any residual hydrocarbon discharge from the pipeline. As such, the Department has recommended that the CWOMP include measures for minimising the potential for hydrocarbon contamination from the pipeline. - The Department considers that the removal of the first 20m of pipeline is acceptable given the low risk to threatened aquatic species and communities. - Overall, the Department is satisfied that the risk to the aquatic environment is low and that the recommended measures would ensure any potential impacts are adequately managed. <u>Silver Beach</u> - The potential impacts of the pipeline removal on Silver Beach include loss of dune stability and dune vegetation. - Council raised the issue that the sand dunes would be susceptible to erosion and sedimentation during the pipeline	Recommended conditions for the Applicant to: prepare and implement a Cooling Water Outlet Management Plan which would include measures for managing the pipeline removal in Botany Bay and Silver Beach and rehabilitation strategy at Silver Beach.

Issue	Assessment	Recommendation
	removal works and sought clarification on the measures proposed. - In response, the Applicant has committed to a number of measures to minimise sand dune erosion during pipeline removal and dune rehabilitation which would be outlined in the CWOMP. - The Department's assessment concludes that with the implementation of the measures in the CWOMP, the impacts on Silver Beach would be minimal and acceptable. As such, the Department has recommended the Applicant prepare the CWOMP in consultation with Council to include details of the measures for managing the pipeline removal and rehabilitation strategy on Silver Beach.	
Terrestrial Biodiversity	- The terminal site has been extensively modified and cleared of its original vegetation. - The SEE stated that the demolition works would not involve the removal or modification of any remnant native vegetation within or surrounding the terminal site. - The continental carbon pipeline runs for approximately 600m from the terminal site boundary to the continental carbon facility and is situated within a 10m easement dominated by exotic grasses and noxious weeds. - The OEH raised concerns about the potential impacts of the removal of the continental carbon pipeline on native vegetation and potential endangered ecological communities on either side of the pipeline. - The Applicant clarified that demolition works would be contained within the easement but committed to updating its Biodiversity and Weed Management Plan (BWMP) to include measures for protecting flora and fauna during the demolition works. - The Applicant also committed to developing a long term strategy to manage the Continental Carbon Pipeline Right of Way (CCROW) following removal of the pipeline. OEH was satisfied with this approach - The Department is satisfied that impacts to biodiversity would be minimised and has included a requirement for the Applicant to prepare a strategy for the ongoing management of the CCROW and to update its BWMP. - The Department's assessment concludes that the impacts to biodiversity would be minor provided that appropriate management of the CCROW is carried out during and following pipeline removal. As such, the Department has recommended a number of conditions to manage these impacts.	Recommended conditions for the Applicant to: - update the Biodiversity and Weed Management Plan to include details of pre-clearing inspections and frog exclusion measures; and - prepare a strategy for the active management of the Continental Carbon Pipeline following removal of the pipeline.
Traffic and Access	<u>Terminal Site</u> - Access to and from the terminal site is via Captain Cook Drive. - Demolition traffic generated by the proposal would include a mix of demolition personnel, demolition plant vehicles and delivery. - During the demolition works, there would be a maximum of 460 light and 60 heavy vehicle movements per day. This compares to 885 light vehicles and 12 heavy vehicles that were generated per day when the refinery was operating. - Although there would be an increase in heavy vehicles due to the delivery of machinery and removal of demolition wastes, the SEE indicated this would have no detrimental impact to the surrounding road network, with Captain Cook Drive and its intersection with the terminal entrance predicted to continue operating with a Level of Service of C (or satisfactory performance). - Following the conclusion of demolition works and with the completion of the conversion works, the number of vehicles generated by the site would significantly reduce to around 100 light vehicle movements per day with no heavy vehicle	Recommended conditions for the Applicant to: - ensure that the Applicant update its existing Traffic Management Plan for the demolition works in consultation with Council to include details about works to be carried out on the road reserves; - ensure pipeline removal works along the road reserves are undertaken in consultation with Council; and - ensure that works

Issue	Assessment	Recommendation
	movements occurring. - As such, RMS and Council raised no concerns. - The Applicant has committed to updating its existing Traffic Management Plan (TMP) in consultation with RMS and Council. - The Department considers the number of vehicles generated during demolition works to be acceptable given the temporary nature of the demolition works and it is satisfied that the impact of traffic on the existing road network would be minimal and managed through the TMP. - The Department has also identified an opportunity to improve car parking arrangements at the terminal site following the demolition works. The Department has recommended that the Applicant review its site parking arrangements in consultation with Council considering issues relating to signage, car parking, vehicle flows and include a timetable for implementation of the findings of this review. The Applicant has agreed to this. <u>Eastern and Western ROWs</u> - The removal of pipelines along the Eastern and Western ROW will involve works within the road reserves which is only expected to take 2 weeks. - Council requested that no works take place within the road reserve during public events at Kurnell such as the Australia Day celebrations. The Applicant has agreed to this condition. - The Department accepts the Applicant's position and considers that the works are temporary in nature and can be undertaken in a way to minimise amenity impacts to local residents. - The Department's assessment concludes that the proposed works within the road reserves would not significantly impact nearby receivers. As such, the Department has included a condition to ensure that pipeline removal works along the road reserves are undertaken in consultation with Council.	within the road reserves do not take place during public events or public holidays in Kurnell; and undertake a review and timetable of implementation for the changes to the Cook Street approach to the Caltex Terminal considering issues relating to signage, car parking and vehicles flows.
Heritage	- The site is located in close proximity to a number of historic heritage items and places including the terminal itself (listed as a local heritage item – Australian Oil Refinery) and Silver Beach (locally significant due to the presence of native vegetation in an important setting overlooking Botany Bay) - As part of the existing conditions for the SSD, the Applicant was required to prepare a Heritage Management Strategy (HMS) which considered the future demolition works at the site. The HMS also outlined which parts of the terminal site could be retained and reused and a number of measures were developed to mitigate the loss of heritage. - A Heritage Impact Statement (HIS) for the proposed demolition works found that the removal and demolition of redundant refinery infrastructure, tanks and process units would have a major permanent adverse impact to the historic, technical and scientific values of the Australian Oil Refinery site but the loss of heritage could be mitigated through the HMS. - At Silver Beach, there would be temporary adverse impacts on the physical fabric of a sandstone wall along the beach and an interpretative concrete footpath on Kurnell Wharf, however the HIS identified additional measures for managing the impact to these heritage items such as the recording, removal and reinstatement of the sandstone blocks and interpretative footpath. This has been addressed through a recommended condition. - The Applicant has committed to applying the recommendations of the HIS for the demolition works and would continue to implement the HMS. - Council and the OEH were satisfied with the findings and recommendations of the HIS and Council reiterated that a number of actions in the HMS were yet to be carried out by the Applicant. Council further recommended that highly significant	Recommended conditions require the Applicant to: - continue to implement the Heritage Management Strategy prior to and during the demolition works; - implement the recommendations of the Heritage Impact Statement (HIS) for the demolition works including works on Silver Beach as described in Appendix F of the SEE; - review the adaptive re-use capabilities of buildings to be demolished which are considered to have high heritage significance.

Issue	Assessment	Recommendation
	items earmarked for demolition should be reviewed again for adaptive reuse. The Applicant has agreed to this. The Department agrees with Council and OEH and is satisfied that the heritage impacts can be adequately managed by the existing consent conditions. However, the Department has also recommended that the Applicant implements the recommendations outlined in the HIS and HMS and undertake a final review of the adaptive reuse capabilities of items to be demolished within the terminal site.	

5. CONCLUSION

The Department has assessed the merits of the proposal in accordance with the EP&A Act.

This assessment has concluded that with the implementation of the recommended modifying conditions, the impacts of the demolition works can be mitigated and/or managed to ensure an acceptable level of environmental performance.

This modification request is a key component of the ongoing conversion works and would enable the Applicant to remain viable and competitive and thereby maintaining their presence in the NSW market. The demolition and removal of redundant refinery infrastructure would eliminate ongoing maintenance costs and reduce any potential risks to the operating terminal, the workers, the local community and the environment.

The Department has recommended a number of conditions to manage the demolition impacts including measures to manage soil, groundwater, contamination, air quality and demolition hazards and risks. Although there may be some short-term soil, dust, noise and traffic impacts, the Applicant has committed to managing these impacts in consultation with the EPA, Council and the local community.

Overall, the Department concludes that the environmental impacts resulting from the demolition works can be adequately managed through the implementation of a Demolition Environmental Management Plan and associated sub-plans. The Department is also satisfied that the proposal would not impact on the current operation of the site as a finished fuel import and distribution terminal.

Consequently, the Department considers that the modification application is in the public interest and should be approved, subject to conditions.

6. RECOMMENDATION

It is RECOMMENDED that the PAC:

- approve of the proposed modification under Section 96(2) of the EP&A Act; and
- sign the attached instrument (tagged A).

Pamela Morales
Planning Officer


Chris Ritchie
A/Director
Industry Assessments
29/7/15.

 29/7/15
Daniel Keary
A/Executive Director
Infrastructure and Industry Assessments