Cleanaway Refiners Rutherford

Annual Environmental Report 2016

Date: December 2016
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Version: 1
Approved by: Scott McLeod

Contents

1 Executive Summary

As part of the project approval for the hydrogenation plant an Annual Performance Report is required to be submitted to the EPA, Council and the Department of Planning.

This report covers the period from 29 September 2015 to 28 September 2016, and has been prepared to meet the requirements of Section 5.2 of the Project Approval issued by the Department of Planning Application No. 05_0037

Note on 1st February 2016 Transpacific Refiners changed its name to Cleanaway Refiners.

The following addresses the requirements of this report.

A copy of the report is placed on the Cleanaway Public Web Site:

http://www.Cleanaway.com.au

1 Compliance with the Conditions of Approval.

This section details compliance with the conditions of approval and any other licence and approvals for the project.

Items in this section which related to construction and pre operations, which are considered finalised have been removed and a can be found in Appendix A for reference.

PA Project Approval

SOC Statement of Commitments

		Demonstration of Compliance
Clause	Task	
SOC 13-14	TPI to employ compliance officer	Position is fulfilled by the Cleanaway HSE, an approved and budgeted position.
SOC 15	TPI will develop and implement an IEMS.	Site was independently audited and Certificated by SAI Global for compliance to ISO 14001, ISO 9001 and AS4801 on 26th Oct 07 and was recertified on Nov 2008 Nov 2009 March 2011, March 2012, and June 2013
SOC 16	IEMS to be reviewed at least annually.	As above. Last recertification audit was on 29th July 2016.
SOC 20-24	Communication and consultation requiring public advertisement of 24 hour contact numbers, consultation with public, property owners, and have a complaints Management System	Advertisement placed in local paper, Documented. Registered documented.
SOC 25	SOC states maximum oil 36 000 tonne pa limit	EPL 12555 is in line with this category.
SOC 26 – 27	Ground water quality criteria to be based on ANZECC trigger limits.	PB tested Ground water in Aug 2005 Doc dated 20 Sept 05, Bi annual has replaced quarterly testing under Project Approval

		Modification dated 18th October 2011 undertaken: On ongoing basis
SOC 23	Surface Water requires sampling	Sampling occurs quarterly in accordance with SWMP.
SOC 28 – 29	Soil and Water Quality Management Plans for the construction and operation to be prepared.	Addressed in OEMP sent 11/5/08. Revised Storm water Management Plan and inspection and test plan prepared March 08.
SOC 30	Soils and Land Contamination mitigation measures.	Monthly site inspections.
SOC 31	Flora and Fauna mitigation measures.	Vegetation management plan sent 26/3/07. In progress, expected completion date 31/10/09. Complete see SOC 46
SOC 36	Air Quality Management requirements:	Air Quality Management Plan sent 20/3/08.
SOC 36.c	Source emission monitoring to validate EPL compliance	An ongoing requirement of the site EPL. Independent contractor engaged to perform the task on an annual basis.
SOC 36 d	Annual monitoring program including potential compound specific emissions	As part of 36 c
SOC 37	Operate facility in accordance with POEO act	Ongoing
SOC 38	Prepare Air Quality Management Plans as part of CEMP and OEMP	Air Quality Management Plan sent 20/3/08.
SOC 39	Operational Air Quality Objectives	Results from air quality are assessed against EPL. Ongoing
SOC 46	Visual Mitigation Measures.	A total of 78 trees were planted on the Cleanaway site to fulfil the obligation of the Vegetation Management Plan. 25 Eucalyptus Maculata and 25 Eucalyptus Fibrosa planted along the southern boundary (P1)

		fenceline, 6 She Oaks planted at (P2), Eucalyptus paniculata planted (P4),a number of Melaleuca Revolution and Callistemon Saligus in area P3 to replace trees lost since commencement of operation. Complete.
SOC 47	Landscape Plan	See above SOC 46.
SOC 48	Traffic Management Plan.	Sent 27/9/06 Updated May 2015
SOC 49	Energy use plan	Pipe lagging inspected on monthly site inspections. Addressed by Energy Efficiency Operation Act requirements
SOC 50	Waste management plan	All waste on site is in accordance with the EPA Waste Classification Guidelines. Licence variation to include waste generation sent to EPA 17/3/08.
SOC 51	Hazards and risk include on risk register	Risk Register has been prepared, independent Hazard audit has been undertaken with findings being addressed. Risk Register reviewed in April 09. All findings addressed. Active Risk Management reviewed and updated monthly as per the S&S plan.
SOC 52	Check Emergency Management Plan	Sent 6/3/07 Reviewed in February 09. The Site Emergency Management Plan was updated Feb 2011 and Nov 2011. A Pollution Incident Management Response Plan has also been prepared in July 2012 as required

		by new Environmental Regulations. PIRMP updated 9/2/2016.
1.1 c)	Conditions of this approval.	Addressed by this report.
1.3 a)	Any reports, plans or correspondence that are submitted by the Proponent in accordance with this approval; and	As required
Vegetation management plan	Requires planting of vegetative screen, removal of weeds.	78 Trees planted (for details refer SOC46 above) weed/grass to be removed, see SOC 31.
Traffic management	6 monthly audit required	Included on inspection and Test Plan.
Air Quality management plan	3.5 emission tests undertaken	Testing was undertaken in November 2015, February 2016, as per attached reports from Assured Monitoring Group (AMG).
	Monthly dust monitoring required	Monthly dust monitoring program commenced April 08 and ceased on 30 October 2011 due to Project Approval Modification dated 18th October 2011.
	Anemometer required.	Anemometer in place an operational. Data backed up weekly.
	Boiler combustion tuning to be undertaken annually	Boiler combustion tuning is conducted during annual boiler service and whenever units are maintained.
	Storm water management plan	Included on monthly site Inspection. Sampling equipment and documented procedure on site.

1.3 b)	The implementation of any actions or measures contained in those reports, plans or correspondence submitted by the Proponent.	See Inspection & Test Plan.
2.4 Dust	The Proponent shall design, construct, operate and maintain the project in a manner that prevents and/or minimizes air pollution	Assured Monitoring Group (AMG). No dust concerns during constructions stages. Function of the site does not generate dust. Dust monitoring ceased 30/10//2011.
2.5 Odour	The Proponent shall not cause or permit the emission of offensive odours from the site, as defined under Section 129 of the Protection of the Environment Operations Act 1997	There have been, well known and documented odour issues within the industrial estate, although Cleanaway Refiners have received no direct complaints. Issue addressed in Odour Audit.
2.6	Air Quality Criteria - 2.7 The Proponent shall design, operate and maintain the project in a manner that would achieve emissions compliance with the:	
2.6 a)	Air quality criteria specified in Table 1 of the Modification Approval (16 May 2007);	Refer to section 4 of this report
2.6 b)	the requirements of the Protection of the Environment (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation 2005; and	Refer to section 4 of this report
2.6 c)	The requirements of Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (August 2005).	See AQMP dated 20th March 2007
2.9	The Proponent shall ensure that the flare is designed, constructed and operated in accordance with the requirements of Clauses 38 – 41 of the Protection of the Environment (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation	Flare Design Brief 22/11/06
2.10	The Proponent shall design, operate and maintain the project in a manner that complies with all requirements of the EPA as specified in the EPL for the project with respect to volatile organic liquid control equipment prescribed in Part 5 of the Protection of Environment Operations (Clean Air)	Resource Recovery and Recycling Facility, Rutherford – Preferred Project Report

	Amendment (industrial and Commercial Activities and Plant) reg 2005	Refer EPL Compliance section below.
2	Operation of the Flare	
2.11	The Proponent shall not operate the flare except during start-up, shutdown and process upsets. For the purposes of this condition, process upsets shall not exceed 2% of the process operating time per annum. This excludes the initial commissioning period of the project, which is defined as three months from the start-up date of the project.	Flare is operated in accordance with these requirements (also refer condition O6 of the EPL).
2.12 a)	Throughout the life of the project, the Proponent shall keep and maintain detailed records of each use of the flare on site, and the details of all process upsets, start-ups and shutdowns. The records shall be made available to the EPA upon request, and shall include: a) the flare start and stop time, and the reasons for its use;	A flare log is maintained in accordance with this condition (refer also condition M7.1 of the EPL). The Flare log is kept in the Refinery control room.
2.12 b)	b) the process start and stop time, and the reason for each process upset.	Flare log kept in control room, percent time calculated on Monthly site inspection.
2	Boilers	
2.13	The Proponent shall not burn or use waste oil and other non-standard fuels as fuel at the site.	Included in EPL No 12555.
2	Soil and Water	
2.15	Except as may be expressly provided in an EPL for the project, the Proponent shall comply with section 120 of the Protection of the Environment Operations Act 1997, which prohibits the pollution of waters.	CEMP Storm water Management Plan. Monthly Site inspections, Site inspection and Inspection and Test Plan.

2.16	Prior to the commencement of operations, the Proponent shall ensure that storm water management measures are implemented to mitigate the impacts of storm water run-off from and within the site in a manner that is consistent with the Storm water Management Plan for the catchments. Where a Storm water Management Plan has not yet been prepared, the measures shall be consistent with the guidance contained in Managing Urban Stormwater: Council Handbook (EPA).	CEMP SWMP in place, with adequate systems and procedures in place during construction in regards to storm water. Downstream defender in place with regular inspections and sampling of exit points. Storm water management system upgraded in September 2011 to divert bund water run-off to trade waste.
2	Noise	
2.19	The Proponent shall only undertake construction activities associated with the project, that are audible at any residential receptor, between the following hours: a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive b) 8:00 am to 1:00 pm on Saturdays; and c) at no time on Sundays or public holidays.	Construction complete
2.20	The Proponent shall ensure that noise from the project at the nearest sensitive receiver does not exceed the criteria specified in Table 2 at those locations and during those periods indicated	Report included with 2009 Annual Environmental Report
2	Pre-commissioning - Prior to the commencement of operation of the project, the Proponent shall prepare and submit for the approval of the Director-General the following studies:	
2.22 a)	a Emergency Management Plan and detailed emergency procedures for the site.	Site Emergency Management Plan sent 6/3/07
2.22 b)	a Safety Management System covering all on-site operations and associated transport activities involving hazardous materials. The document shall clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms	Safety Management Systems sent 6/3/07

2	Dangerous Goods	
2.24	All chemicals, fuels and oils shall be stored in appropriately bunded areas, with impervious flooring and sufficient capacity to contain 110% of the largest container stored within the bund.	All Dangerous Goods stored in accordance with AS1940.
2	Transport	
2.26	The Proponent shall ensure that B-Doubles associated with the site do not use the New England Highway and Kyle St intersection at any time until the intersection has been upgraded to cater for B-Double movements. In the interim, B-Doubles associated with	Driver code of conduct no longer in use due to intersection upgrade that allows access for B-doubles
2.27	To enforce the nominated B-Double route, as conditioned in 2.26, the proponent shall implement a Transport Code of Conduct for the project. The Code of Conduct shall include, but not necessarily be limited to, the following:	As above
2.27 a)	Details of the measures that would be implemented to enforce this route. This shall include, but not restricted to, contractual arrangements and disciplinary action;	Transport Code of Conduct and driver sign off, AS 2.27
2.27 b)	a program of driver training to ensure that drivers are aware of route restrictions applicable to the development;	Transport Code of Conduct and driver sign off. This is also covered during driver induction training.
2.27 c)	communication and management strategies for both the Proponent's own fleet and contracted fleet to ensure the requirements of the code are met;	Transport Code of Conduct and driver sign off.
2.27 d)	the incorporation of a regular audit and monitoring program for the Code to determine compliance with the Strategy by heavy vehicles associated with the development and to evaluate the effectiveness of the Code in enforcing this route	Inspection and Test Plan.
2.28	The Proponent shall ensure that: a) all car parking on the site is constructed in accordance with the relevant requirements in AS 2890.1-2004;	Internal Traffic Management Plan sent 13/12/06

2	Flora and Fauna	
2.31	The Proponent shall minimize any clearing of vegetation during construction work, and shall retain the vegetation community, referred to as 'Remnant 4' on Map Reference 2118506A_2001 (Figure No.11 of the EAR), and partially retain the vegetation community, referred to as 'Remnant 3', throughout the life of the development in a healthy and tidy state.	Refer to SOC 46. Complete.
2	Visual	
2.32	The Proponent shall ensure that all external lighting associated with the project: a) does not create a nuisance to surrounding properties or roadways; and b) complies with AS 4282(INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.	CEMP
2	Asbestos	
2.33	The Proponent shall handle and dispose of asbestos containing materials in accordance with the Protection of the Environment Operations (Waste) Regulation 1996.	All asbestos sheeting has been removed. We conduct asbestos monitoring on-site twice annually. All asbestos monitoring is below detection limits.
2.34	Prior to the commencement of construction work at the site, the Proponent shall ensure that all asbestos-containing materials, including friable asbestos particles within soil, are identified, treated and/or removed to ensure no long-term impact on human	CEMP Complete however requires ongoing updates.
2.35	The Proponent shall ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version	CEMP complete

3	Environmental Management and Monitoring	
3	Environmental Representative	
3.1	Prior to the commencement of construction, the Proponent shall employ a suitably qualified and experienced environmental representative/s, whose appointment has been endorsed by the Director-General. The Proponent shall employ this representative/s throughout the life of the project, and notify the Director General of any changes to the appointment that may occur from time to time.	Nomination approved by the DG. 18/9/06
3	Environmental Management and Monitoring	
3	Operational Monitoring - Air	
3.2	Air quality monitoring will be undertaken in strict accordance with the requirements set out in the EPL covering the operation of the facility and the Rutherford Resource Recovery and Recycling Facility Air Quality Management Plan (AQMP) prepared by Pacific Air and Environment (PAE), dated 20 March 2007	Air Quality Management Plan (AQMP) Testing was undertaken per attached reports.

3	Operation Environmental Management Plan	
3.5	Prior to the Commencement of operations, the Proponent shall prepare (and following approval implement) an Operation Environmental Management Plan (OEMP) for the project, in consultation with the EPA, DNR and Council, and to the Satisfaction of the Director Prior to the Commencement of operations, the Proponent shall prepare (and following approval implement) an Operation Environmental Management Plan (OEMP) for the project, in consultation with the EPA, DNR and Council, and to the Satisfaction of the Director General. This plan must describe the environmental management framework practices and procedures that would be followed during operations and Include:	OEMP sent 11/5/07 2009 report states OEMP sent 6/3/07 Operation Environmental Management is governed by the Cleanaway Health Safety and Environment Management Plan.
3.5 a)	Identification of all statutory and other obligations that the Proponent is required to fulfil in relation to operation of the development, including all approvals, licenses, and consultations;	OEMP sent 11/5/07 2009 report states OEMP sent 6/3/07 Health Safety and Environment Planner.
3.5 b)	A description of the roles and responsibilities for all relevant employees involved in the operation of the development;	OEMP sent 11/5/07 2009 report states OEMP sent 6/3/07
3.5 c)	Overall environmental policies and principles that will be/are applied to the operation of the development.	OEMP sent 11/5/07 2009 report states OEMP sent 6/3/07
3.5 d)	Standards and performance measures that will be applied/are to the development, and a means by which environmental performance can be periodically reviewed and improved;	OEMP sent 11/5/07 2009 report states OEMP sent 6/3/07 Environmental Performance reviewed in this report and the annual report to EPA.

3.5 e)	Management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;	OEMP sent 11/5/07 2009 report states OEMP sent 6/3/07
3.5 f)	Details of all landscaping to be undertaken on this site;	OEMP sent in 2007 Refer to SOC 46. Complete.
3.5 g)	The various management plans required under this approval; and	Multiple management plans outlined above in SOC section of this plan.
3.5 h)	Contingency measures should monitoring of environmental issues under this approval indicate that the development has had, or is having an adverse environmental impact	Refer Ground Water and Air Quality management plans as well as INCR procedure.
3.6	The OEMP for the project shall include the following Management Plans:	
3.6 a)	An Air Quality Management Plan outlining the measures that would be implemented to minimise and manage air quality impacts of the proposal, particularly odour. The Plan shall include, but not necessarily be limited to: i) identification of all point and diffuse sources of air quality emissions associated with the project; ii) a detailed description of the mitigation methods and management practices that would be used throughout the project, particularly methods to ensure offensive odour impacts do not occur off site, and a demonstration that these measures are consistent with industry best practice; iii) a detailed monitoring program for the project; iv) details of the contingency measures that would be implemented if non-compliance with air quality emission criteria is detected or if offensive odour impacts occur; and v) a procedure for handling complaints	Air Quality management Plan (AQMP) sent 20/3/07

3.6 b)	a Transport Code of Conduct to outline measures to manage all heavy vehicle traffic movements associated with the project to minimise impacts on the local and regional road network, including traffic noise. The Code shall address the requirements of the Council and the RTA and shall include, but not necessarily be limited to: i) restrictions to routes, where relevant ii) management measures to reduce volumes of heavy vehicles travelling to and from the site during peak hours, particularly B-Double movements at the Kyle St/New England Highway intersection during peak hours; and iii) details of what disciplinary actions would be taken should any non-compliance with the Transport Code of Conduct be detected	Transport Code of Conduct (TCC) sent 6/3/07
3.6 c)	a Groundwater Management Plan to detail measures to monitor, and where applicable, manage the impact on groundwater. The Plan shall be prepared in consultation with DNR and EPA, and shall include, but not necessarily be limited to: i) Details of baseline groundwater quality, as present prior to the commencement of construction of the development; ii) Groundwater assessment criteria for a broad range of parameters, including, heavy metals, total nitrogen and total phosphorous; iii) Monitoring program of groundwater quality, including frequency of monitoring and monitoring locations; iv) Details of contingency measures and management options should monitoring of groundwater quality indicate that the development has had, or is having, an adverse effect on groundwater quality; v) Details of the nominated contingency measures and management options, should monitoring of groundwater quality indicate that the development has exceeded these criteria. These levels and contingency and management options must be developed to the satisfaction of the EPA and DNR	Groundwater Management Plan (GWMP) 21/3/07

3.7	Within 3 months of the completion of each Independent Environmental Audit (see condition 4.4), the Proponent shall review and update the Operational Environmental Management Plan (OEMP) for the project, in consultation with the EPA and Council, and to the	Complete.
5	Environmental Reporting	
	Incident Reporting	
5.1	The Proponent shall notify the EPA and the Director-General of any incident with actual or potential significant off-site impacts on people or the biophysical environment as soon as practicable after the occurrence of the incident. The Proponent shall provide written details of the incident to EPA and the Director General within seven days of the date on which the incident occurred.	Cleanaway Incident Reporting Procedure A Pollution Incident Management Response Plan has also been prepared in July 2012 as required by new Environmental Regulations.
5	Annual Performance Reporting	
5.2	Within 12 months of the commencement of operations, and annually thereafter, the Proponent shall submit an Annual Environmental Management Report (AEMR) for the project to the EPA, Council and the Department. The AEMR shall include:	This report is the eighth AEMR to be submitted.
	a) details of compliance with the conditions of this approval, and any other licences and approvals for the project;	As above
	b) a list of variations obtained to approvals applicable to the development and to the site during the preceding twelve-month period;	As above
	c) a copy of the Complaints Register for the preceding twelve-month period (exclusive of personal details) and a description of how these complaints were addressed and resolved;	As above
	d) results of all environmental monitoring required under this approval and other approvals, including interpretations and discussion by a suitably qualified person;	As above

	e) a list of all occasions in the preceding twelve-month period when environmental performance goals for the development have not been achieved, indicating the reason for failure to meet the goals and the action taken to prevent recurrence of that type of	As above
	f) a comparison of the environmental impacts and performance of the development against the environmental impacts and performance predicted in the EA and the additional information listed under condition 1.1	As above
	g) identification of trends in monitoring data over the life of the development to date; and	As above
	h) environmental management targets and strategies for the following twelve-month period, taking into account identified trends in monitoring results.	As above
6	Community Information, Consultation and Involvement	
6	Access to Information	
6.1	Subject to confidentiality, the Proponent shall make all documents required under this approval publicly available	As Required
6	Complaints Procedure	
6.3	The Proponent must record details of all complaints received about the project in an up-to-date Complaints Register	Complaints Procedure
6.3	The Complaints Register must be made available for inspection by the Director-General upon request	Complaints Register Available as requested

Tasks Requiring Reporting, EPL

Cond. No.	requirement	Demonstration of Compliance
L2.2	load limits	Quarterly emission report being undertaken.
L3	concentration limits	Quarterly emission report being undertaken.
L5	Noise Limits	See Noise Validation report.
O3.1	Within 3 months of issue emergency response plan must be developed	Located at front gate
O5.1	all above ground tanks must be bunded or have alternative spill containment systems in place	Sighted on inspection
O5.2	all tanks to have suitable measures (high/low alarms control valves etc) to prevent spills	Sighted on inspection
O6	Flare operation	Logging system in place
M5	Monitoring records to be kept and be readily producible	On file
M2.1	Requirement to monitor concentration of pollutants	Annual emission report
M4	Requirement to monitor weather	System installed.
M5	Recording pollution complaint	Complaint folder on site
M6	Telephone complaints	Complaint folder on site
M7.1	Records of flare operation	Flare log on site
R1	Annual return	Submitted to EPA
R1.10	Results of air quality test must be submitted to EPA each quarter within 6 months of issue of license	All available reports have been submitted to the EPA as required.
U1	Operational Air & noise report required within 6 months	Report submitted 19 December 2008

2 List of variations to approvals during the preceding twelve-month period

List of all variations obtained to approvals applicable to the development and to the site during the preceding twelve month period

Reduction in required Emission Testing

On 4th April 2016 NSW EPA issued a variation to reduce emission tests to an annual requirement:

E. Condition M2.5 of the licence states:

"Special Frequency 1 - means that sampling will be undertaken on a quarterly basis for a period of not less than one (1) year. The minimum number of sampling events required within one (1) reporting period is four (4).

Following the completion of at least four (4) sampling events, the licensee may request in writing to have the sampling frequency varied to Special Frequency 2.

Special Frequency 2 - means that sampling will be undertaken on a bi-annual basis for a period of not less than one (1) year. The minimum of sampling events required within one reporting period is two (2).

Following completion of two (2) sampling events, the licensee may apply in writing to have the sampling frequency varied to once every reporting period."

Cleanaway Refiners provided information in support of this application for variation that demonstrates that the criteria of M2.5 has been met without breaching the limit conditions in the licence, as such the EPA considered it appropriate to approve this application.

Cleanaway Refiners Diversification Technology

On 9th September 2016, Cleanaway Refiners received consent from the NSW Department of Planning and Environment to install additional infrastructure. This augmentation of the sites infrastructure is aimed at improving the plants finished product quality in order to increase domestic sales of product and secure the plants viability. The upgrade of the sites steam boiler system and the versatility of fuels is part of this consent.

Cleanaway is progressing with the detailed design and information required by the Department of Planning and Environment. It is expected communications will commence with the EPA early 2017 regarding modifications to the site EPL (EPL12555) to compliment the consent.

3 Complaints Register

Copy of the Complaints Register for the preceding twelve month period (exclusive of personal detail) and a discretion of how these complaints were addressed and resolved as below.

Nil complaints received.

4 Results of Environmental Monitoring

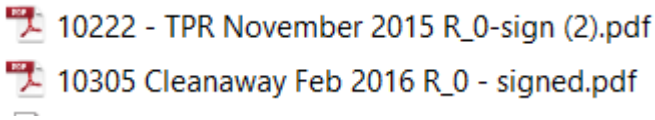
Results of all environmental monitoring required under this approval and other approval, including interpretations and discussions by a suitably qualified person are as follows

RESULTS

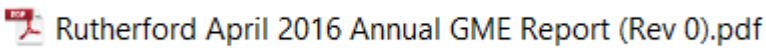
Environmental Reports for the reporting year licence year 29 September 2015 to 28 September 2016

The following reports are presented with this report

Air Emissions:



Ground Water Results:



Assured Monitoring Group Report have been included and a summary table of results can be found below.

Data for Emission testing 3rd to 6th November 2015.

DP 2, 3MW Boiler

Discharge Point 2; 3MW Boiler

Pollutant	Unit of measure	Mean of sample	Limit Conditions
Temperature	oC	176	na
Nitrogen oxides at 8%O2	mg/m3	92.7	350
Volatile organic compounds (n-propane) at 8%O_2	mg/m3	< 3.02	10
Oxygen	%	9.52	na
Velocity	m/s	3.48	na
Dry gas density	kg/m3	1.33	na
Molecular weight of stack gases	g/g-mol	29.7	na
Volumetric flowrate	m3/s	0.636	na
Moisture	%	9.50	na
Solid particles	mg/m3	0.535	10
Nitrogen oxides	mg/m3	81.8	LBL
Nitrogen oxides at 8%O2	mg/m3	92.7	LBL
Volatile organic compounds (n-propane)	mg/m3	< 2.66	LBL
Volatile organic compounds (n-propane) at 8%O_2	mg/m3	< 3.02	LBL
Fine particles (PM10)	mg/m3	< 0.47	LBL
PM10 at 8%O2	mg/m3	< 0.53	LBL
Hydrogen sulfide	mg/m3	< 0.094	LBL
Hydrogen sulfide at 8%O2	mg/m3	< 0.107	LBL
Sulphur oxides	mg/m3	< 2.86	LBL
Sulphur oxides at 8%O2	mg/m3	< 3.24	LBL
Benzo(a)pyrene	mg/m3	DNT	LBL
Benzene (air)	mg/m3	< 0.136	LBL
Arsenic (air)	mg/m3	DNT	LBL
Lead(air)	mg/m3	DNT	LBL
Mercury(air)	mg/m3	DNT	LBL

Discharge Point 3; 0.2MW Boiler

Pollutant	Unit of measure	Mean of sample	Limit Conditions
Temperature	^{oC}	248	na
Nitrogen oxides at 8%O2	mg/m3	86.4	350
Volatile organic compounds (n-propane) at 8%O_2	mg/m3	< 2.88	10
Oxygen	%	8.51	na
Velocity	m/s	9.97	na
Dry gas density	kg/m3	1.33	na
Molecular weight of stack gases	g/g-mol	29.7	na
Volumetric flowrate	m3/s	0.301	na
Moisture	%	13.0	na
Solid particles	mg/m3	0.62	10
Nitrogen Oxides	mg/m3	83	LBL
Nitrogen Oxides at 8%O2	mg/m3	86.4	LBL
Volatile organic compounds (n-propane)	mg/m3	< 2.77	LBL
Volatile organic compounds (n-propane) at 8%O_2	mg/m3	< 2.88	LBL
Fine Particles (PM10)	mg/m3	0.60	LBL
PM10 at 8%O2	mg/m3	0.62	LBL
Hydrogen Sulfide	mg/m3	< 0.199	LBL
Hydrogen Sulfide at 8%O2	mg/m3	< 0.207	LBL
Sulphur oxides	mg/m3	< 2.86	LBL
Sulphur oxides at 8%O_2	mg/m3	< 2.98	LBL
Benzo(a)pyrene	mg/m3	DNT	LBL
Benzene (air)	mg/m3	< 0.142	LBL
Arsenic (air)	mg/m3	DNT	LBL
Lead(air)	mg/m3	DNT	LBL
Mercury(air)	mg/m3	DNT	LBL

Discharge Point 5; Light End Scrubber

Pollutant	Unit of measure	Mean of sample	Limit Conditions
Temperature	oC	29.6	na
Volatile organic compounds	mg/m3	< 2.50	20
PAHs	mg/m3	0.0000180	na
Velocity	m/s	4.57	na
Dry gas density	kg/m3	1.29	na
Molecular weight of stack gases	g/g-mol	28.8	na
Volumetric flowrate	m3/s	0.125	na
Moisture	%	3.00	na
Odour	OU	288	na
Solid particles	mg/m3	0.930	na
Nitrogen Oxides	mg/m3	< 2.05	LBL
Volatile organic compounds (n-propane)	mg/m3	< 2.50	LBL
Fine Particles (PM10)	mg/m3	< 0.93	LBL
Hydrogen Sulfide	mg/m3	< 0.56	LBL
Sulphur oxides	mg/m3	< 2.86	LBL
Benzo(a)Pyrene	mg/m3	0.00000518	LBL
Benzene (air)	mg/m3	< 0.128	LBL
Arsenic (air)	mg/m3	DNT	LBL
Lead(air)	mg/m3	DNT	LBL
Mercury(air)	mg/m3	DNT	LBL

Discharge Point 19; Fired Heater

Table 18: Results for DP19; Fired Heater Pollutant	Unit of measure	Mean of sample	Limit Conditions
Temperature	oC	96	na
Nitrogen Oxides at 8% O2	mg/m3	245	350
Volatile organic compounds as propane at 8% O2	mg/m3	< 2.53	10
Hydrogen sulphide at 8% O2	mg/m3	< 0.03	5
Oxygen	%	6.86	na
Velocity	m/s	2.71	na
Dry gas density	kg/m3	1.32	na
H2SO4 and SO3 (as SO3 equivalent) at 8% O2	mg/m3	15.0	100
Odour	OU	2658	na
Molecular weight of stack gases	g/g-mol	29.5	na
Volumetric flowrate	m3/s	0.437	na
Moisture	%	22.5	na
Carbon monoxide	mg/m3	11.90	na
Solid particles at 8%O2	mg/m3	7.6	50
Sulphur dioxide at 8%O2	mg/m3	< 1.72	1360
Formaldehyde at 8%O2	mg/m3	< 0.0396	na
Nitrogen Oxides	mg/m3	272	LBL
Nitrogen Oxides at 8% O2	mg/m3	245	LBL
Volatile organic compounds as propane	mg/m3	< 2.71	LBL
Volatile organic compounds as propane at 8% O2	mg/m3	< 2.53	LBL
Fine Particles (PM10)	mg/m3	< 8.53	LBL
Fine Particles (PM10) at 8% O2	mg/m3	< 7.6	LBL
Hydrogen Sulfide	mg/m3	< 0.03	LBL
Hydrogen Sulfide at 8% O2	mg/m3	< 0.03	LBL
Sulphur oxides	mg/m3	19.1	LBL
Sulphur oxides at 8% O2	mg/m3	0.354	LBL
benzo(a)pyrene	mg/m3	< 0.00000760	LBL
Benzene (air)	mg/m3	< 0.139	LBL

Arsenic (air)	mg/m3	< 0.00450	LBL
Lead(air)	mg/m3	0.07713	LBL
Mercury(air)	mg/m3	0.000461	LBL

Discharge Point 20; Reformer

Table 20: Results for DP20; Reformer Pollutant	**Unit of measure**	**Mean of sample**	**Limit Conditions**
Temperature	oC	800	na
Nitrogen Oxides at 4% O2	mg/m3	86	350
Volatile organic compounds as propane at 4% O2	mg/m3	< 2.64	10
Hydrogen sulphide at 4% O2	mg/m3	< 0.246	5
Oxygen	%	2.97	na
Velocity	m/s	11.0	na
Dry gas density	kg/m3	1.37	na
Odour	OU	1938	na
Molecular weight of stack gases	g/g-mol	30.7	na
Volumetric flowrate	m3/s	0.207	na
Moisture	%	18.0	na
Carbon monoxide	mg/m3	24.41	na
Solid particles at 4% O2	mg/m3	1.15	50
Nitrogen Oxides	mg/m3	89	LBL
Nitrogen Oxides at 4% O2	mg/m3	86	LBL
Volatile organic compounds as propane	mg/m3	< 2.57	LBL
Volatile organic compounds as propane at 4% O2	mg/m3	< 2.64	
Fine Particles (PM10)	mg/m3	< 1.27	LBL
Fine Particles (PM10) at 4% O2	mg/m3	< 1.15	LBL
Hydrogen Sulfide	mg/m3	< 0.271	LBL
Hydrogen Sulfide at 4% O2	mg/m3	< 0.256	LBL
Sulphur oxides as SO3	mg/m3	< 4.34	LBL

Sulphur oxides as SO3 at 4% O2	mg/m3	< 4.09	LBL
benzo(a)pyrene	mg/m3	< 0.00000534	LBL
Benzene (air)	mg/m3	< 0.132	LBL
Arsenic (air)	mg/m3	< 0.00799	LBL
Lead(air)	mg/m3	0.06494	LBL
Mercury(air)	mg/m3	< 0.001440	LBL

Data for Emission testing 10-11th February 2016.

Discharge Point 5; Light End Scrubber

Pollutant	Unit of measure	Mean of sample	Limit Conditions
Temperature	oC	35.8	na
Volatile organic compounds	mg/m3	4.59	20
Velocity	m/s	5.38	na
Dry gas density	kg/m3	1.29	na
Molecular weight of stack gases	g/g-mol	28.8	na
Volumetric flowrate	m3/s	0.145	na
Moisture	%	2.50	na

Discharge Point 19; Fired Heater

Pollutant	Unit of measure	Mean of samples	Limit Conditions
Temperature	oC	97.5	na
Nitrogen Oxides	mg/m3	296	350
Hydrogen sulfide	mg/m3	2.60	5
Oxygen	%	4.31	na
Velocity (at sample plane)	m/s	2.48	na
Velocity (at stack exit)	m/s	5.59	na
Dry gas density	kg/m3	1.32	na
Sulfuric acid mist and sulfur trioxide(as SO3 equivalent)	mg/m3	63.9	100
Odour	OU	3,160	na
Molecular weight of stack gases	g/g-mol	29.5	na
Volumetric flowrate	m3/s	0.401	na
Moisture	%	22.5	na
Carbon monoxide	mg/m3	4.83	na
Solid particles	mg/m3	1.22	50

Ground Water Monitoring and Dipping

This has been undertaken since late 2007.

Results from the groundwater monitoring testing indicate that:

1. There is only minor contamination of the groundwater, which is localised around the original point of contamination, namely the former dye and finishing warehouse located in the centre of the property.
2. This contamination poses little risk to the environment.
3. This contamination is the result of previous site activities, not the current Cleanaway activities.

The DoP removed the condition for monthly dipping from the Project Approval on 18 October 2011

It should be noted that actual testing and analysis of the ground water is still a requirement of the EPL.

Summary of ground water results to date:

All units in µg/L unless otherwise stated

Sample ID	Sampling Date	TPH					TRH	
		TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{15} - C_{28}	TPH C_{29} - C_{36}	TPH C_{10} - C_{36}	TRH F1 C_6 - C_{10}	TRH C_{10} - C_{40}
LOR		20	50	100	50	50	20	50
MW12	20/11/2007	<20	<50	<100	<50	<200	-	
	1/05/2008	<20	<50	<100	<50	<200	-	
	30/07/2008	<20	<50	<100	<50	<200	-	
	30/10/2008	<20	<50	<100	80	155	-	
	12/05/2009	<20	<50	<100	<50	<200	-	
	16/07/2009	<20	<50	<100	<50	<200	-	
	18/10/2009	<80	<50	<100	<50	<200	-	
	15/01/2010	<20	<50	<100	<50	<200	-	
	27/4/2010	<20	<50	<100	<50	<200	-	
	23/7/2010	<20	<50	<100	<50	<200	-	
	21/10/2010	<20	<50	<100	<50	<200	-	
	13/04/2011	<20	<50	<100	<50	<200	-	
	21/10/2011	<20	<50	<100	<50	<200	-	-
	4/04/2012	<20	<50	<100	<50	<200	-	-
	12/10/2012	<20	<50	<100	<50	<200	-	-
	19/04/2013	<20	<50	<100	<50	<50	-	-
	31/10/2013	<20	<50	<100	<50	<50	-	-
	3/04/2014	<20	<50	<100	<50	<50	-	-
	22/10/2014	<20	<50	<100	<50	<50	-	-
	15/04/2015	<20	<50	<100	<50	<50	-	-
	8/04/2016	<20	<50	<100	<50	<50	<20	<50
MW17	21/10/2010	220	<50	<100	<50	<200	-	
	13/04/2011	110	<50	<100	<50	<200	-	
	21/10/2011	180	<50	<100	<50	<200	-	-
	4/04/2012	160	<50	<100	<50	<200	-	-
	12/10/2012	120	<50	<100	<50	<200	-	-
	19/04/2013	170	<50	<100	<50	<50	-	-
	31/10/2013	130	<50	<100	<50	<50	-	-
	3/04/2014	230	<50	<100	<50	<50	-	-
	22/10/2014	220	<50	<100	<50	<50	-	-
	15/04/2015	200	<50	<100	<50	<50	-	-
	8/04/2016	190	<50	<100	<50	<50	190	<50
MW18	21/10/2010	390	<50	<100	<50	<200	-	
	13/04/2011	200	<50	<100	<50	<200	-	
	21/10/2011	120	<50	<100	<50	<200	-	-
	4/04/2012	150	<50	<100	<50	<200	-	-
	12/10/2012	110	<50	<100	<50	<200	-	-
	19/04/2013	210	<50	<100	<50	<50	-	-
	31/10/2013	130	<50	<100	<50	<50	-	-
	3/04/2014	300	<50	<100	<50	<50	-	-
	22/10/2014	290	<50	<100	<50	<50	-	-
	15/04/2015	340	<100	<50	<50	<1	-	-
	8/04/2016	320	<50	<100	<50	<50	320	<50
MW20	21/10/2010	<20	<50	<100	<50	<200	-	
	13/04/2011	<20	<50	<100	<50	<200	-	
	21/10/2011	<20	<50	<100	<50	<200	-	-
	4/04/2012	<20	<50	<100	<50	<200	-	-
	12/10/2012	<20	<50	<100	<50	<200	-	-
	19/04/2013	<20	<50	<100	<50	<50	-	-
	31/10/2013	<20	<50	<100	<50	<50	-	-
	3/04/2014	<20	<50	<100	<50	<50	-	-
	22/10/2014	<20	<50	<100	<50	<50	-	-
	15/04/2015	<20	<50	<100	<50	<50	-	-
	8/04/2016	<20	<50	<100	<50	<50	<20	<50
MW21	21/10/2010	3260	<50	<100	<50	<200	-	
	13/04/2011	2380	<50	<100	<50	<200	-	
	21/10/2011	5610	<50	<100	<50	<200	-	-
	4/04/2012	3710	<50	<100	<50	<200	-	-
	12/10/2012	1790	<50	<100	<50	<200	-	-
	19/04/2013	5680	<50	<100	<50	<50	-	-
	31/10/2013	1690	<50	<100	<50	<50	-	-
	3/04/2014	1810	<50	<100	<50	<50	-	-
	15/04/2015	1040	<50	<100	<50	<50	-	-
	8/04/2016	360	<50	<100	<50	<50	360	<50

Notes:

[1]ANZECC (2000) Trigger Values for Freshwater - 95% species level of protection
[2]ANZECC (2000) Freshwater Low Reliability Trigger Values
LOR - Limit of Reporting

Cleanaway Refiners

Historical Groundwater Summary Results - VOCs

Job Number - QN937525
Cleanaway Refiners - 11 Kyle Street, Rutherford, NSW
Annual GME
Table 7 - Historical Groundwater Summary Results - Halogenated Aliphatic Compounds

All units in µg/L unless otherwise stated

Sample ID	Sampling Date	Halogenated Aliphatic Compounds																											
		1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2,3-Trichloropropane	1,2-Dibromo-3-chloropropane	1,2-Dichloroethane	1,2-Dichloropropane	Bromomethane	Carbon Tetrachloride	Chloroethane	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromomethane	Dichlorodifluoromethane	Hexachlorobutadiene (HCB)	Iodomethane	Pentachloroethane	Trichloroethene (TCE)	Tetrachloroethene (PCE)	trans-1,2-Dichloroethene	Trichlorofluoromethane	Vinyl Chloride	vic-1,2-Dichloropropane	trans-1,4-Dichloro-2-butene
LOR		5	5	5	5	5	5	5	5	5	5	50	5	50	50	5	5	5	50	1	5	5	5	5	5	5	5	5	5
MW12	20/11/2007	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	2	<5	<50	<50	<5	<5
	1/05/2008	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	<1	<5	<50	<50	NA	NA
	31/07/2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<10	<1	<1	<1	<10	<1	<1	<5	<1	<1	<1	<10	<10	NA	NA
	30/10/2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<10	<1	<1	<1	<10	<1	<1	<5	<1	<1	<1	<10	<10	NA	NA
	12/05/2009	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<10	<1	<1	<1	<10	<1	<1	<5	<1	<1	<1	<10	<10	NA	NA
	16/07/2009	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	18/10/2009	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	15/01/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	<5	<5	<5	<5	<5	<5
	27/4/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	<5	<5	<5	<5	<5	<5
	23/7/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	<5	<5	<50	<5	<5	<5
	21/10/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	<5	<5	<50	<5	<5	<5
	13/4/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<1	<5	<5	<5	<5	<5	<50	<5	<5	<5
	21/10/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	4/04/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	12/10/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	19/04/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	31/10/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	3/04/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	22/10/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	15/04/2015	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
	8/04/2016	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
MW17	21/10/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	147	<5	<5	<50	<5	<5	<5	<5	28	<5	<50	<50	<5	<5
	13/04/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	144	<5	<5	<50	<5	<5	<5	<5	31	<5	<50	<50	<5	<5
	21/10/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	94	<5	<5	<50	<5	<5	<5	<5	34	<5	<50	<50	<5	<5
	4/04/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	92	<5	<5	<50	<5	<5	<5	<5	26	<5	<50	<50	<5	<5
	12/10/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	87	<5	<5	<50	<5	<5	<5	<5	46	43	<5	<50	<50	<5	<5
	19/04/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	59	<5	<5	<50	<5	<5	<5	<5	38	47	<50	<50	<5	<5
	31/10/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	88	<5	<5	<50	<5	<5	<5	<5	59	16	<50	<50	<5	<5
	3/04/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	52	<5	<5	<50	<5	<5	<5	<5	64	72	<50	<50	<5	<5
	22/10/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	68	<5	<5	<50	<5	<5	<5	<5	76	69	<50	<50	<5	<5
	15/04/2015	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	67	<5	<5	<50	<5	<5	<5	<5	77	61	<50	<50	<5	<5
	8/04/2016	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	65	<5	<5	<50	<5	<5	<5	<5	63	64	<50	<50	<5	<5
MW18	21/10/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	228	<5	<5	<50	<5	<5	<5	<5	67	66	<5	<50	<5	<5
	13/04/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	202	<5	<5	<50	<5	<5	<5	<5	64	52	<5	<50	<50	<5	<5
	21/10/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	74	<5	<5	<50	<5	<5	<5	<5	17	18	<5	<50	<5	<5
	4/04/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	76	<5	<5	<50	<5	<5	<5	<5	23	28	<5	<50	<50	<5	<5
	12/10/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	76	<5	<5	<50	<5	<5	<5	<5	40	51	<5	<50	<50	<5	<5
	19/04/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	55	<5	<5	<50	<5	<5	<5	<5	35	74	<5	<50	<50	<5	<5
	31/10/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	74	<5	<5	<50	<5	<5	<5	<5	44	48	<5	<50	<50	<5	<5
	3/04/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	54	<5	<5	<50	<5	<5	<5	<5	50	120	<5	<50	<50	<5	<5
	22/10/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	61	<5	<5	<50	<5	<5	<5	<5	81	114	<5	<50	<50	<5	<5
	15/04/2015	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	63	<5	<5	<50	<5	<5	<5	<5	70	128	<5	<50	<50	<5	<5
	8/04/2016	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	104	<5	<5	<50	<5	<5	<5	<5	85	130	<5	<50	<50	<5	<5
MW20	21/10/2010	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	13/04/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	21/10/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	4/04/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	12/10/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	19/04/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	31/10/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	3/04/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
	22/10/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5
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MW21	21/10/2010	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<50	<10	<5	<5	<50	<10	<5	<5	<5	11	3040	<10	<50	<10	<5
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	21/10/2011	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	10	2820	<5	<50	<50	<5	<5
	4/04/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	11	3620	<5	<50	<50	<5	<5
	12/10/2012	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	11	4060	<5	<50	<50	<5	<5
	19/04/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	10	3340	<5	<50	<50	<5	<5
	31/10/2013	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	5	1940	<5	<50	<50	<5	<5
	3/04/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	5	1230	<5	<50	<50	<5	<5
	22/10/2014	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	8	1490	<5	<50	<50	<5	<5
	15/04/2015	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	<5	<5	<5	<50	<5	<5	<5	<5	<5	676	<5	<50	<50	<5	<5
	8/04/2016	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<50	94	<5	<5	<50	<5	<5	<5	<5	34	254	<5	<50	<50	<5	<5

Notes:

[1] ANZECC (2000) Trigger Values for Freshwater - 95% species level of protection
[2] ANZECC (2000) Freshwater Low Reliability Trigger Values
[3] ANZECC (2000) 99% level of protection (recommended where chemical may bioaccumulate or 95% provides inadequate protection for test species)
LOR - Limit of Reporting

5 Environmental performance goals.

List of all occasions in the preceding twelve month period when environmental performance goals for the development have not been achieved, indicate the reason for the failure to meet the goals and the action taken to prevent the recurrence of that type of incident.

Performance goal not achieved	Reason for failure and preventive/corrective action taken
NA	

6 Comparison of the environmental impacts those predicted in the EA.

Comparison of the environmental impacts and performance of the development against the environmental impacts and performance predicted in the EA and the additional information listed under condition 1.1

Based on actual emission results conducted in accordance with the EPL and dispersion modelling, no adverse environmental impacts are expected beyond the site boundary.

All model predictions show that the Cleanaway Refiners operations comply with EPA impact assessment criteria for all air emissions considered in this study.

In regard to potential risk of harm or nuisance, the results reveal that (if emitted at the maximum measured levels continuously over a year) off-site H2S and sulphuric acid mist concentration levels would be at around two third of the criteria, odour levels near the site would be one fifth of the criteria and other pollutant concentration levels would be negligible.

These environmental impacts are in line with predictions in the EA.

Independent Odour Emission assessment conducted by the Odour Unit in February 2012.

The purpose of the assessment was to identify all odour emission sources, sample these sources and assess ambient odour levels. The assessment would then recommend corrective actions if necessary.

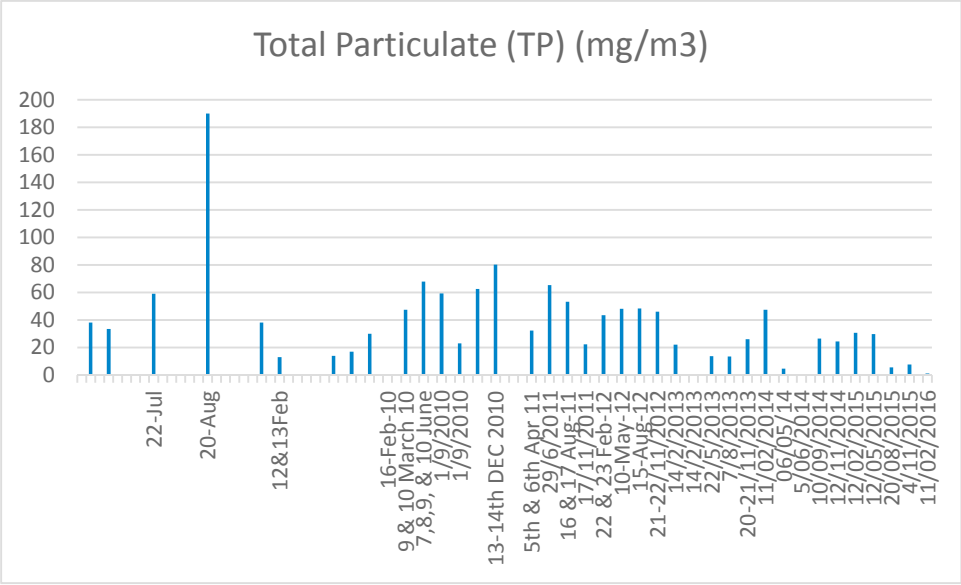
The assessment found odour emission rates to be extremely low for a refinery operation of this scale. Furthermore, given the very low odour emission levels the refinery's emissions would be most unlikely to cause significant odour impacts at the nearest sensitive receptor. Consequently, no corrective actions were identified.

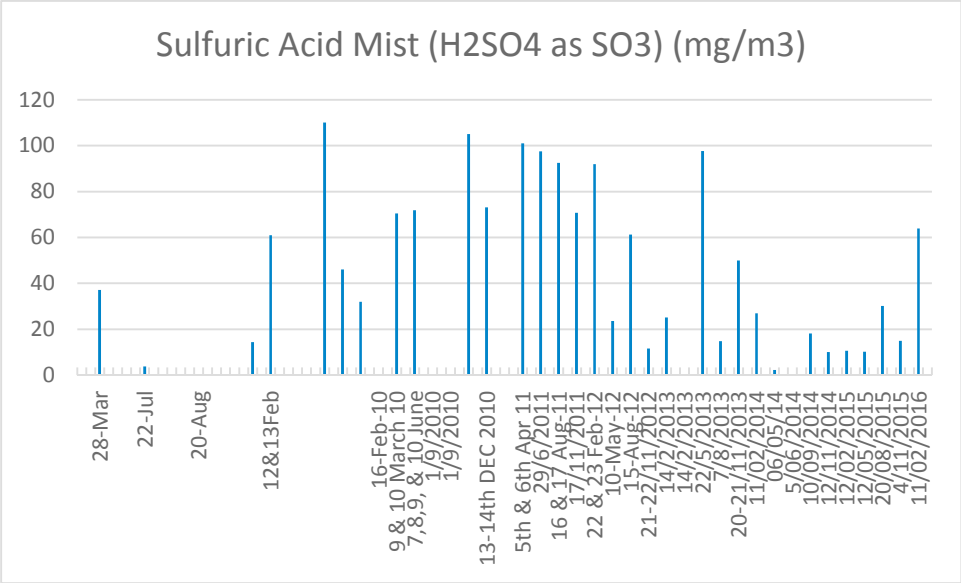
7 Identification of trends in monitoring data over the life of the development to date;

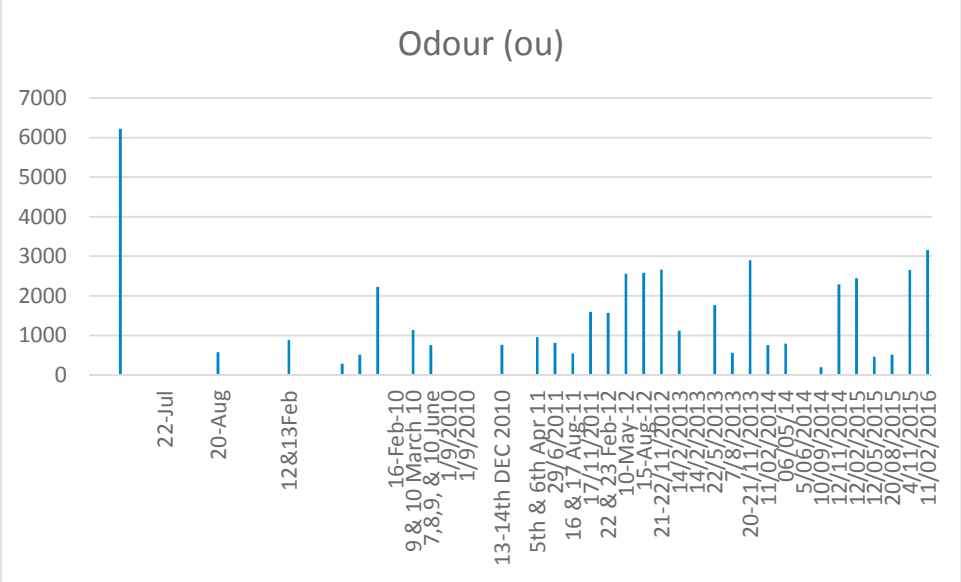
Stack testing
Emission monitoring testing indicates significant improvement in all parameters; since commissioning, continuous improvements in key areas have allowed the refinery to comply with all emission limits.

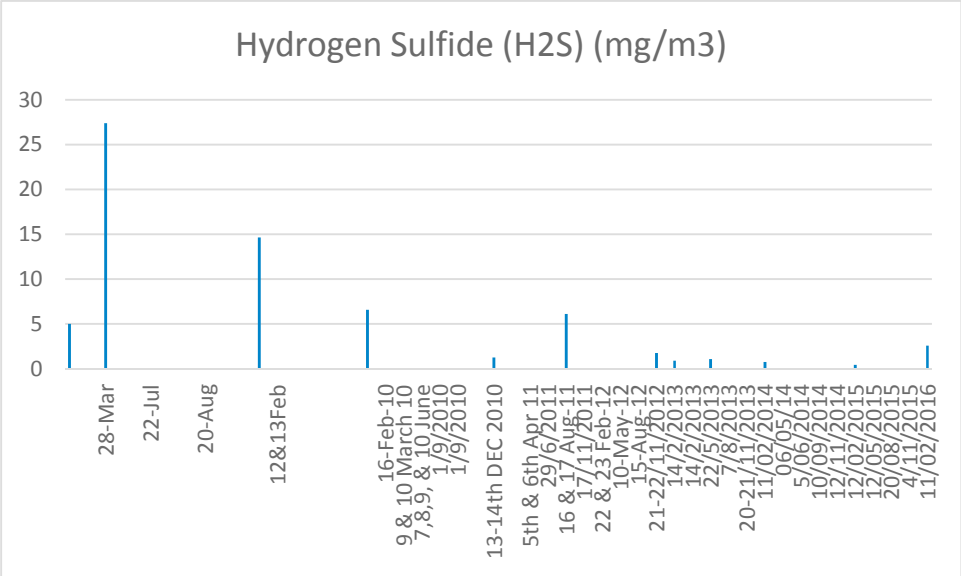
Below is a graphical representation for emission from Discharge Points 5 and 19.

Emissions from Point 19

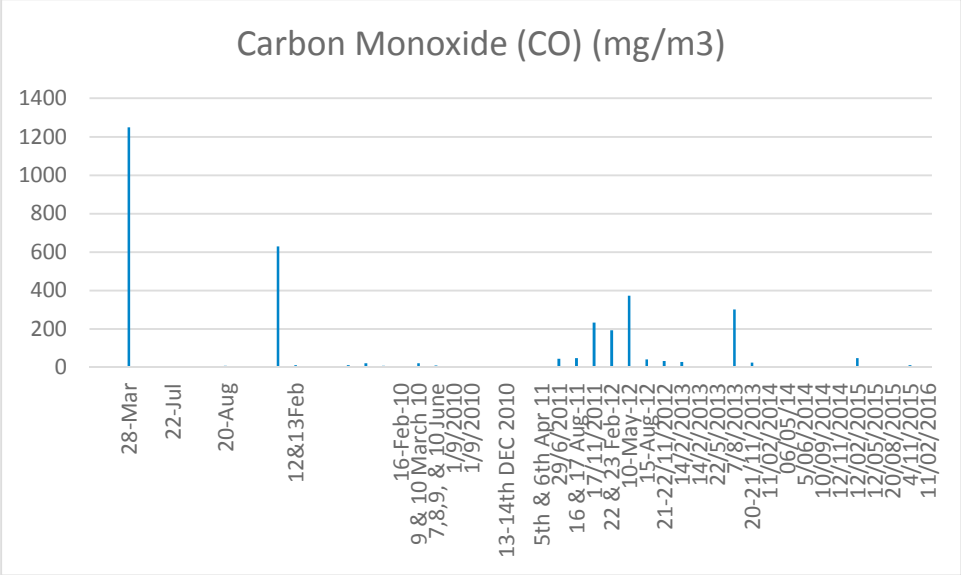




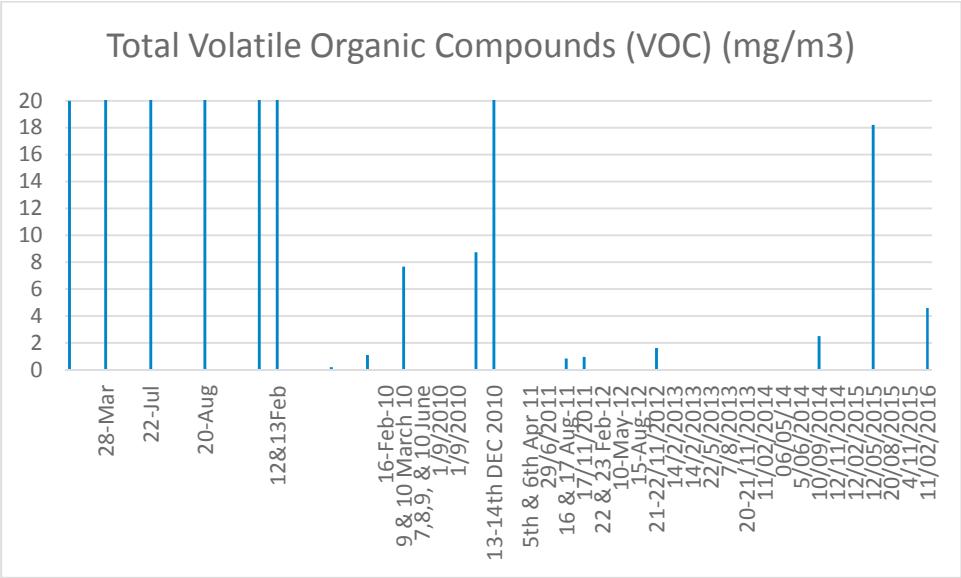




In December 2011, Cleanaway a cyclone downstream of the SOx scrubber but upstream of DP19 in order to reduce the concentration on TSP matter and H2SO4 emissions from this discharge point. Unfortunately, this cyclone did not produce the anticipated reduction in emissions.



Emissions from Point 5



Note Scale 0 – 20

VOC levels from emission Point 5 have dropped significantly since the commissioning of the plant. A higher than expected results was measured in December 2010 and Cleanway commissioned an investigation into emissions from DP5 under varying operating conditions in order to identify potential impacts on VOC emissions. Under most conditions, VOC emissions were well within licence limits. However, it was discovered that under certain circumstances VOC emissions at DP5 in the order of 70mg/m3 could result during process tank transfers.

Cleanaway Refiners implemented a number of measures to prevent a recurrence of the non-compliance:

1. Installed an activated carbon filter on the final discharge from DP5 (as an interim measure).
2. Replaced the VRU spray nozzles with a different spray pattern in order to improve vapour scrubbing within the VRU (upstream of DP5).
3. Installed a pressure transmitter on the process tank farm vapour header with dynamic feedback to our SCADA control system. Cleanaway Refineries has also included alarms to advise operators when the header vents to DP5
4. Implemented simultaneous transfers of product to and from the process tank farm wherever operationally practicable to minimise the frequency of venting from the process tank farm header to DP5
5. Replaced the temporary activated carbon filter with an engineered activated carbon filter bank (including lead-lag system) upstream of DP5.

6. Routine monitoring of VOC concentrations at each stage of the Activated carbon bank to maintain performance

Subsequent emissions monitoring has demonstrated the efficacy of these control measures as VOC emissions from DP5 are well within licence limits

Ground Water

The potential for offsite migration of contaminants of potential concern (CoPC) is negligible for several reasons:

- Contamination levels are very low – The groundwater is only slightly contaminated with tetrachloroethylene (PCE) and trichloroethylene (TCE). In the case of PCE, these contamination levels are just above the ANZECC 2000 Guidelines for the 95% protection of freshwater ecosystems. In the case of TCE, contamination levels are well below the ANZECC trigger value.
- The contamination is limited to the area surrounding the old dye and finishing warehouse from the textile mill located in the centre of the property – PCE and TCE has been detected in low levels in the wells immediately adjacent to the former dye and finishing warehouse. Only trace levels of PCE have been occasionally detected in other wells (well below the ANZECC 2000 trigger values).TCE has not been detected in other wells.
- CoPC will be physically and chemically retarded by aquifer colloids and minerals by the time they migrate off-site.
- High salinity within the groundwater aquifer, which is typical of the region, makes the groundwater unsuitable for irrigation or stock watering. Consequently, there are no bores in the vicinity of the site for these purposes and there are effectively no potential users of this aquifer. Therefore, the consideration for off-site migration for CoPC can be reasonably limited to groundwater runoff into Stony Creek.
- Groundwater migration rates are extremely low – The Parsons Brinkerhoff report on 21 November 2005 calculated the groundwater flow velocity to be just 10-3 m/d (i.e. 1 mm/d). This equates to well over 1,000 years for the groundwater to migrate to Stony Creek. The Environmental and Earth Sciences report calculated the groundwater attenuation rate to be 2.4m/year. At this rate, it would take groundwater emanating from the site over 200 years to reach Stony Creek.
- On-going routine groundwater monitoring will identify any potential off-site migration well in advance of the event allowing appropriate remedial action to be taken to mitigate any such event.

Note, On 23 September 2015 NSW EPA modified the Ground Water Monitoring Frequency from Bi-annual to Annual.

8 Environmental management targets and strategies.

Environmental management targets and strategies for the following twelve-month period taking into account identified trends in monitoring results

Air Quality
Maintain emissions within EPL12555 limits.

Fired Heater burner management:

The Fired Heater burner management has been upgraded in 2016. This provided more dynamic control which should improve unit efficiency.

Vent gas utilization

The vent gas utilization project has directed the waste gas stream with energy content to the reformer burner to utilize energy content.

Catalyst technology

New catalyst technology implemented new catalyst technology and material which has reduced heat energy requirements for material processing

Power

As part of compliance with the Energy Efficiency Operations Act, the site was audited for power saving opportunities in 2012. A number of opportunities have been identified. Those opportunities with a reasonable payback have been included in our capital plan and will be implemented accordingly.

Refer Vent gas utilization and catalyst technology.

Appendix A Conditions previously reported, which relate to construction or pre operational issues.

1	Administrative Conditions - The proponent shall carry out the project generally in accordance with the:	
PA 1.1 a)	EAR as amended by the preferred project report (Resource Recovery and Recycling Facility, Rutherford – Preferred Project Report), prepared by Parsons Brinckerhoff Australia Pty Ltd and dated May 2006;	Resource Recovery and Recycling Facility, Rutherford – Preferred Project Report
1.1 b)	Statement of Commitments (SOC) , prepared by Parsons Brinckerhoff Australia Pty Ltd and dated 19 May 2006; and	See below.
SOC 7	Pre construction compliance report.	Amendments to pre construction document date sent 16/03/07.
SOC 9	Construction Compliance report	Sent 21st Feb 07 & 22 Aug 07
SOC 10	Pre operation Compliance report	Sent 22/08/07
SOC 12	Environmental Impact Report.	Air Noise Validation Report from ENSR, sent 22/12/08
SOC 17	CEMP to be prepared and implemented.	Sent to DoP 10/10/06
SOC 18	Audit OEMP against SOC	OEMP Sent 6/3/07 OEMP was superseded by the TPI National Integrated Management System (NIMS) which includes a Business Unit Annual Plan (BUAP).
SOC 19	Appointed Construction contractors have EMS prepared in accordance with ISO 14001.	CEMP was sent 10/10/06
SOC 32	Clearing Management Plan required prior to construction.	Detailed in CEMP Sent 24/11/06, Construction complete

SOC 33	Indigenous Heritage to be protected during construction.	No significant heritage was identified in study under taken, indigenous or otherwise. Complete
SOC 34	Non - Indigenous Heritage	As above Complete
SOC 35	CEMP to identify and protect heritage items.	No heritage items were identified in initial studies. CEMP required any additional items to be notified to project manager complete
SOC 36 a	Post commissioning validation in respect to odour	See Comprehensive Odour Audit submitted 19/12/08. Updated copy of the Pollution Reduction Program was submitted 5th October 2010
SOC 36 b	Full odour audit with olfactometry analysis	See Comprehensive Odour Audit submitted 19/12/08.
SOC 36 e	Dust monitoring to assess dust levels	Monthly dust monitoring program by ENSR, commenced April 08 and ceased on 30 October 2011 date, due to Project Approval Modification dated 18th October 2011.
SOC 40-42	Construction noise management plan	Addressed in CEMP. Complete
SOC 43-45	Operation Noise Management Plan.	Addressed in OEMP. Complete
Ground water management plan	Monthly level measurements	Monthly measurements commenced April 2008 and ceased on 30th October 2011 under Project Approval Modification dated 18th October 2011
	quarterly VOC tests requires	Scheduled quarterly testing by ENSR commenced November 07.

		This has been replaced with the project approval modification dated the 18th October 2011. Bi-annual testing is now undertaken as per the EPL.
1.4	The Proponent shall not process more than 40,000 tonnes of waste lubricant oils a year at the hydrogenation plant.	Included in EPL No 12555
1.5	This proposal shall lapse five years after the date on which it is granted.	The plant is now operational.
2.1	Except as provided in condition 2.2 of this consent and/or expressly permitted by an EPL, the Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing or disposal	Included in EPL No 12555
2.2	The Proponent shall only receive, store, treat, process or reprocess the following wastes at the site: Waste lubricant Oils	Included in EPL No 12555
2.3	The Proponent is prohibited from storing green waste and septic waste on site.	Not part of Cleanaway Refiners business
2.7	Design, operate and maintain the project in a manner that would achieve Best Available Control Technology for toxic air pollutants specified in Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (August 2005)	Addressed by Resource Recovery and Recycling Facility, Rutherford – Preferred Project Report
2.8 a)	The Proponent shall ensure that all stack air emission points at the site are designed to broadly conform to the general requirements of Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height	Stack Location Report 12/09/2007
2.8 b)	The Proponent shall ensure that all stack air emission points at the site are designed to accommodate and be built with sampling ports that conform with TM-1 as specified in Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales	Stack Location Report 12/09/2007.

2.9	The manufacture's design specification for the flare must include the design destruction efficiency and must be submitted to the EPA for approval. The EPA's approval in writing must be obtained by the Proponent prior to the installation of the flare,	Flare Design Brief 22/11/06
2.17	Prior to the commencement of construction, the Proponent shall submit to the Director-General for approval, a soil contamination validation report to confirm the presence, or otherwise, of any contamination within the construction footprint of the development, and to demonstrate that any contamination on the site is not inconsistent with the development. The validation report shall be prepared by a suitably qualified and independent person(s), and shall detail any additional measures that shall be implemented to address contamination, if identified, and if required	Soil Contamination Report sent 10/10/06
2.18	Within six months of the granting of the modified consent, the Proponent must complete the following groundwater contamination investigation and works which includes, but need not be limited to the following:	Groundwater Contamination Report 18/4/07, the finding of this report requires the installation of further bores and an assessment on the cation exchange capacity of the soil. This work commenced on 24/4/08, report submitted 21st July 08.
	a) An assessment of the potential for off-site migration of chemicals of potential concern (including Tetrachloroethene);	As above
	b) Identification, based on the activities carried out at the site, of suspected source locations. If suspected source locations are identified, an evaluation of the presence of DNPLs trapped in or above lower permeability zones above the regional groundwater aquifer must be undertaken (note that care must be taken to ensure that the regional aquifer is not penetrated at suspected source locations);	As above

	c) Works to assess regional groundwater and determination of hydrogeological characteristics (such as flow and direction). Such works must include the installation of additional wells across the site to: - enable the groundwater flow direction to be determined: - further investigate the lateral and vertical extent of groundwater contamination; - enable more accurate falling head tests and/or a pump test to be undertaken; and - allow collection of soil samples within the water bearing zone.	As above
	d) Soil samples collected must be analysed for organic carbon content and cation exchange capacity to allow fate and transport modelling to assess the potential for adsorption and retardation of dissolved organic compounds;	As above
	e) An assessment of risk posed by the contamination and recommendations for appropriate management requirements.	As above
	The Director-General and the EPA must be provided with a copy of the report detailing the results of the investigations within 7 months of the modified development consent being granted.	As above
	The Proponent shall comply with all reasonable requirements of the Director-General and the EPA in respect of the implementation of any measures presented in the Report. Any such works shall be completed within such time as the Director-General or the EPA may require.	All requests have been met
2	Hazards and Risks	
2.21 a)	Fire Safety Study covering the relevant aspects of the Department of Planning's Hazardous Industry Planning Advisory Paper No. 2	Revised Fire Safety Study sent 31/11/06. Fire Study revised and updated April 2013.
2.21 a)	Fire Safety Study covering the relevant aspects of the Department of Planning's Hazardous Industry Planning Advisory Paper No. 2 - approval for this	Fire Safety Study sent 31/11/06

	study shall also be obtained from the Commissioner of the NSW Fire Brigades/Rural Fire Service.	
2.21 b)	Hazard and Operability Study, The study shall be carried out in accordance with Department of Planning's Hazardous Industry Planning Advisory Paper No. 8 - HAZOP Guidelines.	Hazard and Operability Study sent 3 Nov 06
2.21 b)	Hazard and Operability Study, undertaken by an independent qualified person approved by the Director-General.	Approval received 24/10/06
2.21 c)	Final Hazard Analysis prepared in accordance with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis.	Final Hazard analysis sent 13/12/06
2.21 d)	Construction Safety Study prepared in accordance with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 7 - Construction Safety Guidelines	Construction Safety Study sent 30/11/06
2	Post Commissioning	
2.23	Prior to commencement of operations, the Proponent shall submit to the Director-General, a Pre-Start up Compliance Report, detailing compliance with conditions 2.21 and 2.22 including:	Pre start up compliance Report sent 22 Aug 07
	a) dates of commissioning of plant;	Commissioning of plant commenced 22 May 07 to 22 Sept 07.
	b) an action plan to implement recommendations made in studies listed in conditions 2.21 and 2.22; and	Ongoing requirements included in Annual Inspection and Test Plan.
	c) responses to each requirement imposed by the Director-General in respect of implementation of any measures arising from recommendations of the studies or reports referred to in conditions 2.21 and 2.22 and the hazards-related conditions of this approval, within such time as the Director-General may agree.	Letter of approval received 3 Oct 07

2.25	Prior to the Commencement of operations or as otherwise agreed by the Director-General, the Proponent shall provide a monetary contribution of $60, 000 to the RTA towards the upgrade of the New England Highway and Kyle St intersection to accommodate B-double.	Bank Guarantee Receipt issued May 2007
2.29	Prior to the commencement of construction work, the proponent shall submit to the Director General documentation detailing the internal traffic management plan, particularly the internal road works and car parking arrangement for the project.	Internal Traffic Management Plan sent 27/9/06
2.30	Prior to the commencement of construction work, the proponent shall demonstrate to the Director General that any applicable consent for the site access road works have been granted under section 138 of the Roads Act 1993.	Internal Traffic Management Plan sent 27/9/06
3	Construction Environmental Management Plan (CEMP)	Construction complete
3.3	Prior to the commencement of construction, the Proponent shall prepare (and following approval implement) a Construction Environmental Management Plan (CEMP) for the project to the satisfaction of the Director-General.	CEMP sent 10/10/06
3.4 a)	Soil, Water and Dust Management Plan to detail measures to minimise the disturbance of soil, erosion and the generation of dust during construction of the project.	CEMP sent 10/10/06
3.4 b)	Soil Contamination Protocol to manage soil contamination during site preparation and construction works	CEMP sent 10/10/06
3.4 c)	Vegetation Management Plan to detail measures to minimise the impact of vegetation clearing associated with the project and manage the rehabilitation of remaining remnants throughout the life of the development	Refer to SOC 46. Complete
4	Compliance	
4.1	Prior to the commencement of construction and operations, the Proponent shall certify in writing to the satisfaction of the Director-General, that it has	Pre-Construction Compliance Report sent 11/1/07

	complied with all the applicable conditions of this approval	
4	Compliance, Auditing and Independent Auditing	
4.2	Air Quality and Noise Validation Report	Report submitted 19 Dec 08
	Within 3 months of commissioning operations at the site, the Proponent shall submit an Operational Air and Noise Validation Report for the Project. This Report shall:	AS above
	a) be undertaken by a suitably qualified and experienced person(s);	ENSR
	b) assess whether the project is complying with noise criteria specified in condition 2.20 of this approval, and identify what additional measures could be implemented to ensure compliance should any non-compliance be detected;	As above
	c) validate that the performance of the project reflects the assumptions and conclusions made in the Preferred Project Report and the Environmental Assessment for Transpacific Refiners, Modifications to Existing Development, date 12 April 2007;	As above
	d) undertake air quality validation and performance verification reporting as detailed in the AQMP prepared by PAE, dated 20 March 2007 to validate compliance with the Protection of the Environment Operations (Clean Air) Amendment Regulation 2005 and the emissions inventory of the project as detailed in the Environmental Assessment for Transpacific Refiners, Modifications to Existing Development, dated 12 April 2007.	As above
	e) provide details of each round of Performance Verification Monitoring such that the monitoring frequency for all pollutants can be reviewed, as specified in the AQMP;	As above
	f) identify what additional measures could be implemented to ensure compliance should any non-compliance be detected; and	As above

	g) provide details of any complaints received relating to air quality generated by the project, and action taken to respond to those complaints.	As above
4.3	If the report identifies any non-compliance with the air quality limits imposed under this approval, an EPL for the development and/or does not reflect the conclusions made within the Environmental Assessment for Transpacific Refiners, Modifications to Existing Development, dated 12 April 2007, the Proponent shall detail what additional measures would be implemented to ensure compliance, clearly indicating who would implement the measures, when and how the effectiveness would be measured and report to the Director-General and the EPA.	As above
	The Proponent shall comply with all reasonable requirements of the Director-General or the EPA in respect to the findings presented in the Report.	Agreed
4	Independent Environmental Audit	
4.4	Within one year of the commencement of operations, and then as directed by the Director-General, the Proponent shall commission an Independent Environmental Audit of the development. This audit must:	Report submitted 19 Dec 08
	a) be carried out by a suitably qualified, experienced and independent audit team, that contains an odour specialist and hazard specialist, whose appointment has been endorsed by the Director-General;	As above
	b) be carried out in accordance with ISO 14010 and ISO 14011.	As above
	c) assess whether the project is complying with the conditions of both this approval and the EPL for the project	As above
	d) assess whether the project is being carried out in accordance with industries best practice;	As above
	e) review the adequacy of the OEMP for the project; compliance with the requirements of the approval and other licences and approvals; and	As above

	f) recommend measures or actions to improve the environmental performance of the project, and/or the OEMP for the project	As above
4.5	Within two months of commissioning this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General, with a response to any recommendations contained in the audit report	As above
6.2	Prior to the commencement of construction, the Proponent shall establish community complaints system to the satisfaction of the Director-General	Complaints Procedure sent 10/10/06. Advertisement placed in Maitland Mercury Friday 16 2007.