



ASSESSMENT REPORT

Section 96(2) Modification Caltex Kurnell Refinery Conversion Works (SSD 5544 MOD 2)

1. INTRODUCTION

This report assesses a modification application by Caltex Australia Petroleum Pty Ltd (the Applicant) to modify its development consent to allow for on-site management of asbestos contaminated soils (ACS), as part of the ongoing conversion and demolition works of the former Kurnell Refinery. The application has been lodged pursuant to section 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

2. BACKGROUND

The Applicant operates a finished fuel product import and distribution terminal (the terminal) at 2 Solander Street, Kurnell in the Sutherland local government area (LGA) (see **Figure 1**). Between 1956 and 2014, the site was used as both an oil refinery and a storage and distribution terminal. Following a review of its operations in July 2012, the Applicant announced that it would cease its refining operations. However, the site would continue to import finished and processed fuels, including gasoline, diesel and jet fuel for storage and distribution to its market customers.



Figure 1: Site Location

To facilitate this conversion, the Applicant sought development consent (SSD 5544) to convert the Kurnell Refinery to a finished product import and distribution terminal, referred to as the Kurnell Refinery Conversion Works. The Kurnell Refinery Conversion Works commenced in 2014 and were considered necessary to ensure operations within Australia remain viable, while also guaranteeing a safe and reliable supply of petroleum fuels to NSW and the ACT. The conversion works were divided into two phases:

1. conversion of existing infrastructure to allow the site to operate as a terminal and shutdown of the refinery (completed in 2016); and
2. demolition and removal of redundant tanks, pipes and infrastructure within the terminal and on Silver Beach, Kurnell Wharf and various road reserves along Captain Cook Drive, Prince Charles Parade and Cook Street.

The demolition works commenced in late 2015 and is expected to be completed in mid-2018.

3. SUBJECT SITE

The terminal is located on the Kurnell Peninsula, within the Sutherland LGA, located approximately 15 kilometres (km) south of the Sydney CBD and 4 km south-east of Sydney Airport. The site has an area of approximately 187 hectares (ha) and is relatively level and low lying, at an elevation between 5-10 metres (m) Australian Height Datum.

Road access to the site is via Solander Street, off Captain Cook Drive. The site is surrounded by residential and industrial land uses and natural features (see **Figure 1**) including:

- the community of Kurnell village immediately to the north and north-west;
- Quibray Bay Aquatic Reserve and Towra Point Nature Reserve (a RAMSAR wetland) to the west;
- light industrial uses and the desalination plant to the west and south-west; and
- Kamay Botany Bay National Park to the east.

The closest residential receiver to the site is located approximately 30 m north of the site on Cook Street. The site is also subject to an existing Environment Protection Licence (EPL) No. 837 issued by the Environment Protection Authority (EPA) which would need to be amended as a result of the modification.

4. APPROVAL AND SITE HISTORY

On 7 January 2014, development consent was granted by the Planning Assessment Commission (the Commission) for the Kurnell Refinery Conversion Works (SSD 5544). The development consent permits the conversion of the Kurnell Refinery to a finished product import and distribution terminal, including modification to fuel storage tanks and extension of product pipelines for gasoline, diesel and jet fuel.

On 10 August 2015, the consent for the conversion works was modified (SSD 5544 MOD 1) to allow for the demolition and removal of redundant refinery process units, tanks, pipelines, pipeways and infrastructure at the site.

4.1 History of Asbestos at the Site

Asbestos is a naturally occurring mineral known for its physical properties, including resistance to fire and heat. Asbestos was commonly used in Australia in construction and insulation materials until the late 1980s. Due to the historic use of the site as an oil refinery, some of the structures, pipelines and buildings therefore contained asbestos.

As part of the conversion and demolition works, all identified asbestos contaminated materials were managed in accordance with the existing development consent and current codes of practice and regulations, and disposed off-site to licensed facilities. However, the site still contains areas of asbestos contaminated soils (ACS). ACS is mainly contained in sections of the main pipeways (easement containing several pipelines in the former refinery process areas) at depths of around 0.2 to 0.5 m below ground level (see **Figure 2**). The presence of ACS at the site was previously identified during the assessment of the conversion and demolition works. Under the demolition works modification (SSD 5544 MOD 1), the Applicant has consent for the excavation, handling, management and transport of ACS at the site.

In addition, there is potential for other contaminants of concern to be present at the site, including total petroleum hydrocarbons (TPHs), polycyclic aromatic hydrocarbons (PAHs) and benzene, toluene, ethylbenzene and xylene (BTEX). These contaminants may also be mixed in with ACS.

Currently, ACS is being managed *in situ* under an Exemption Order to Clause 419 of the *Work Health and Safety Regulation 2011*. This means that staff and contractors require special processes and equipment to work in these areas.

To remove the ongoing health and safety risk and operational constraints, the Applicant undertook an investigation to determine an appropriate long-term solution for managing ACS on-site. The options included:

- managing ACS *in situ*;
- removal of ACS from the site; and
- containment of ACS on-site.

The Applicant also consulted with the EPA regarding the above management options and concluded that containment on-site was the best option for managing ACS because it would remove the:

- potential health and safety risks and operational constraints associated with the presence of ACS;
- requirement for the pipeways to be managed under an Exemption Order; and
- risks associated with transporting large volumes of ACS across metropolitan Sydney.

5. PROPOSED MODIFICATION

The Applicant lodged a modification application under section 96(2) of the EP&A Act to modify the development consent for the Kurnell Refinery Conversions Works (SSD 5544) to allow for the on-site management of ACS via on-site containment.

The proposed modification will be carried out entirely within the site and is proposed to be undertaken over a period of 18 months. The major components of the modification are summarised in **Table 1** and shown in **Figure 2**. The modification is described in full in the Statement of Environmental Effects (SEE) included in **Appendix B**.

Table 1: Modification Summary

Aspect	Description
<i>Modification Summary</i>	On-site management of ACS identified as part of the ongoing conversion and demolition works of the former Kurnell refinery
<i>Containment Cell and Leachate Collection System</i>	<ul style="list-style-type: none"> • Construction of an on-site aboveground containment cell with a maximum airspace capacity for up to 24,500 tonnes (t) of ACS • Containment cell would be constructed within the existing bunds for tanks 224 and 225 (see Figure 2) • Installation of a lining system, including a leachate collection layer to extend across the proposed containment cell footprint • Installation of a leachate storage tank within the bund for tank 226
<i>Surface Water, Stormwater and Groundwater Management</i>	<ul style="list-style-type: none"> • Construction of additional groundwater monitoring wells down gradient of the proposed cell location • Leachate collection system for the containment cell area to be connected to the site's existing oily water sewer system
<i>Vehicle Movements</i>	<ul style="list-style-type: none"> • 60 light vehicle movements per day • 24 heavy vehicle movements concentrated on 4 to 6 days throughout the 18 month program
<i>Hours of Construction</i>	7:00 am to 10:00 pm, seven days a week
<i>Capital Investment Value</i>	\$13.5 million
<i>Employment</i>	Construction – 30 full time equivalent (FTE) employees

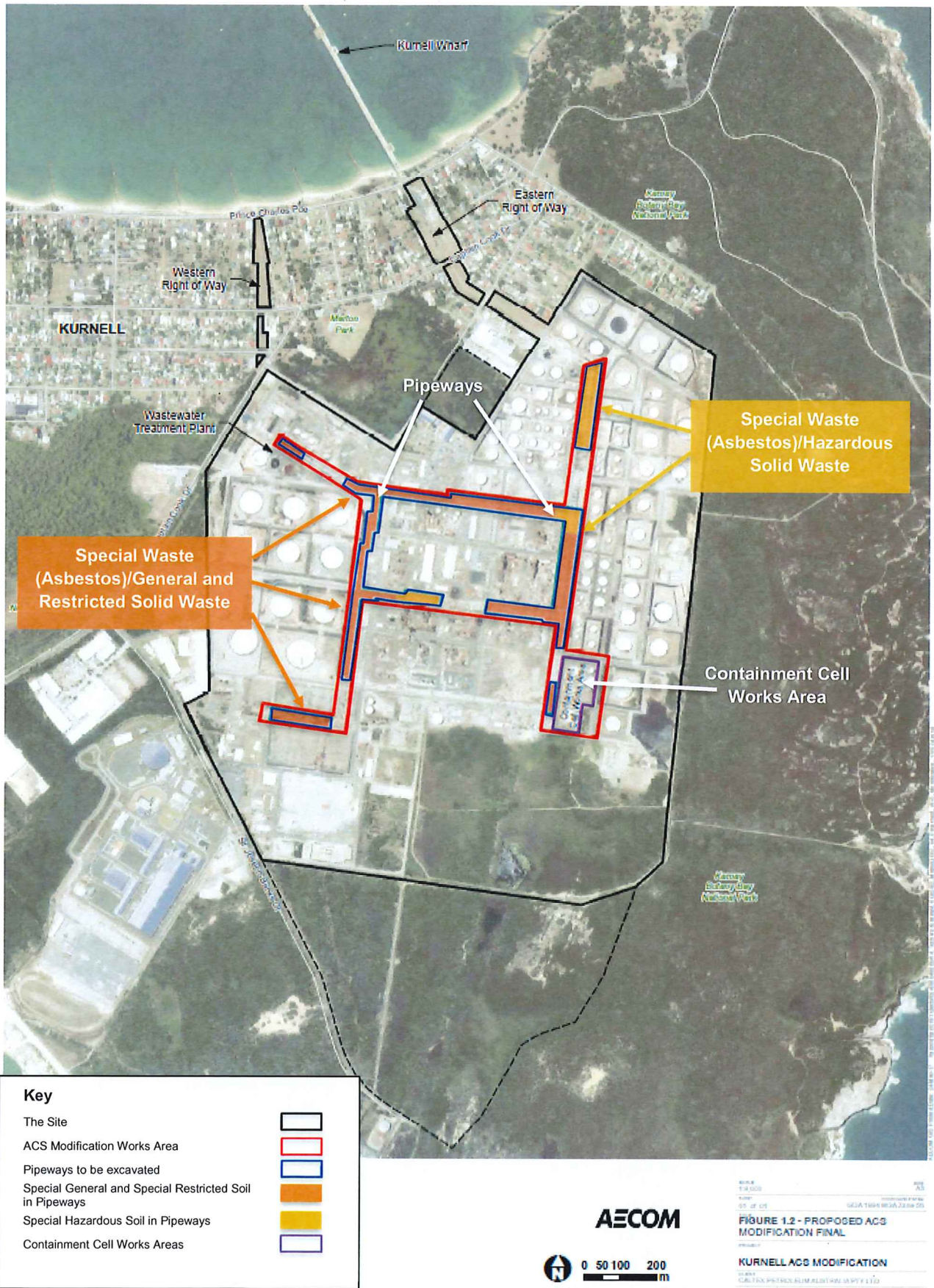


Figure 2: Proposed Modification

5.1 ACS Management Works

The proposed ACS management works would involve:

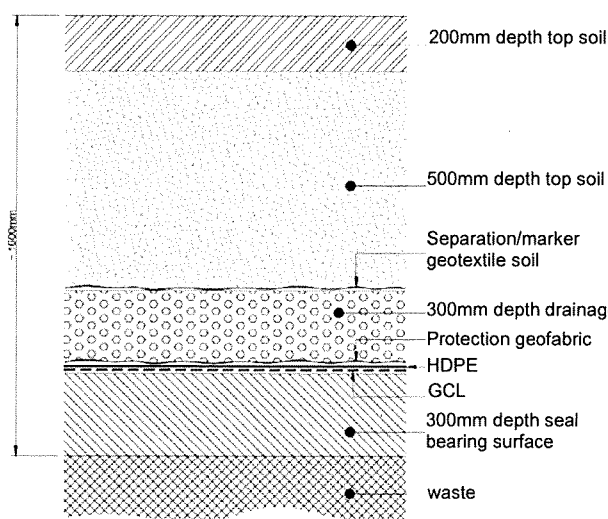
- construction of the containment cell;
- excavation of the pipeways and transport of ACS by truck to the containment cell;
- cell filling and temporary management; and
- cell closure and long-term management of the containment cell.

As discussed in **Section 4.1**, the Applicant identified that on-site containment would be an appropriate long-term option for managing ACS. The Applicant has undertaken several site investigations to understand the extent of contamination in the pipeways, including characterising the soils for the presence of asbestos and other contaminants of concern (such as BTEX, TPH and PAHs) and classifying the soils in accordance with the *Waste Classification Guidelines* (EPA, 2014). The estimated soil volumes from the pipeways by waste classification type is shown in **Table 2**.

Table 2: Kurnell Pipeways – Waste Classification and Estimated Waste Volumes

Soil Category	Area (ha)	Volume (m ³)	Mass (t)
Soil – asbestos not detected	3.48	6,955	-
Special Waste (Asbestos)/ General Solid Waste	3.57	7,960	10,600
Special Waste (Asbestos)/ Restricted Solid Waste	1.15	2,308	3,100
Special Waste (Asbestos)/ Hazardous Waste	1.44	2,880	3,850

(i) Proposed Containment Cell Capping Layer



(ii) Proposed Containment Cell Liner Profile

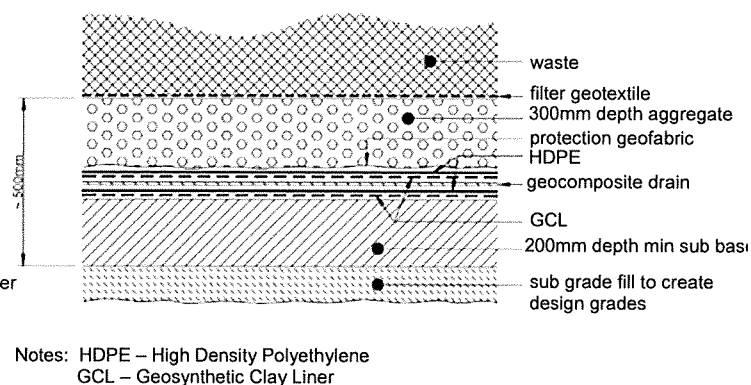


Figure 3: (i) Proposed Containment Cell Capping Layer and (ii) Proposed Containment Cell Liner Profile

The containment cell, including the cell liner and capping layer has been designed in accordance with the *NSW EPA Environmental Guidelines: Solid Waste Landfills* (Landfill Guidelines) (see **Figure 3**). The containment cell would be an aboveground cell constructed within existing tank bunds and would have a maximum airspace capacity for up to 24,500 t of ACS. The containment cell design also incorporates a lining system, leachate collection layer and a leachate storage tank, which would be connected to the site's oily water sewage system.

Additional capacity (around 40% contingency) is available in the containment cell to accept any ACS that may be found outside the pipeways, but is restricted to ACS found on-site only. No ACS from outside the site or any other asbestos materials (friable or non-friable asbestos sheets, piping etc) would be placed in the containment cell.

Initially, the SEE indicated that soils classified as Special Waste (Asbestos) and General Solid Waste or Restricted Solid Waste would only be placed within the containment cell. Soils that are classified as

both Special Waste (Asbestos) and Hazardous Waste, that is, ACS containing elevated concentrations of hydrocarbons and asbestos fibres, would require further treatment via a process called biopiling prior to being placed within the cell.

Biopiling is a bioremediation method which stimulates microbial activity through aeration and/or the addition of minerals, nutrients and moisture to reduce the concentration of hydrocarbons in contaminated soil. To ensure biopiling is effective, contaminated soils are also homogenised or mixed to lower peak hydrocarbon concentrations to promote microbial activity.

Following the exhibition of the SEE, the EPA advised it could not support the proposed biopiling process because of the increased potential for these processes to mobilise asbestos fibres. The EPA recommended all ACS be contained within the containment cell and sought further clarification on whether the cell can be built to a standard that can accept ACS classified as hazardous waste without the need for further treatment. The Applicant reviewed the design of the containment cell including the proposed liner and leachate collection system to ensure these elements would not be affected by the hazardous ACS. In its Response to Submissions (RTS), the Applicant confirmed the design and materials of the containment cell as outlined in the SEE would be suitable to contain all ACS from the pipeways.

The Applicant subsequently revised its proposal for managing hazardous ACS and now proposes to directly place all ACS in the containment cell to minimise the emission of asbestos fibres from the soil. Whilst this approach would not reduce the concentration of hydrocarbons in the soil, this approach would minimise the risk of asbestos and contamination impacts to off-site receivers. As such, the proposed biopiling process is no longer included in the scope of the modification works and is not assessed as part of this modification application (see **Section 7.3**).

5.2 Works Schedule

The modification works are scheduled to take place in conjunction with the demolition works, and would be undertaken over a period of 18 months commencing in late 2017 as shown in **Table 3** below.

Table 3: Proposed Modification Schedule

Task	Timing
Containment Cell Construction	6 months
Excavation of ACS from Pipeways	6 months
Filling of Containment Cell with ACS	
Closure of Containment Cell	6 months
On-going Management of Closed Containment Cell	-

5.3 Applicant's Need and Justification for the Modification

The presence of ACS on-site was identified during the conversion and demolition works and are currently being managed *in situ*. As discussed in **Section 4.1**, the Applicant indicated that on-site containment of ACS would remove ongoing health and safety risks for workers on-site and operational constraints for the terminal.

The proposed modification works would be considered part of the conversion and ongoing demolition works to enable the Applicant to remain viable and competitive, while maintaining its presence in the NSW market.

6. STATUTORY CONTEXT

6.1 Consent Authority

The Minister for Planning was the consent authority for the original development application and is consequently the consent authority for this application.

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

6.2 Modification

The Department has formed the view the development consent, if modified under section 96(2) of the EP&A Act 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 proposed modification would assist in facilitating the conversion of the site to an import and distribution terminal. Further, there would be no change in the nature or capacity of processes to be carried out within the terminal.

Therefore, the Department is satisfied the proposed modification is within the scope of section 96(2) of the EP&A Act and does not constitute a new development application. Accordingly, the Department considers that the application should be assessed and determined under section 96(2) of the EP&A Act rather than requiring a new development application to be lodged.

7. CONSULTATION

Due to the complex nature and the potential for public interest in the proposal, the Department exhibited the application from **Thursday 20 October 2016** to **Friday 2 November 2016**:

- on the Department's website;
- at the Department's information centre; and
- at Sutherland Shire Council's offices.

The modification application was advertised in the Sydney Morning Herald, Daily Telegraph and the St George and Sutherland Shire Leader. As no public submissions were received for the SSD application, the Department did not notify any previous submitters as required by Clause 118(3) of the EP&A Regulation. 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.

During the exhibition period, a total of 34 submissions were received, including 9 submissions from government authorities and 25 submissions from the public. Of the 34 submissions received, 24 public submissions objected to the modification.

7.1 Government Authorities

Sutherland Shire Council did not object to the modification but commented on a number of issues relating to the flood study for the site, biopiling process and leachate collection system.

The **EPA** did not object to the modification but raised concerns about the homogenisation and biopiling processes, which was described in the original project description in the SEE. The EPA also requested further information on several issues including surface water, groundwater and contamination impacts. The Applicant provided supplementary information to address these concerns.

The **NSW Department of Primary Industries (DPI)** did not object to the modification and was satisfied the potential impacts to groundwater processes would be appropriately managed by the Applicant through proposed and existing measures.

The **NSW Department of Industry – Geological Survey of New South Wales (GSNSW)** did not object to the proposed modification and raised no further issues.

The **NSW Health South Eastern Sydney Local Health District Public Health Unit (NSW Health)** did not object to the modification and recommended provisions relating to working with asbestos as well as monitoring for noise, odour and air along the sensitive receivers.

The **Office of Environment and Heritage (OEH)** did not raise any issues.

The **Roads and Maritime Services (RMS)** raised no objections to the proposed modification.

SafeWork NSW did not have any comments on the proposed modification.

Sydney Water did not have any comments on the proposed modification.

7.2 Public Submissions

The **Kurnell Progress and Precinct Resident's Association** raised concerns around the storage of asbestos contaminated materials on-site and the potential for groundwater contamination.

All 24 submissions from the general public objected to the proposed modification and raised the following issues:

- disposal of asbestos contaminated materials in the on-site containment cell;
- potential health risks to local residents of Kurnell due to the proximity of the on-site containment cell;
- potential for further contamination of the site including groundwater resources if on-site containment cell is disturbed; and
- lack of consultation with the local community about the proposed modification.

7.3 Response to Submissions

Following exhibition of the SEE, the Applicant had several meetings with the EPA to discuss an appropriate approach for managing ACS classified as hazardous waste. It was agreed that rather than risk mobilising friable asbestos in the soil through the homogenisation and biopiling processes, all ACS would be directly placed in the containment cell and there would be no attempt to reduce the concentrations of hydrocarbons in the soil prior to disposal.

In June 2017, the Applicant provided a RTS report on the issues raised during the exhibition of the modification application. The RTS included an amendment to the scope of the proposed works to remove the biopiling and homogenisation activities and to place ACS classified as hazardous waste directly into the containment cell without further treatment. The RTS was made publicly available on the Department's website and was provided to key agencies to consider whether it adequately addressed the issues raised.

To address community concerns, the Applicant carried out two letter box drops and held a community information session to allow members of the community to speak directly to the project team. The Applicant summarised the questions and responses from the community information session in its RTS highlighting that:

- no asbestos materials from off-site would be accepted in the containment cell;
- the containment cell would be designed as an aboveground cell to avoid any contact with the groundwater; and
- the Applicant is committed to further community consultation during the modification works.

No further issues were raised by the community in relation to the RTS. The Department has considered the issues raised in submissions, the RTS and the supplementary concerns raised, in its assessment of the modification.

8. ASSESSMENT

The Department has assessed the merits of the proposed modification. During this assessment, the Department has considered the:

- SEE provided to support the proposed modification (see **Appendix B**);
- assessment report for the original development application and subsequent modification application;
- submissions from government authorities (see **Appendix C**);
- relevant environmental planning instruments, policies and guidelines; and
- requirements of the EP&A Act, including the objects of the EP&A Act.

The Department considers the key assessment issues include the ACS management approach, soil and groundwater and air quality. The Department's assessment of other issues is provided in **Table 5**.

8.1 ACS Management Approach

The proposed modification involves the excavation, transport and on-site containment of ACS within a specially designed containment cell. During exhibition of the SEE, several submissions from the public and the EPA raised concerns around the proposed ACS management approach, particularly around managing ACS classified as hazardous waste.

Given the history of contamination at the site and due to the sensitive nature of managing asbestos, the Applicant has been working closely with the Department and the EPA to determine an appropriate remediation option. It was agreed that the most appropriate option is to remove all ACS from the

pipeways and place it directly into the on-site containment cell without further treatment. This is because it would:

- remove the potential hygiene risks to the terminal workers and operational constraints of working in the pipeways;
- remove the need to transport large volumes of ACS across metropolitan Sydney; and
- enable the Applicant to manage the containment cell over the long-term as part of the wider operation of the site.

As discussed in **Section 5.1**, the containment cell has been designed in accordance with the Landfill Guidelines as an aboveground cell constructed within existing tank bunds on-site. The Applicant reviewed the containment cell design including the proposed liners and leachate collection system, and confirmed the cell design as outlined in the SEE is suitable to contain all ACS from the pipeways. The EPA is in support of the proposed containment cell design provided it is constructed in accordance with the Landfill Guidelines.

The EPA also requested that the Applicant appoint a Site Auditor to independently verify the management plans that underpin the preferred option. As part of this approach, the Applicant prepared a draft Remedial Action Plan (RAP) detailing the preferred option and how it will be implemented. To provide an additional level of rigour and an appropriate level of oversight for key stages of the RAP, the Applicant has also been requested to prepare several plans and reports. The details of the requirements of the plans and reports along with the recommended conditions and their intent is described in **Table 4** and discussed in the following sections.

Table 4: Recommended Conditions for ACS Management Works

Timing	Consent Condition	Deliverables	Description
Prior to commencement of construction activities	Condition C49	<ul style="list-style-type: none"> • Site Auditor to review the RAP and construction quality assurance plan • Site Auditor to issue a site audit statement and report for the RAP and a copy to be provided to EPA and the Secretary of the Department (the Secretary) 	Confirmation the proposed remediation option, including the containment cell design in the construction quality assurance plan, will address the human health and environmental risks posed by the ACS
	Condition C50	<ul style="list-style-type: none"> • Applicant to prepare a containment cell management plan for the review and approval of the Secretary 	A detailed plan outlining the construction and proposed filling of the containment cell prior to commencement of works
Prior to/upon completion of construction activities	Condition C51	<ul style="list-style-type: none"> • Applicant to prepare a containment cell validation report to be submitted to the EPA 	Confirmation the containment cell has been constructed and filled in accordance with the consent conditions and approved plans
	Condition C52	<ul style="list-style-type: none"> • Applicant to prepare a Long-Term Environmental Management Plan (LTEMP) in consultation with EPA • Site Auditor to review and approve LTEMP • Site Auditor to issue SAS and SAR for LTEMP and a copy provided to EPA and the Secretary 	Confirmation the LTEMP will suitably manage the containment cell in the future.
	Condition C54	<ul style="list-style-type: none"> • Applicant to prepare pipeways validation report and a copy to be provided to EPA 	Confirmation the ACS surrounding the pipeways has been appropriately remediated

Remedial Action Plan

The Applicant submitted a draft RAP for the excavation and management of ACS from the pipeways as part of the RTS. The primary objective of the RAP is to minimise the potential risks posed to human health and/or the environment and included details of the:

- key contaminants of concern including ACS and petroleum hydrocarbon impacts;
- preferred remediation approach and methodology;

- validation strategy; and
- ongoing environmental management of the containment cell.

The EPA advised the final RAP should demonstrate the suitability of the containment cell design and construction works and requested that an accredited Site Auditor be engaged to review the RAP. The Department concurs with the EPA's advice and has included a condition in the recommended instrument requiring the Applicant to ensure a Site Auditor has been appointed to prepare a site audit statement and report for the RAP.

The methodology outlined in the RAP for the cell construction works (including excavation, transport and filling) would be further detailed in a CCMP to be reviewed by the EPA and approved by the Department, prior to commencement of the proposed modification. Some aspects of the ACS management works, such as the excavation, transport and handling of ACS, would be managed under an existing Demolition Environmental Management Plan (DEMP), which was previously approved under the demolition works modification (SSD 5544 MOD 1).

To ensure the RAP objectives can be achieved, a pipeway validation strategy outlining the sampling and validation works to be completed is also detailed in the RAP. The Applicant also confirmed that prior to cell closure, validation sampling would be undertaken and an independent hygienist would be appointed to certify the pipeways are clear of asbestos. As such, the Department has recommended the Applicant prepare a validation report to ensure validation of the pipeways is undertaken by a suitably qualified and experienced environmental consultant.

Containment Cell Design

The proposed modification involves the construction of an aboveground containment cell for the long-term storage of ACS excavated from the pipeways and other parts of the site. As discussed in **Section 4.1**, the Applicant indicated on-site containment of ACS was the best option because it would minimise potential health risks for on-site and off-site receivers and it was supported by the EPA.

The location and design of the containment cell is shown in **Figures 2** and **3**. The Department understands the containment cell has been designed in accordance with the Landfill Guidelines and would be constructed within an existing 2.5 m high tank bund incorporating a lining system, leachate collection layer and an impermeable cap. To ensure quality control and quality assurance procedures are implemented during construction of the containment cell, the Applicant has prepared a Construction Quality Assurance Plan (CQAP) which is to be taken into consideration by the Site Auditor when reviewing the remedial objectives described in the RAP. For this reason, the Department has recommended a condition for the Site Auditor to be satisfied the design and construction methods in the CQAP will achieve the remedial objectives in the RAP.

In its submission, the EPA requested the Applicant prepare a final report following the completion of the construction activities to verify the containment cell has been adequately constructed and filled in accordance with the CQAP. A condition to this effect has been included in the recommended instrument. The Department considers these conditions would be adequate for ensuring the containment cell is appropriately designed and installed.

Long-Term Environmental Management

The Applicant has committed to developing a LTEMP that would be implemented prior to the closure of the containment cell. The LTEMP would detail the ongoing environmental management of the containment cell including maintenance of the capping and drainage, groundwater monitoring and any land-use restrictions which may apply to the containment cell.

The EPA indicated its support of this approach and advised that the LTEMP must be reviewed and deemed suitable by an accredited Site Auditor. Details relating to the LTEMP must also be listed on the planning certificate issued under section 149(5) of the EP&A Act for the land. The Department concurs with the EPA and has included these requirements in the recommended instrument. With these conditions in place, the Department considers the containment cell can be effectively managed in the long-term.

Asbestos Management

Several public submissions objected to the proposed modification on the basis that the proposal may involve bringing in asbestos contaminated materials (friable and non-friable) from off-site and placing it

into the containment cell. The Applicant confirmed no asbestos contaminated materials would be brought onto site, with only ACS identified from the on-site pipeways or from other parts of the site to be disposed in the cell. However, should any asbestos contaminated materials other than ACS be encountered during excavation or the demolition works, the Applicant has in place procedures and mitigation measures that are currently contained within an existing Asbestos Management Plan (AMP) for the site, including:

- appointment of a licensed asbestos removalist to undertake asbestos removal works;
- preparation of an asbestos removal control plan;
- air monitoring to be undertaken during any asbestos removal works; and
- limiting dust generating activities during high wind events.

The EPA also requested further information on decontamination procedures for any equipment or plant used during the containment cell works. In its RTS, the Applicant confirmed that decontamination of any plant and equipment would be carried out in accordance with SafeWork Australia's *How to Safely Remove Asbestos Code of Practice, April 2016*. The Department notes the existing consent conditions already require the Applicant to engage appropriately qualified and licenced contractors to monitor, handle and dispose of any asbestos found on-site, in accordance with current codes of practice and regulations.

The Department acknowledges the concerns raised in public submissions, and considers any asbestos contaminated materials encountered during the modification works would be appropriately managed by the Applicant through its statement of commitments and the existing conditions of consent. However, the Department has included a condition to ensure that no asbestos is brought in from off-site and placed in the containment cell. The Department considers the Applicant's commitments as well as the existing and proposed conditions would be effective in managing asbestos on-site.

Timing

Condition B7A of the existing development consent requires the demolition works to be completed by August 2018. If approved, the ACS management works are expected to take around 18 months commencing in late 2017. The Applicant initially indicated these works would be completed as part of the demolition works schedule. However, given delays associated with negotiations on the ACS management approach, the modification works are now likely to extend a few months beyond August 2018.

The Department considers the modification works would not affect the timing of other demolition activities currently approved under the demolition works modification. It is expected the last 6 months of the modification works would relate to the closure of the containment cell and would not involve any excavation or transport of ACS. As such, the Department has recommended a new condition to ensure the modification works do not extend beyond 30 April 2019.

Conclusion

The Department concludes that with the containment cell designed to meet the Landfill Guidelines, it can appropriately contain the ACS from the site. The Department also considers the RAP would confirm the details of the management approach and is satisfied the RAP would address the human health and environmental risks posed by the ACS. The EPA supports this approach and has worked closely with the Applicant to ensure any impacts associated with the on-site containment of ACS is appropriately managed. The Department's assessment concludes that:

- the appointment of a Site Auditor to independently verify the RAP and LTEMP would provide an additional level of oversight to ensure the proposed modification is appropriately undertaken;
- the methodology for the modification works is suitable and would be further detailed in the CCMP to be prepared in consultation with the EPA and approved by the Secretary;
- the containment cell would be constructed in accordance with the CQAP, which is to be considered by the Site Auditor as part of the RAP process;
- a LTEMP would be prepared and implemented, including on-going surface and groundwater monitoring;
- the Applicant's commitments as well as the proposed and existing conditions of consent would be sufficient in handling, managing and disposing of any asbestos contaminated materials found on-site; and
- the proposed modification would not impact on the timing of the demolition works program.

8.2 Soil and Groundwater

The proposed modification has the potential to result in the release of asbestos fibres and other contaminants, which could cause soil and groundwater impacts to the surrounding environment.

Due to the historic use of the site as an oil refinery, the site has a history of soil and groundwater contamination issues. The main contaminants of potential concern at the site are TPHs, PAHs, BTEX and asbestos. The Applicant has previously undertaken investigations and discrete remediation works across the site, and has procedures and monitoring programs in place to manage known contaminants of concern.

Construction

The construction activities associated with the proposed modification include cell construction, excavation and transport of ACS, cell filling and cell closure. Approximately 13,148 cubic metres (m³) of ACS would be excavated to a depth of 0.2 to 0.5 metres (m) from the pipeways and would be transported and placed within the containment cell.

The potential soil and groundwater impacts that may occur because of the construction activities include:

- dust generation and release of asbestos fibres affecting on-site and off-site receivers;
- disturbance of soils potentially mobilising contaminants resulting in contaminant migration to underlying soils and groundwater;
- potential for asbestos fibres to mobilise due to trucks movements along the designated roadway; and
- spills and leaks from construction equipment and vehicles dispersing contaminant material across the site and off-site.

The RAP outlines the environmental management requirements that would be implemented to ensure activities associated with cell construction, filling and closure are managed effectively. As such, the Applicant has committed to implementing management measures specific to the containment cell works activities which would be detailed in the CCMP including, but not limited to:

- a soil acceptance criteria which would identify the types of soils that can be placed within the containment cell;
- additional sampling to ensure the area of soil disturbance is restricted to asbestos impacted areas only; and
- measures to manage dust and particulate matter generation such as wetting down of areas.

The SEE concluded the risk of key contaminants, including asbestos being released into the soil and surrounding environment during excavation and transport would be low. The SEE also notes the likelihood of asbestos leaching into the groundwater would be minimal, given groundwater at the site is generally encountered anywhere between 1 to 15 m below ground level (mbgl), while ACS would only be excavated to a depth of 0.2 to 0.5 mbgl. The containment cell would also be constructed within an existing concrete bund, which would continue to direct surface water flows and leachate from these areas into the site's oily water sewer system (OWSS). The proposed containment cell has been designed as an aboveground cell (incorporating a liner system) within a concrete bund to prevent any residual hydrocarbons that may be present within the ACS to seep into the groundwater.

The Applicant also proposes to install two groundwater monitoring bores downgradient of the proposed containment cell location and would conduct quarterly groundwater monitoring during construction, filling and closure of the cell to ensure any leakages can be detected. In the event that any contaminants of concern are detected, the Applicant has in place an existing Soil and Water Management Plan (SWMP) for the site which contains procedures for corrective action.

The EPA worked closely with the Applicant in revising its management approach and in developing the RAP to ensure effective soil and groundwater management measures are adopted. The EPA was satisfied that soil and groundwater can impacts can be managed under the CCMP and DEMP. DPI and Council did not raise any issues. A number of public submissions raised concerns about groundwater contamination and the associated risks to the community and surrounding ecosystems. In response, the Applicant undertook further community consultation during the preparation of the RTS further outlining the soil and groundwater mitigation measures that would be implemented to ensure impacts on the Kurnell community are minimised. No further concerns from the community were raised.

The Department considers the Applicant's approach to managing the potential soil and groundwater impacts are appropriate. The Department acknowledges the DEMP already contains measures to manage ground disturbance works and the handling and transport of ACS and is satisfied these mitigation measures are applicable to the proposed modification. Where works pertain to the containment cell, the Department considers the mitigation measures in the CCMP would be suitable in managing soil and groundwater impacts. As such, the Department has formalised this requirement in the recommended instrument.

The Department also considers the risk of groundwater contamination associated with construction would be minimal due to the design and location of the proposed containment cell works area. However, the Department further recommends the CCMP be updated to include details of the proposed groundwater monitoring program. The Department's assessment concludes the modification works would be adequately managed and is unlikely to result in any off-site impacts.

Long-Term Management of the Containment cell

The SEE outlined several potential soil and groundwater impacts arising from the long-term management of the containment cell, including:

- potential erosion of the cap over the containment cell; and
- leaks in the containment cell liner leading to groundwater impacts.

While it was considered unlikely that the cell liner would leak and result in leachate impacting groundwater, the Applicant has committed to undertaking quarterly groundwater monitoring at the two installed monitoring wells, for two years following completion of the works to ensure the cell liner is operating effectively. To minimise erosion and sediment impacts relating to the cell cap, the Applicant has committed to incorporating best practice erosion and sediment controls as part of the cell cap design and ongoing inspections of the containment cell to monitor the effectiveness of the erosion and sediment controls. At the request of the EPA, these measures would be included in the LTEMP to be prepared for the containment cell, which is to be reviewed by the Site Auditor.

Council and DPI did not raise any concerns. The Department supports the Applicant's proposed long-term management approach and has recommended a condition formalising the Applicant's commitments.

Conclusion

The Department's assessment concludes the impacts associated with soil and groundwater during construction of the containment cell and transport of ACS are acceptable and short-term in nature and can be managed under the existing and proposed conditions of consent. The Department is satisfied any soil and groundwater risks associated with the long-term management of the closed containment cell would be minimal and can be managed under the LTEMP as part of the wider operation of the site.

8.3 Air Quality

The proposed modification has the potential to generate particulate matter, combustion emissions and soil contaminant emissions (including asbestos and volatile organic compounds (VOCs)) during cell construction, excavation and transport, cell filling and closure. The containment cell works area is located in the middle of the site approximately 900 m from the nearest sensitive receiver.

The SEE included a qualitative air quality assessment and found the air quality risks associated with the excavation works would be low, and can be managed under the existing DEMP and AMP for the demolition works. Air quality measures that will continue to be implemented under the DEMP include minimising excavation activities during high wind events, staging excavation to manage potential VOC and odour emissions and minimising surface disturbance where possible.

The SEE also considered the air quality impacts associated with the containment cell construction, filling and closure and concluded the risks with appropriate mitigation would be moderate. To manage any potential impacts, the Applicant has committed to implementing measures specific to the containment cell activities which would be included in the CCMP, such as:

- use of a biodegradable spray for daily and intermediate cell cover to minimise potential dust emissions and rainfall infiltration;
- installing dust and aerosol monitoring stations at a minimum of six locations to monitor prevalent upwind and downwind locations; and
- wetting of soils to minimise particulate matter and asbestos fibre emissions.

The EPA recommended the CCMP include details of dust and asbestos monitoring to be undertaken for areas of the site where asbestos in soil has been identified or is suspected to occur (including in the pipeways). Council did not raise any specific concerns but agreed with the EPA's recommendations. NSW Health noted that the proposed modification must comply with the *EPA Guidelines for Environmental Management On-Site Remediation*. The Applicant accepts these requirements which has been incorporated in its statement of commitments.

The Department considers air quality and odour impacts would be minimal given the works would be in the middle of the site and at least 900 m away from the nearest sensitive receiver. The Department considers the existing air quality measures in DEMP are acceptable and agrees the additional air quality measures to be included in the CCMP would be sufficient in managing air emissions relating to the containment cell works. The Department has included these requirements in the recommended instrument.

Conclusion

The Department's assessment concludes that the potential for the proposed modification to create adverse air quality impacts would be minimised through implementation of the Applicant's proposed management combined with the recommended and existing conditions and EPL.

8.4 Other Issues

The Department's assessment of other issues is provided in **Table 5**.

Table 5: Assessment of Other Issues

Issue	Assessment	Recommendation
<p><i>Stormwater and Flooding</i></p>	<ul style="list-style-type: none"> • The site's stormwater system collects runoff from areas that have been designated low risk with respect to interactions with petroleum products, such as building roofs and roads. • Stormwater that has encountered petroleum products (such as in tank bunds) is sent to the site's OWSS and the wastewater treatment plant (WWTP) for treatment before being discharged off-site. • A leachate collection system would be installed within the proposed containment cell to collect any runoff/leachate which would go to the OWSS. The containment cell would be constructed within an existing tank bund. • During the construction and filling of the containment cell, there is potential for erosion and fuel leaks from various plant to impact on stormwater quality. • The SEE indicated the modification works would not increase the volume of water directed to the WWTP. As the OWSS and WWTP were designed for the former refinery operations, the SEE noted the OWSS and WWTP would have adequate capacity to treat the wastewater volumes and concentrations expected from these areas. • Following the closure of the containment cell, any leachate would be directed to the OWSS and WWTP, however this volume is expected to be low. • The containment cell cap would consist of imported soil planted with native grasses. Runoff from the containment cell cap would be directed into the stormwater systems instead of the OWSS as it is unlikely to be contaminated. • The Applicant has committed to implementing additional stormwater measures associated with the construction and management of the containment cell in the CCMP, such as inspection of excavation areas, staged excavation of the pipeways and monitoring of local weather patterns. The Department recommends the Applicant's commitments be implemented as additional measures in the CCMP. • The site has previously experienced some localised flooding, however the Applicant has implemented improvement measures such as increasing bund height and constructing retention walls to reduce the potential for flooding on-site. • The modification works would not alter the flood risk profile of the site; however the Applicant would need to exercise caution when 	<p>Require the Applicant to:</p> <ul style="list-style-type: none"> • include stormwater measures associated with the construction and ongoing management of the containment cell in the CCMP.

Issue	Assessment	Recommendation
	<p>undertaking work in the pipeways to ensure stormwater flows do not present a risk to workers. The Applicant has committed to implementing measures to monitor flooding risk in the pipeways as part of the CCMP.</p> <ul style="list-style-type: none"> The EPA did not raise any issues. However, Council requested a copy of the flood study of the site, however the Applicant confirmed a flood study would be undertaken in March 2018 following completion of the demolition works. The Applicant has updated its statement of commitments to reflect this. Council was satisfied with this response. The Department agrees the flood risk profile is unlikely to change particularly as the containment cell would be no higher than the current bund height. The Department is satisfied the Applicant's commitments and existing conditions of consent would manage any flood risks. The Department's assessment concludes the site's stormwater system, OWSS and WWTP is suitable to treat stormwater from the containment cell. Any potential surface water and flooding impacts from the proposed modification would be largely the same as those identified during the demolition works. 	
<p><i>Waste Management</i></p>	<ul style="list-style-type: none"> The Applicant currently manages waste in accordance with the EPA's Waste Classification Guidelines, its existing EPL and on-site waste management facilities including a WWTP, landfarm and soil regeneration facility. The construction works (including construction, filling and closure) would generate several waste streams such as general municipal waste, metals, plastics, ACS, leachate and stormwater. Some materials may be recycled on-site or off-site, however ACS would be placed directly within a containment cell (see Section 8.1). The SEE indicated that the existing Demolition Waste and Resource Management Plan would continue to be implemented during the ACS management works. However, the Applicant has committed to including additional waste management measures in the CCMP that are specific to the containment cell works such as using treated soil from the Applicant's soil regeneration facility and pre-fabricated materials to eliminate off-cuts generated on-site. The EPA noted that a waste register must be prepared, used and maintained by the Applicant to track any materials generated by the modification. The Department has recommended the CCMP include additional waste management measures including details of a waste register. The Department's assessment concludes that waste impacts would be adequately managed by new and existing conditions. 	<p>Require the Applicant to:</p> <ul style="list-style-type: none"> include waste management measures associated with the containment cell construction works in the CCMP.
<p><i>Noise and Vibration</i></p>	<ul style="list-style-type: none"> The existing development consent includes conditions to manage noise and vibration impacts during operation of the terminal and the demolition works, including construction noise limits and a Noise Management Plan. The closest residential receiver is located approximately 30 m north of the site (R2 – 30D Cook Street). The modification works are expected to take 18 months to complete. Key noise sources during construction activities from the modification would be from construction equipment and machinery during cell construction, excavation and transport of ACS and cell filling. The SEE found that under a worst-case scenario, the modification works alone would comply with the criteria at all identified receiver locations. The assessment also considered the cumulative impacts of the proposed modification and demolition works modification (SSD 5544 MOD 1) and found there would be one minor exceedance of 4 dB above the criteria of 46 dB(A) at R2 during the daytime period and two exceedances during the evening period (10 dB above the criteria of 40 dB(A) at R2 and 5 dB above the criteria of 45 dB(A) at R3 – Reserve Road). 	<p>No additional conditions required.</p>

Issue	Assessment	Recommendation
	<ul style="list-style-type: none"> The SEE indicated these exceedances are wholly associated and controlled by the demolition works and that no cumulative noise increase is expected as a result of the proposed modification, given the contribution from the modification works would be at least 10 dB less than the demolition noise contribution at all receivers. The Applicant would continue to manage potential noise impacts through its existing Noise Management Plan under the DEMP. The EPA and Council did not raise any issues. The Department considers the construction noise impacts are minor and temporary in nature and is satisfied the existing noise mitigation measures in the DEMP would be adequate to manage any potential noise impacts from the proposed modification. No additional conditions are required. 	
Traffic and Access	<ul style="list-style-type: none"> Access to and from the site is via Solander Street and Captain Cook Drive. During construction, there would be up to 60 light vehicle movements per day for a period of up to 18 months. Approximately 24 heavy vehicle movements would be required to deliver and remove plant and equipment and would be concentrated on 4 to 6 days throughout the 18-month program. The Applicant has committed to ensuring the number of heavy vehicles generated by the proposed modification does not exceed 60 movements a day as assessed under the demolition works modification. Council did not raise any issues, however, several public submissions stated a preference for the off-site removal of ACS. The RTS clarified that all ACS would be managed and contained on-site. It is the Department's view that on-site containment of ACS is a safer and more suitable option as it would generate fewer vehicle movements potentially carrying ACS off-site. The Department considers on-site containment carries the lowest risk for the community and the greater Sydney metropolitan. The Department's assessment concludes the number of light and heavy vehicles generated by the proposed modification is acceptable as the works are short term and can be managed via the existing Traffic Management Plan for the site. The Department is satisfied the potential traffic impacts on the existing network would be minimal and that overall traffic at the site has reduced significantly since refinery operations ceased. No additional conditions are required. 	No additional conditions required.

9. CONCLUSION

The Department has assessed the proposed modification in accordance with the relevant requirements of the EP&A Act.

The Department and the EPA has worked closely with the Applicant to determine an appropriate ACS management approach. The Department considers that on-site containment of ACS as detailed in the RAP is the most appropriate management option as it would address the human health and environmental risks posed by the ACS. The Department is satisfied that the containment cell, designed in accordance with the Landfill Guidelines is suitable to contain all ACS from the site. The Department is also satisfied the risk of groundwater pollution is low, however monitoring and remedial action as described in the Applicant's existing DEMP would suitably address any impacts, should they occur. The appointment of a Site Auditor to independently review the RAP and LTEMP would provide an additional level of rigour and oversight to ensure the ACS management works are appropriately managed. This assessment has concluded that with the implementation of the recommended modifying conditions, the impacts of the proposed modification can be mitigated and/or managed to ensure an acceptable level of environmental performance.

The proposed modification would allow for the on-site containment of ACS and forms part of the conversion and ongoing demolition works to enable the Applicant to remain viable and competitive, while maintaining its presence in the NSW market. The ACS management works would eliminate ongoing maintenance costs of working within the pipeways under the Exemption Order and would

minimise short term costs of off-site disposal, while also removing potential risks to the operation of the terminal, the workers and the local community.

The Department has recommended a number of conditions including design requirements and long-term management of the containment cell, as well as measures to manage soil, groundwater, contamination and air quality impacts through implementation of the RAP, CCMP and LTEMP. These plans would also be supported by the existing DEMP and associated sub-plans. The Department is satisfied the proposal would not impact on the current operation of the site as a finished fuel import and distribution terminal.

Following on from its assessment of the proposed modification to the development, the Department considers that the modification request is approvable, subject to any modifying conditions of consent outlined in **Appendix A**. This assessment report is hereby presented to the Planning Assessment Commission for determination.

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