Caltex Australia

ANNUAL REVIEW
ENVIRONMENTAL PERFORMANCE

DEVELOPMENT APPLICATION SSD 5544

CALTEX REFINERIES (NSW) PTY LTD
2 SOLANDER STREET
KURNELL NSW 2231

December 2016

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1 INTRODUCTION

Caltex Refineries (NSW) Pty Ltd (Caltex) has prepared this Progress Report to comply with Condition D4 – Annual Review in accordance with the Development Consent for application SSD 5544 (dated 7 January 2014). Condition D4 of the Consent states:

> *By 31 December 2014 and annually thereafter, or as otherwise agreed in writing by the Director-General, the Applicant shall review the environmental performance of the Development to the satisfaction of the Director-General. This review must:*
>
> *a) Describe the development that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;*
> *b) Include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against;*
> - *The relevant statutory requirements, limits or performance measures/criteria;*
> - *The monitoring results of previous years; and*
> - *The relevant predictions in the EIS;*
> *c) Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;*
> *d) Identify any trends in the monitoring data over the life of the Development;*
> *e) Identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and*
> *f) Describe what measures will be implemented over the current calendar year to improve the environmental performance of the Development.*

This Report presents a summary of the activities undertaken over the past twelve months, the proposed works for the next twelve months and the analysis and review required in the Consent condition. This report is divided in three parts:

- Part 1 – Environmental performance of the Terminal and site development activities
- Part 2 – Environmental performance of Terminal operations activities
- Part 3 – Improvement plan and summary

Part 1 of this report will also include a description of the activities carried as part of the demolition of the refinery.

PART 1 - ENVIRONMENTAL PERFORMANCE OF THE TERMINAL AND SITE DEVELOPMENT ACTIVITIES

1.1 DEVELOPMENT SUMMARY

The overall works program associated with the Development is summarised on Table 1 below. This table includes the commencement date and completion date for each activity.

TABLE 1- Overview of Activities in Development to Date

Activity	Start	Stop
Tank Farm Automation	July 2012	December 2014
Tank 613 - Jet Conversion	July 2012	December 2013
Tank 603 - Jet Conversion	July 2012	May 2014
Slop Recovery, Storage, Transfer & Injection Upgrade	July 2012	December 2014
Fire Water System Modifications	October 2012	December 2014
Conversion Tank Bund Modifications	July 2012	June 2015
Electricity Consolidation For Terminal Operation	October 2012	December 2015
Dye, Stadis & Lubricity System	July 2012	September 2014
Tank 634 - Diesel Conversion	July 2012	April 2014
Tank 512 - Gasoline Conversion	July 2012	February 2014
Plant and Instrument Air System	October 2012	April 2015
Potable Water Modifications	October 2012	March 2015
OWS System Management	January 2013	December 2014
Tank Miscellaneous Nozzle Replacement	June 2013	December 2014
A-Line Gasoline Filter	October 2013	December 2014
Tank 633 – Diesel Conversion	October 2014	June 2016
Tank 413 – Gasoline Conversion	October 2014	March 2016
Tank 411 – Gasoline Conversion	October 2014	November 2015
Demolition of Refinery Infrastructure	September 2015	December 2017

1.2 DEVELOPMENT DURING THE LAST TWELVE MONTHS

The Development conducted over the previous calendar year is summarised on Table 2 with descriptions of the activities, the associated impacts and the controls provided in the following sub-sections. Included on this table is a summary of the potential environmental impacts which relate to the management plans prepared for the Development. Also included on the table are the actual number of incidents for each activity over the year.

TABLE 2 - Development Activities in 2016

Activity	Potential Environmental Impacts	Number of incidents
Tank 633 – Diesel Conversion	Noise, Air Quality, Waste	Nil
Tank 413 – Gasoline Conversion	Noise, Air Quality, Waste	Nil
Demolition of Refinery Infrastructure	Noise, Air Quality, Water, Biodiversity, Waste	One

1.2.1 Tank Conversion

The Development conducted over the previous calendar year included the continuation of the conversion of two tanks that were started in 2015. Tank conversion works changes the product that can be stored in the tank. The following tanks were part of this year's conversion works:

- Tank 633 – Diesel Conversion
- Tank 413 – Gasoline Conversion

The activity involves the emptying and cleaning of the tank, internal modifications to the tank and repainting the tank. The potential environmental impacts associated with a tank conversion include the generation of wastes during the emptying and cleaning process and the generation of noise and dust during surface preparatory work before painting.

The controls that have been established to manage the potential environmental impacts associated with tank conversions are documented in the:

- Air Quality Management Plan
- Construction Noise Management Plan
- Construction Waste Management Plan

1.2.2 Demolition of Refinery Infrastructure

Demolition of the refinery infrastructure commenced in September 2015. Demolition includes the dismantling and removal of the aboveground redundant refinery process units, tanks, pipelines, buildings, and other structures including vessels/heat-exchangers, piping and valve, pumps and compressors and underground pipes and services. This requires the felling of structures, cutting of vessels, piping and support structures and the excavation of underground pipework. Pipelines from the refinery to the old Continental Carbon site and Tabbigai Gap will also be removed, along with sections of pipeline from the Caltex wharf, Rights of Way and at Silver Beach.

The following table shows progress for the main demolition activities:

TABLE 3 – Detailed Demolition Activities in 2016

Activity	% complete
Civil Work & Buildings	43%
Tank Cleaning	94%
Demo Tanks & Pipeways	39%
Process Plant Demolition	84%
Overall Demo Scope	**47%**

The demolition activities completed in 2016 are as follows;

Refinery Process Units and Associated Infrastructure

- Disconnection and removal of pipelines from all process unit areas.
- Removal of insulation, corrosion protection materials and other materials prior to demolition for all process units.
- Demolition of all refinery process units, except the Power Plant (Plant 11) and two (2) concrete stacks.
- Intermediate storage of demolished materials on the former Caltex Lubricating Oil Refinery (CLOR) site. 18,000T of scrap processed & sorted to end of October 2016.

Tanks and associated Infrastructure

- Disconnection of redundant tanks and vessels from both the eastern and western tank areas.
- Demolition of a number of tanks using heavy machinery to cut them up (i.e. 2 x 100 series tanks and 3 x 200 series tanks)
- Intermediate storage of demolished materials on the former Caltex Lubricating Oil Refinery (CLOR) site.
- Commenced removal of redundant infrastructure associated with the tanks – i.e. water draw equipment and pipelines. Pipeway B East and West complete. Pipe track 1 complete. Oil Movement Centre pipes and manifolds 50% complete.

Pipelines/Pipeways

- Removal of the two cooling water intake lines running from the pumphouse on Kurnell wharf to Silver Beach.
- Removal of the Continental Carbon pipeline running south from the site.

- Removal of pipes from 3 out of 12 pipeway zones.

Buildings

- No buildings were demolished in 2016.
- Preparation work commenced for demolition in 2017 – i.e. all buildings have been isolated from utilities. Asbestos removal was completed and clearances were issued for 50% of redundant buildings.

1.3 DEVELOPMENT FOR THE NEXT CALENDAR YEAR

The Development that will be conducted over the next twelve months is summarised on Table 4. Included on this table is a summary of the potential environmental impacts which relate to the management plans prepared for the Development.

TABLE 4 - Development Activities in 2017

Activity	Potential Environmental Impacts
Demolition of Refinery Infrastructure	Noise, Air Quality, Water, Soil, Biodiversity, Waste

Note: All conversion related works were completed in 2016.

The following provides an overview of the demolition activities planned to be carried out in the 2017 calendar year;

Refinery Process Units and Associated Infrastructure

- Demolition of remaining process units, i.e. the Power Plant and 2 remaining concrete stacks.
- Removal of the foundations and slabs below the process units & regrading & topping with crushed concrete
- Removal of redundant cabling and some underground services including the oily water sewer from the area beneath the refinery process units.
- Disposal, recycling or divestment of demolished materials – anticipated to continue into 2018.
- Commission concrete crusher and process all concrete for recycling / reuse on site.

Tanks and associated Infrastructure

- Demolition of remaining tanks and vessels using heavy machinery to cut them up.
- Disposal, recycling or divestment of demolished materials - anticipated to continue into 2018.
- Complete removal of redundant infrastructure associated with the tanks – i.e. water draw equipment and pipelines.

Pipelines/Pipeways

- Removal of the two cooling water intake lines running from Silver Beach through the eastern right of way (ROW) to the Kurnell Terminal.
- Removal of three redundant product lines running through the eastern ROW.
- Removal of the cooling water outlet running from the Terminal through the western ROW under Silver Beach and into Botany Bay.
- Removal of Tabbagai gap pipeline.

Buildings

- Demolition and removal of all redundant buildings
- Disposal, recycling or divestment of demolished materials.

1.4 ENVIRONMENTAL MANAGEMENT CONTROLS

The activities completed during the previous calendar year involved the implementation of the controls and performance indicators documented in the following management plans for the Development:

- Air Quality Management Plans
- Noise (and Vibration) Management Plans
- Waste (and Resource) Management Plans
- Soil and Water Management Plans
- Biodiversity (and Weed) Management Plans

Included in these management plans are performance indicators and monitoring requirements.

1.4.1 Air Quality Management Plans

The following performance indicators within the Air Quality Management Plans are required to be implemented during the Development are:

- No air quality complaints received.
- No visible emissions of dust from the premises.

The key monitoring requirements for air quality for the development are:

- Odour screening of excavated material.
- Contractor will carry out regular visual monitoring to identify equipment producing excessive visible emissions.
- Contractors will carry out regular visual monitoring to identify any area/s generating dust.
- In the event of an odour complaint, an evaluation will be undertaken to confirm that Project works are not a potential source of odours. If Project work is confirmed as a potential ongoing odour source additional mitigation measures will be implemented which will include the use of water sprays to suppress odours and, if necessary, the use of odour suppressants. In the event of ongoing odours, excavation activities will be stopped.
- Daily asbestos monitoring around area of demolition activity.
- Continued dust monitoring around areas of demolition activity.

1.4.2 Noise (and Vibration) Management Plans

The following performance indicators within the Noise Management Plans that are required to be implemented during the Development are:

- No exceedances of the Noise Affected Management Level of LAeq (15min).
- No exceedances of the Structural Damage Vibration Criteria

- No community complaints received regarding conversion project related nuisance noise.
- Works only carried out within the required hours and noise complaints managed in accordance with the Noise Management Plan requirements.

Noise monitoring must be undertaken at the commencement of any work that has the potential to generate noise that could exceed the Noise Criteria Management Levels at the nearest sensitive receiver and the nearest sensitive down-wind receiver.

The key monitoring requirements noise monitoring for this Development are:

- At the beginning of undertaking any high noise generating activities (i.e. paint removal, demolition or metal fabrication) in close proximity (100m) to a specified receptor (R1-R8), measures noise monitoring will be carried.
- If high noise generating works are shown to exceed the required noise limits, or if noise complaints are received related to the high noise work, additional mitigation will be implemented for these activities (to ensure compliance with the required noise limits to the satisfaction of the Environmental Management Representative). These additional mitigations measures include:
    - The substitution of equipment or change the work procedure.
    - Acoustic screening.
    - Implement periodic breaks in undertaking high noise generating works. For example, working for 3 hours and stopping for 1 hour.
- If noise complaints are received which are determined to be not associated with high noise generating work but do relate to the Project, additional mitigation measures should be undertaken or noise monitoring undertaken.
- Noise monitoring must be undertaken at the nearest residential sensitive receiver to the source of noise and at the nearest residential sensitive receiver downwind from the source. Thus monitoring locations will vary dependent of any source of noise and the wind direction.
- Vibration monitoring will be conducted in the event that demolition is carried out within 20 m of any Site buildings to be retained.

1.4.3 Waste (and Resource) Management Plans

The following performance indicators within the Waste Management Plans are required to be implemented during the Development are:

- No litter present on or around work areas.
- Appropriate segregation, storage and management of all waste and recyclable material.
- Environmental requirements included in procurement and subcontract documentation.
- 90% diversion of waste produced during demolition activities from landfill

The key monitoring requirements for this Development:

- The Contractor will record the types, volumes and management measures (i.e. reuse / recycling / disposal etc.) for wastes generated from its activities.

- The Contractor will carry out weekly inspections of its works areas to ensure any wastes, chemicals and hazardous materials are appropriately stored and all required procedures are being implemented.

1.4.4 Soil and Water Management Plans

The following performance indicators within the Soil and Water Management Plans are required to be implemented during the Development are:

- All stockpiles managed in accordance with the relevant requirements in the latest version of the Managing Urban Stormwater: Soils and Construction Guideline.
- No silt runoff from stockpiles beyond the silt fencing.
- No significant increase in COPC levels in groundwater.
- No impacts to the environment from ASS or PASS.
- No environmental pollution incidents.

The key monitoring requirements for this Development:

- Sampling of all excavations for asbestos and visual and olfactory screening for hydrocarbons, using a PID where appropriate.
- Quarterly groundwater monitoring.
- Inspection of all stockpiles for erosion.
- Inspection of stormwater drains down gradient of work areas if erosion of stockpiles is observed.
- Any collected water within the bunded areas will be field tested for pH (to monitor for ASS).Treatment will be required if less than pH 6.5.

1.4.5 Biodiversity (and Weed) Management Plans

The following performance indicators within the Construction Biodiversity, Pest and Weed Management Plans are required to be implemented during the Development are:

- Limited removal of vegetation.
- No disturbance to ‘tall tower’ structures used as perches.
- No disturbance to nesting shorebirds.
- Minimise potential disturbance to frog populations or habitats.

The key monitoring requirements for this Development:

- The Contractor will undertake pre-works inspections for frogs in excavations or work areas and take appropriate actions if observed.
- The Contractor will undertake pre-works inspections for nesting shorebirds in work areas and take appropriate actions if observed.
- The Contractor will undertake regular (weekly or as required) inspections of demolition areas as well as stockpiles for the presence of noxious and problematic weeds on site and in the surrounding areas and take appropriate actions if observed.

1.5 ENVIRONMENTAL PERFORMANCE AND MONITORING

The management plans prepared for this Development incorporate the mitigation measures specified in the EIS for Conversion and SEE for Demolition. Each management plan contains management actions, performance indicators and monitoring requirements.

A summary of the relevant management plan for each activity undertaken in the last twelve months, with potential environmental impacts, is presented in Table 5.

TABLE 5 - Performance against Performance Indicators per Activity

Activity	Environmental Aspect	Environmental Impact	Performance Indicator	Monitoring Results	Non-Conformances
Tank Conversion	Tank cleaning	Waste management	Waste disposed of liquids to the oily water sewer system and soils to the landfarm	No recorded spills and all waste disposed of to the oily water sewer or the landfarm	No non-conformances and no complaints
	Tank painting	Noise management	All paint removal work was completed during designated working hours using routine methodology that does not have the potential to generate significant noise	No “out of hours” work and no high noise work conducted within 100m of a residential property	No non-conformances and no complaints
	Tank painting	Air quality management	Paint removal undertaken with no visible emission of dust from the premises	No visible dust emissions from the premises. No lead paint removal	No non-conformances and no complaints
Demolition Activities	Plant removal	Air quality management	Structure felling and plant removal undertaken with no visible emission of dust or odours from the premises	405 individual spot measurements of dust in air were taken using the Dust track™ monitor. Nil exceedances of the 50ug/m^3 standard were detected. 1485 individual samples taken for fibres in air. Nil air samples returned a result of >10% of the time weighted average (TWA) Exposure Standard (ES) for fibres in air. i.e. >10 fibres. The peak result achieved was a single result of 8 fibres in an area where Rockwool lagging, a synthetic mineral fibre (SMF), had been removed from piping. An inspection by the independent Occupational Hygienist identified an opportunity for improved housekeeping and wetting down in this area.	No non-conformances and no complaints

Activity	Environmental Aspect	Environmental Impact	Performance Indicator	Monitoring Results	Non-Conformances
Demolition Activities (continued)	Plant removal	Soil and Water management	Excavated material stockpile with silt control to minimise sediment erosion. Stormwater and groundwater managed during excavations and infrastructure removals	No erosion, Stormwater and groundwater managed on-site without off-site impact	No non-conformances and no complaints
	Plant removal	Noise management	Structure felling undertaken and plant removal completed in designated working hours and without noise or vibration impact	20 attended noise audits were conducted at several different receptor locations. The LAeq 15min readings (dBA) ranged from 40dB to 66.1dB and peak noise was mainly attributed to passing cars, overhead planes and residential construction noise.	No non-conformances and no complaints
	Plant removal	Waste management	All plants and all excavations inspected for hydrocarbons and tested for asbestos. All waste streams classified for disposal	Records of waste volume in the waste database and asbestos waste removed and disposed. ~300 individual samples were taken for proactive identification of asbestos containing materials (ACM). 20% of samples positively identified the presence of ACM's.	No non-conformances and no complaints
	Plant removal	Biodiversity management	No vegetation removed and excavations inspected for frogs and other fauna. Pests and noxious weeds managed	No frogs observed in excavations	No non-conformances

1.6 NON-COMPLIANCE AND CORRECTIVE ACTION

The activities undertaken during the last twelve months had relatively low potential for the generation of environmental impacts. The activities with the highest potential for impacts were tank cleaning and painting and the felling of tall structures. No environmental exceedances or consent condition non-compliances occurred over the last year.

Tank cleaning generates significant volumes of liquid waste including residual hydrocarbons and cleaning fluids. The residual hydrocarbons have, as far as practicable, been collected for recycling in the slop system. Cleaning fluids have been treated at the waste water treatment plant and solids have been disposed of at the on-site landfarm or have been transferred to a suitable off-site disposal facility. Tank painting has the potential to generate noise and dust during surface preparation work.

The felling of tall structures was preceded by the removal of all hydrocarbon and asbestos material (as far as practicable). Dust and noise monitoring was carried out during the actual felling activity. There were nil non-compliances with monitoring data relating to measures identified in EMP and sub-plans, as reported by the Environmental Representative (ER) in the Environmental Key Performance Indicator (KPI) Report.

There has been one incident involving the loss of primary containment of approximately 80,000 litres of a hydrocarbon and water mixture. A section of the sites hydrocarbon slops system pipework (a flange under a valve) was reduce bolted (selected bolts had been removed from the flange) for future demolition work. During a planned terminal transfer of hydrocarbon slops from the site's marine facility, pressure was introduced to the slops system pipework and a loss of primary containment occurred from the compromised flange. The loss of containment was noticed by the Terminal console operator by a drop in level on the receiving tank. The Terminal operations team shut down the transfer activity and responded to identify the location of the loss of containment.

The loss of containment was confined within a concrete catchment area which drains via the oily water sewer system to the onsite waste water treatment plant. The onsite waste water treatment plant responded, per system design, to ensure there was no off-site release of hydrocarbon.

No injuries occurred as a result of the event and there was no release of product off-site. SafeWork NSW, the NSW Environmental Protection Agency, Fire and Rescue NSW, Sutherland Shire Council, the NSW Department of Health and Department of Planning and Environment were notified. A full report of the investigation has been provided to the relevant statutory bodies.

As a result of the investigation findings, additional layers of protection & enhanced procedures involving the identification and physical marking of pipes and valves were introduced. All demolition employees and contractors have been trained in the new procedures. A comprehensive work permitting and audit process has ensured compliance with the new procedure.

There were no community complaints associated with any of the activities associated with the Development. (For community complaints received during the last twelve months see Part 2 Terminal Operations.)

1.7 DATA TREND ANALYSIS

A review of the available data shows that:

- All working hours have been in line with the conditions of consent.
- All high noise generating construction works have been confined to less sensitive times of the day in accordance with conditions of consent.

1.8 DATA DISCREPANCIES

The management actions within the management plans were developed from the mitigation measures in the EIS for Conversion and SEE for Demolition. Based on the performance of the development activities over the last twelve months, the management actions appear to be appropriate for this project. There were no discrepancies identified over the past year.

PART 2 - ENVIRONMENTAL PERFORMANCE OF TERMINAL OPERATIONS ACTIVITIES

2.1 TERMINAL OPERATIONS DURING THE PREVIOUS CALENDAR YEAR

The Terminal continues to be a major supplier of transport fuel to NSW. In 2016 the operation of the pipeline between Kurnell and Newcastle transferred to Kurnell from Banksmeadow. The Terminal continues to operate the site's Waste Water Treatment Plant and managed the significant east coast low event in June without incident. Accreditation against ISO 9001 and 14001 continues with plans to meet the new 2015 Standards within the next two years. The site has had one Process Safety Incident during 2016 when approximately 700 litre of gasoline was released through a flanged joint as a result of an over pressure. There have been no treated injuries attributed to Terminal operations in 2016.

2.2 TERMINAL ENVIRONMENTAL MANAGEMENT CONTROLS

The Terminal operations are governed by a comprehensive Environment Management System which is ISO14001 certified. The most recent ISO 14001 surveillance audit was carried out in the period 5 September to 7 September inclusive. No major or minor non-conformances were raised. The auditor made a few minor observations and highlighted areas for improvement. (The latest 14001 Surveillance Audit Report is available on request)

The site's current ISO14001 certification lapses in June 2017 and it is planned to seek recertification to the new ISO 14001:2015 Standard. To assist with the transition to the new Standard, a Gap Analysis Workshop was conducted after the September surveillance audit. While it was expected that gaps would be identified, it was pleasing to confirm that the site's environmental system and Caltex's operational excellence processes generally meet the intent of the new or revised elements in the 2015 Standard.

During the year the Terminal's Environment Management System (EMS) major documents were reviewed, updated and combined to form the new OEMP. The benefit of this document is that all relevant environmental information, requirements and controls are captured in one spot.

One of the bases for the EMS is the site's Environment Protection Licence (Lic №: 837). This licence describes the activities that are performed on the site and as well as the required controls and monitoring. The monitoring section of the licence describes 5 Monitoring and Discharge Points. For details, see Table 6:

TABLE 6 – Description of Monitoring and Discharge Points

EPA Identification No	Type of Monitoring or Discharge Point	Location Description
1	Discharge to waters	Cooling water pipe discharging into Botany Bay labelled "1" on drawing No. 18588 titled "Environment Protection Licence EPA Identification Points" submitted to the EPA

EPA Identification No	Type of Monitoring or Discharge Point	Location Description
		with letter on 15 June 2007. Note: Monitoring is at Point 26 and Point 33.
2	Discharge to waters	Submerged ocean outfall at Yena Gap labelled "2" on drawing No. 18588 titled "Environment Protection Licence EPA Identification Points" submitted to the EPA with letter on 15 June 2007. Note: Monitoring is at Point 27.
15	Groundwater quality monitoring	Bioremediation plot (landfarm) – permanent monitoring well PWM 8 labelled "15" on drawing No. 18588 titled "Environment Protection Licence EPA Identification Points" submitted to the EPA with letter on 15 June 2007
16	Groundwater quality monitoring	Bioremediation plot – (landfarm) permanent monitoring well (PMW) 33 labelled "16" on drawing No. 18588 titled "Environment Protection Licence EPA Identification Points" submitted to the EPA with letter on 15 June 2007.
27	Effluent quality and volume monitoring	Sampling port in wastewater treatment plant labelled "27" on drawing No. 18588 titled "Environment Protection Licence EPA Identification Points" submitted to the EPA with letter on 15 June 2007. Note: Discharge is at Point 2.

The pollutants monitored at these points, their licence concentration limits and monitoring results are presented in Section 2.3. The prevention of off-site noise, dust and offensive odours are licence and consent requirements. The site's performance against these requirements will also be discussed as part of the overview of the calls made to the 24 Hour Community Complaints Hotline in Section 2.3.

2.3 TERMINAL ENVIRONMENTAL PERFORMANCE AND MONITORING

In this section, a summary is provided of the environmental performance of the Terminal against its Environmental Protection Licence and the Conditions of Consent for SSD 5544:

- Table 7A-F shows the summary of monitoring results for the licenced monitoring points 15 and 16 for the calendar years 2016-2012.
- Table 8 contains the annual summary of the monitoring results for Monitoring Point 27.
- Table 9 contains a summary of the asbestos monitoring (air) results during asbestos removal activities in 2015-16. This monitoring will continue for the duration of the asbestos removal program on site.
- Table 10 contains a summary of the Dust monitoring during high dust potential during demolition activities. It was started in August 2015.
- Table 11 and Figure 1 provide an overview of the calls made to the 24 Hour Community Complaints Hotline.

TABLE 7A – Licenced Monitoring/Discharge Points: 2016

Monitoring Period	**2016**								
Pollutant	**Benzene**	**Ethyl Benzene**	**Lead**	**pH**	**Standing Water Level**	**Toluene**	**Total Petroleum Hydrocarbons**	**Total Phenolics**	**Xylene**
Unit of Measure	mg/L	mg/L	mg/L	pH units	m	mg/L	mg/L	mg/L	mg/L
Licence Limit	None	None	None	None	None	None	None	None	None
Monitoring Frequency Required by Licence	Quarterly								
EPA Point	Point 15, PMW08								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.001	<0.002	<0.001	4.54	3.169	<0.002	<0.050	<0.05	<0.002
Highest	<0.001	<0.002	<0.001	5.31	3.895	<0.002	<0.050	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EPA Point	Point 16, PMW33								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.001	<0.002	<0.001	5.22	1.500	<0.002	<0.050	<0.05	<0.002
Highest	<0.001	<0.002	<0.001	5.85	1.845	<0.002	0.140	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7B – Licenced Monitoring/Discharge Points: 2015

Monitoring Period	**2015**								
Pollutant	**Benzene**	**Ethyl Benzene**	**Lead**	**pH**	**Standing Water Level**	**Toluene**	**Total Petroleum Hydrocarbons**	**Total Phenolics**	**Xylene**
Unit of Measure	mg/L	mg/L	mg/L	pH units	m	mg/L	mg/L	mg/L	mg/L
Licence Limit	None	None	None	None	None	None	None	None	None
Monitoring Frequency Required by Licence	Quarterly								
EPA Point	Point 15, PMW08								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.001	<0.002	<0.001	4.83	3.236	<0.002	<0.050	<0.05	<0.002
Highest	<0.001	<0.002	<0.001	5.57	3.932	<0.002	0.055	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EPA Point	Point 16, PMW33								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.001	<0.002	<0.001	5.548	1.555	<0.002	<0.050	<0.05	<0.002
Highest	<0.001	<0.002	<0.001	5.900	1.814	<0.002	0.017	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7C – Licenced Monitoring/Discharge Points: 2014

Monitoring Period	**2014**								
Pollutant	**Benzene**	**Ethyl Benzene**	**Lead**	**pH**	**Standing Water Level**	**Toluene**	**Total Petroleum Hydrocarbons**	**Total Phenolics**	**Xylene**
Unit of Measure	mg/L	mg/L	mg/L	pH units	m	mg/L	mg/L	mg/L	mg/L
Licence Limit	None	None	None	None	None	None	None	None	None
Monitoring Frequency Required by Licence	Quarterly								
EPA Point	Point 15, PMW08								
No. Samples Collected	4	4	4	4	4	4	4	4	
Lowest	<0.001	<0.001	<0.001	4.21	3.433	<0.001	0.035	<0.05	<0.001
Highest	<0.001	<0.001	<0.001	5.86	4.934	<0.001	0.055	<0.05	<0.001
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EPA Point	Point 16, PMW33								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.001	<0.001	<0.001	5.63	1.779	<0.001	0.035	<0.05	<0.001
Highest	<0.001	<0.001	<0.001	6.49	2.370	<0.001	0.180	<0.05	<0.001
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7D – Licenced Monitoring/Discharge Points: 2013

Monitoring Period	**2013**								
Pollutant	**Benzene**	**Ethyl Benzene**	**Lead**	**pH**	**Standing Water Level**	**Toluene**	**Total Petroleum Hydrocarbons**	**Total Phenolics**	**Xylene**
Unit of Measure	mg/L	mg/L	mg/L	pH units	m	mg/L	mg/L	mg/L	mg/L
Licence Limit	None	None	None	None	None	None	None	None	None
Monitoring Frequency Required by Licence	Quarterly								
EPA Point	Point 15, PMW08								
No. Samples Collected	4	4	4	4	4	4	4	4	
Lowest	<0.001	<0.001	<0.001	4.95	2.925	<0.001	0.035	<0.05	<0.001
Highest	<0.002	<0.002	<0.001	6.40	4.846	<0.002	0.055	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EPA Point	Point 16, PMW33								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.001	<0.001	<0.001	5.91	1.553	<0.001	0.075	<0.05	<0.001
Highest	<0.002	<0.002	<0.001	6.29	2.279	<0.001	0.440	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7E – Licenced Monitoring/Discharge Points: 2012

Monitoring Period	**2012**								
Pollutant	**Benzene**	**Ethyl Benzene**	**Lead**	**pH**	**Standing Water Level**	**Toluene**	**Total Petroleum Hydrocarbons**	**Total Phenolics**	**Xylene**
Unit of Measure	mg/L	mg/L	mg/L	pH units	m	mg/L	mg/L	mg/L	mg/L
Licence Limit	None	None	None	None	None	None	None	None	None
Monitoring Frequency Required by Licence	Quarterly								
EPA Point	Point 15, PMW08								
No. Samples Collected	4	4	4	4	4	4	4	4	
Lowest	<0.002	<0.002	<0.001	4.81	3.581	<0.002	0.035	<0.05	<0.002
Highest	<0.002	<0.002	<0.001	5.43	4.927	<0.002	0.070	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EPA Point	Point 16, PMW33								
No. Samples Collected	4	4	4	4	4	4	4	4	4
Lowest	<0.002	<0.002	<0.001	5.850	1.874	<0.002	0.012	<0.05	<0.002
Highest	<0.002	<0.002	<0.001	6.130	2.167	<0.002	0.032	<0.05	<0.002
Exceedance (yes/no)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 8A – Point 27: Normal Operation Conditions

Monitoring Period	**2016**									Reason for Missing Data
EPA Point	Point 27, Yena Gap Effluent, Normal Operating Conditions									
Pollutant	**Temperature**	**pH**	**Volumetric Flowrate**	**Oil and Grease**	**Phenols**	**Sulfide (un-ionised hydrogen sulfide)**	**Nitrogen (ammonia)**	**Total Suspended Solids**	**Biochemical Oxygen Demand**	
Unit of Measure	°C	pH units	kl/day	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
Licence Limit	40	6.0 - 9.0	None		2.7	None				
Monitoring Frequency Required by Licence	Continuous			6 Day						
Averaging Period	1 Hour Block	6 Minute Rolling	1 Day Block	Grab Sample						
No. Samples Collected	8755	527040	366	59	59	59	59	59	59	No Missing Data
Lowest	15.4	6.55	0	<1	<0.05	<0.1	<0.01	<0.1	<2	
Highest	29.1	7.49	10433	8	<0.05	<0.1	0.34	20	16	
Exceedance (yes/no)	No	No	N/A	No	No	No	No	No	No	

Table 8B – Point 27: Normal Operation Conditions

Monitoring Period	**2016**										
EPA Point	Point 27, Yena Gap Effluent, Normal Operating Conditions										
Pollutant	**Arsenic**	**Ethyl Benzene**	**Lead**	**Naphtha - lene**	**Nickel**	**Phenan-threne**	**Benzene**	**Toluene**	**Polycyclic Aromatic Hydrocarbons**	**2,4-Dimethyl-phenol**	Reason for Missing Data
Licence Limit		None		None		None	None	None	0.5	None	
Unit of Measure	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
Monitoring Frequency Required by Licence	Monthly										
Averaging Period	24 Hour Composite Sample										
No. Samples Collected	12	12	12	12	12	12	12	12	12	12	No Missing Data
Lowest	0.002	<0.002	<0.001	<0.0002	0.002	<0.0002	<0.001	<0.002	<0.0002	<0.0002	
Highest	0.060	<0.002	0.002	0.0031	0.006	<0.0002	<0.001	<0.002	0.0031	0.0052	
Exceedance (yes/no)	No	N/A	No	N/A	No	N/A	N/A	N/A	N/A	N/A	

Table 8C – Point 27: Wet Weather Bypass Conditions

Monitoring Period	2016				Reason for Missing Data
EPA Point	Point 27, Yena Gap Effluent, Wet Weather Bypass Conditions				
Pollutant	**Oil and Grease (Wet)**	**Phenols (Wet)**	**Total Suspended Solids (Wet)**	**Biochemical oxygen demand (Wet)**	
Unit of Measure	mg/l	mg/l	mg/l	mg/l	
Licence Limit	70	5	100	350	
Monitoring Frequency Required by Licence	Daily during Wet Weather Bypass				
Averaging Period	Grab Sample				
No. Samples Collected	0	0	0	0	Wet Weather Bypass was not used at all during the year.
Lowest					
Highest					
Exceedance (yes/no)	No	No	No	No	

Community Complaints

During the reporting period 35 calls to the 24 Hour Community Complaints Hotline were received. Table 9 shows the breakdown of these calls based on the category of the complaint. Complaints are followed up immediately with an investigation into the potential cause of the complaint and corrective actions where required. The outcome of the investigation and the actions taken is provided during a phone call to the complainant.

Figure 1 shows the breakdown of the complaints by month over the reporting period.

Table 9 - Community Complaints Monitoring

Number of Complaints Recorded During the Last Twelve Months	
Pollution Complaint Category	Number of Complaints
Air	15
Water	5
Noise	8
Waste	0
Other	7
Total	35

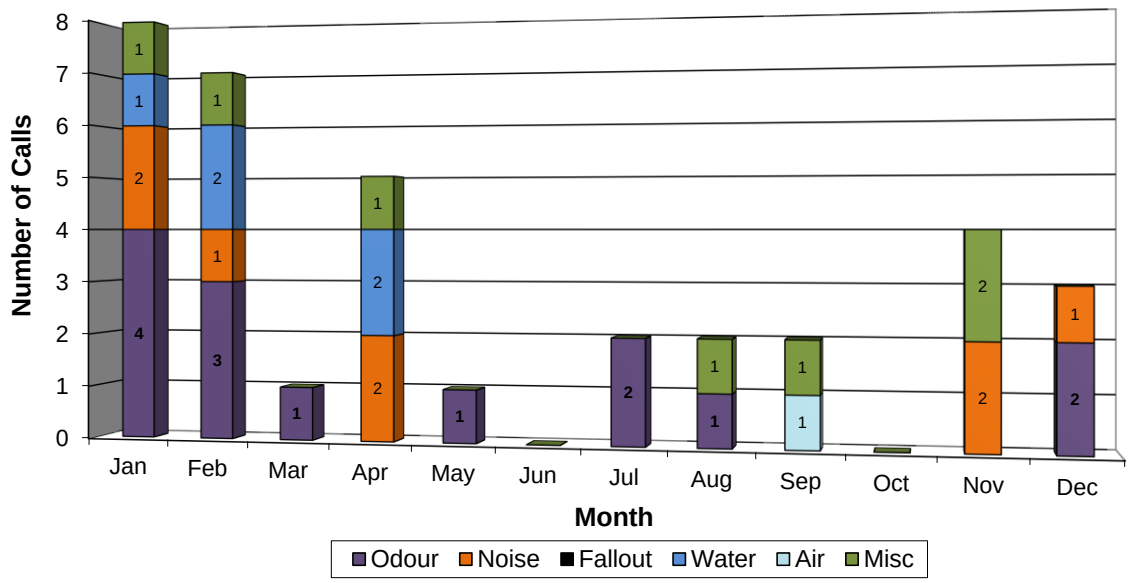

Figure 1 **Call to Community Hotline for the period January 2016 to December 2016 (by month)**

Pest, Vermin & Noxious Weed Management Monitoring

The effectiveness of the management plan in place to detect and eradicate pest, vermin & noxious weed is measured by:

- Contractor and Caltex employees undertake regular (weekly or as required) inspections of demolition areas as well as stockpiles for the presence of noxious and problematic weeds on site and in the surrounding areas and take appropriate actions if observed.

- Caltex *Permit to Work* Issuers inspect work areas prior to permits being issued. This inspection also provides an opportunity to check the work area for the presence of noxious and problematic weeds, pests and vermin. If found, the Issuer will inform the Demolition Environment Team (areas under Demolition project control) or the Kurnell Terminal Maintenance Manager to arrange corrective action.

- Demolition Environment Team undertaking monthly site inspections of all demolition work areas to ensure that management plan measures are working effectively, and that pests, vermin or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in surrounding area. The Inspection checklist used includes requirements to check for noxious and problematic weeds, pests and vermin. If found, the Environment Team arranges for the affected area/s to be treated by approved contractors. All chemicals used are on the Caltex approved list.

2.4 TERMINAL NON-COMPLIANCE AND CORRECTIVE ACTION

Based on the data presented in the previous section no exceedances were recorded against the licence limits for the three monitoring points.

As can be seen from Table 9, the main potential impact on the community is odour. All odour complaints are immediately investigated by Terminal operational personnel. Not all community odour complaints can be verified. Where odour have been verified and the odour source identified, immediate actions have been taken to eliminate or reduce the odour. All findings and actions are recorded and communicated to the complainant.

During 2016, noise was reported as the second highest potential impact on the community. In particular, the noise that members of the community observe from ship activities.

A Noise Consultant has been engaged and further noise assessments continued during 2016. A report based on the consultant's observations was prepared and issued to EPA and DP&E. Questions following the report have been answered and additional analysis have been carried out. Caltex is awaiting feedback from the regulators.

As a corrective measure, a standard instruction letter/form was developed and has been implemented. This letter is used to:

- Alert the ship of the proximity to the local community
- Alert the ship to existing noise level restrictions
- Advise ships on measures which they should take to limit noise whilst in port at Kurnell

The Letter was issued to all Shipping agents and the noise minimisation measures are communicated to ship captains via the Ship Discharge procedure, at the time of berthing.

All other community complaint (regarding dust or otherwise) were investigated immediately and appropriate actions were implemented. Feedback was provided to the complainant regarding the cause of the potential impact and the actions taken to prevent it from happening again. Generally, the community has been appreciative of the way any complaints were handled.

During 2016 two Non-Compliances have been reported as well.
The details of these non-compliances and a summary of the actions taken can be found in Table 10.

Table 10. Summary of Non Compliances

Date	Description of Non-Compliance	Cause of Non-Compliance	Corrective Actions to Prevent Non-Compliance
12 September 2016	Release of a small amount of oily water into Botany Bay from a tank on the wharf.	During cathodic protection work holes were drilled in the concrete wall of the wharf's stormwater tank. Some of the content of the tank ran into secondary containment. Due to a crack (previously unnoticed) in this secondary containment, a minor amount of oily water leaked into Botany Bay.	• Caltex and its principal maintenance contractor have reviewed project planning, drilling controls, personnel controls and undertaken repairs.
17 September 2016	Release of gasoline at a flanged joint on a pipeline.	The non-compliance was caused due to an isolated pressure safety valve (PSV) leading to an increased pressure in the pipeline and failure of the gasket in the flanged joint.	• Gasket was replaced. • Operation of PSV was checked. • Rest of business was made aware of the incident and its cause. • Area around flanged joint was cleaned-up • Expectation that isolation valves on a PSV need to be secured open was reconfirmed.

2.5 TERMINAL DATA TREND ANALYSIS

Analysis of the available data show continued sound operation of the Terminal within licence and consent requirements. None of the compliance and monitoring data reveals a trend that could potentially lead to non-compliance with any licence and/or consent conditions.

2.6 TERMINAL DATA DISCREPANCIES

The Terminal EMS used to govern the environmental aspects and impacts is considered to be appropriate. The processes under the EMS ensure that relevant data is generated and reported. This also allows for gaps to be identified and gap closing plans to be developed and implemented.

PART 3 – 2016 IMPROVEMENT PLAN AND SUMMARY

This section of the report provides an overview of the improvement works that have been carried out during the reporting period. This includes: works carried out as part of the EPL's Pollution Reduction Program, development of the Terminal's OEMP, Phytoremediation works. An overview of the improvement works planned for 2017 will be provided as well.

3.1 CHANGES MADE TO ENHANCE THE ENVIRONMENTAL PERFORMANCE OF THE DEMOLITION ACTIVITIES.

Audits of the Noise Management Plan were also conducted in January, May, August and November. A gap was identified during the internal audit in September (also documented in the Noise Management Plan November Audit). This gap concerns the communication and response plan following the detection of high noise. The procedure has been updated such that in addition to reporting high noise to the EMR, noise exceeding the Terminal Operating License Limit is communicated in writing to the Terminals Manager and where multiple noise readings are recorded above the D&D Consent Conditions, even where these noise levels are not attributed to D&D activity, independent monitoring and verification is recommended and to be coordinated by the site EMR.

Enhancement of the local asbestos removal procedure per discussions with demolition contractor - Industrial Demolition Services.

3.2 EPA LICENSE 837: POLLUTION STUDIES AND REDUCTION PROGRAMS (PRPS) ACTIVITIES IN 2015

This section provides an overview of the PRP projects U2.1 and U4.2. During the last twelve months work has been carried out on both projects.

U2.1 PRP U16.2: Implementation of the Tank Sleeve Program

Caltex has committed to the installation of Tank sleeves on slotted guide poles on twelve External Floating Roof Tanks (EFRT) after the transition from a Refinery to a Terminal. The NSW EPA have agreed to three part implementation program Part 1 has been completed and reported on in the 2015 Annual Return.

Part 2 involves the upgrade of six EFRT's by 31 December 2017. The project is being managed by the Tank Program Team. Of the six tanks in the Part 2 program, four have already been completed. The remaining EFRT's included in Part 2 are:

- TK 104 – scheduled to be completed by end 2016
- TK 103 - scheduled to be completed by end Qtr.4 2017

U4.2 PRP U25.2: Wastewater Characterisation and Risk Assessment

Requirement to undertake the Wastewater Survey and Risk Assessment in accordance with the agreed methodology as developed in PRP U25.1 unless

otherwise agreed in writing by the EPA. A report was to be prepared and submitted to the EPA detailing the results of the survey. The Report was submitted by the due date of 31 March 2016

Waste water samples were collected over a 5 week period, in accordance with a detailed sampling schedule. All samples were analysed by ALS. The wastewater collected during the 5 week period was representative of expected future flow inputs. . Additional waste water tests were conducted on specific flows from the Kurnell site "Land Farm" and the new Caltex Soil Regeneration facility. The sampling data has been used to assist with the "future state" design of the Terminal Wastewater Treatment Plant

The business is currently assessing economical options of modifying the existing plant infrastructure to better meet the current and predicted future waste water treatment needs of the site.

3.3 KURNELL TERMINAL OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN (OEMP) DEVELOPMENT

In line with the requirements of Obligation D2 of SSD 5544, a Kurnell Terminal Operational Environmental Management was developed. The Plan includes all the stated elements in the sub text of D2 and D3.

An internal Audit tool has been developed to assist with monitoring compliance to and the effectiveness of the OEMP. It has been reviewed and endorsed by key stakeholders.

Independent environmental audits were conducted in April 2016 in accordance with the auditing requirements of SSD 5544 Conversion of Refinery to Finished Product Import and Distribution Terminal and SSD 5353 Ports and Berthing Upgrade. The reports, along with the Caltex response to the non-conformances, has been sent to the DP&E.

Discussions with the DP&E in relation to the non-conformances relating to SSD 5544 have concluded. The full IEA reports and Caltex response have been published on the Caltex Public web page under Kurnell Conversion.

3.4 PHYTOREMEDIATION AT SPENT CATALYST STORAGE AREA

Over the last 4 and a half years, the Kurnell site has remediated an area where previously spent Phosphoric Acid Catalyst used to be stored. The area was remediated by neutralising and encapsulating the spent catalyst and by planting 100 sterile poplar trees. The poplars have helped to remediate the locally contaminated groundwater, reducing the level of dissolved phosphate. Figure 2 show that reduction in a number of wells over time.

The results indicate that the rate of reduction in phosphate has slowed down somewhat. Further monitoring will continue.

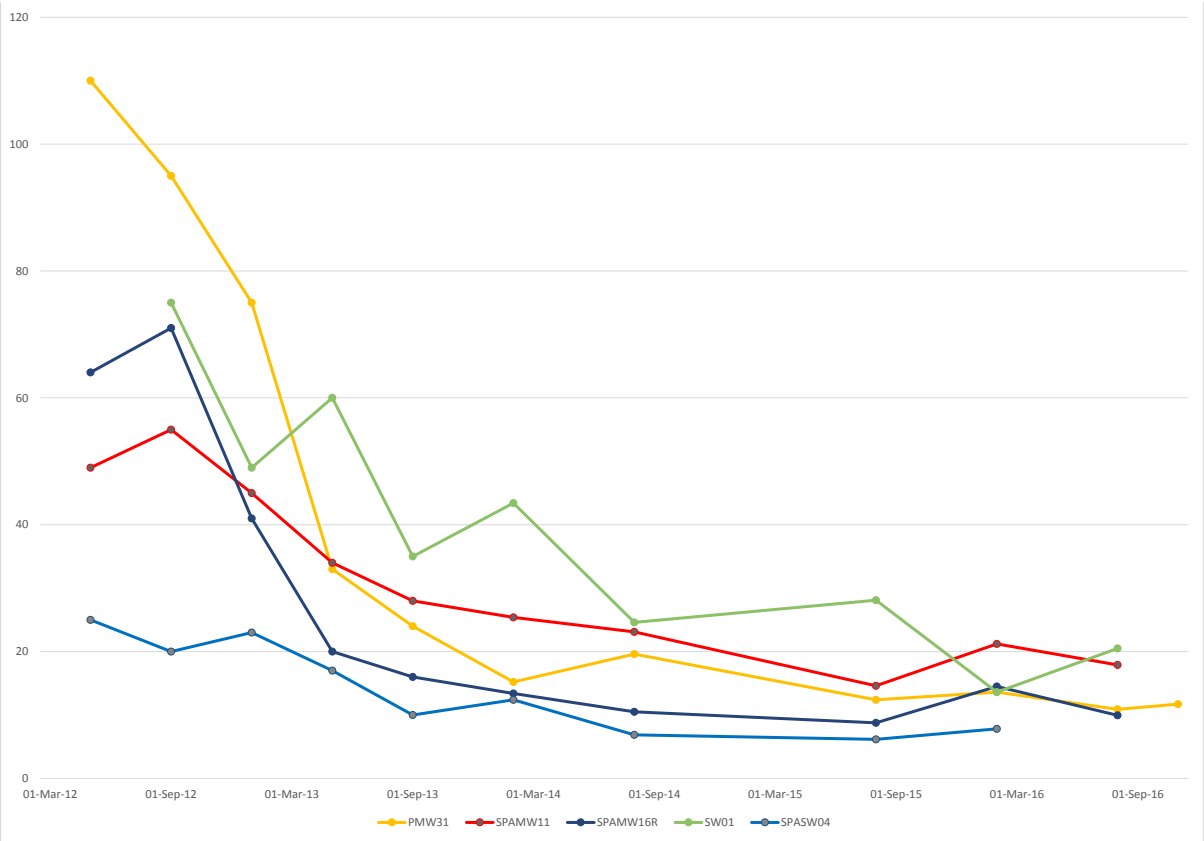

Figure 2, Reduction in Phosphate Concentration in Groundwater

3.5 PLANNED 2017 IMPROVEMENT MEASURES

The proposed improvement measures for 2017 include:

- Progress the improvements opportunities identified during the ISO 14001: 2015 Environmental Management Systems Standard Gap Analysis event in September 2016. The site intends to seek recertification to the new 2015 Standard by June 2017.
- Implementation of the 2017 Internal Audit program.
- Progress “Future State” Redesign of Kurnell Terminal Waste Water Treatment Plant.
- Progress the 2017 stage of the Kurnell Terminal OE Marine Improvement Program

4 SUMMARY

Over the previous year, activities associated with the development have complied with the Development Consent for Application SSD 5544 (dated 7 January 2014) and Development Consent for Modification 1 of SSD 5544 (dated 10 August 2015).

The environmental management activities developed from the EIS, SEE and the EPL, incorporating the consent conditions, have been effective and will be continued for the current year.