



# Operational Air Quality Monitoring Program

Clyde Terminal

# CONTENTS

<b>Introduction .....</b>	<b>2</b>
Risk Management Framework.....	2
<b>Key Performance Indicators .....</b>	<b>3</b>
<b>Sensitive Receptors .....</b>	<b>4</b>
<b>Dust .....</b>	<b>6</b>
Risk Assessment .....	6
Controls .....	6
Monitoring Requirements .....	6
<b>Odour .....</b>	<b>7</b>
Risk Assessment .....	7
Controls .....	7
Monitoring Requirements .....	7
<b>Volatile Organic Compounds (VOC) Emissions .....</b>	<b>8</b>
Risk Assessment .....	8
Controls .....	8
Tank List .....	8
Monitoring Requirements .....	9
<b>Record Keeping.....</b>	<b>11</b>
<b>Complaints and Incident Management .....</b>	<b>11</b>
<b>Compliance Reporting .....</b>	<b>12</b>

# Introduction

This document provides an outline of the risk based Air Quality monitoring at Viva Energy Australia Limited's Clyde Terminal in response to condition C30 of Development consent SSD 5147. The overarching goal of the monitoring program is to evaluate the performance of the operation and determining compliance with key performance indicators agreed in consultation with the EPA.

Condition C30 of the Development Consent is as follows:

*The Applicant shall prepare and implement an Air Quality Monitoring Program for the operation. The plan shall:*

- a) Be prepared and implemented by a suitably qualified and experienced expert;*
- b) Be prepared in consultation with the EPA;*
- c) Be submitted to the Secretary for approval within 3 months of the date of this consent;*
- d) Describe an air quality monitoring program that is capable of evaluating the performance of the operation and determining compliance with key performance indicators agreed in consultation with the EPA;*
- e) Includes record keeping, a complaints register and response procedure and compliance reporting.*

Beyond this, the primary environmental management goals for Clyde Terminal include:

- To dispose of waste generated from the site's activities in an appropriate manner.
- To minimise the discharge of volatile organic compounds, to the extent practicable, beyond the boundaries of the premises.
- To prevent discharge of offensive odours beyond the boundaries of the premises.

The objective associated with these goals is to demonstrate compliance with the development consent and environmental licence for the facility and provide information for continuous improvement in environmental protection.

## Risk Management Framework

The Clyde Terminal Hazards and Effects Management Process (HEMP) document reference (CGBT-HSE-001-7-F) provides an assessment of the hazards arising at the site from the storage, handling and distribution of hydrocarbon fuels and solvents. The hazards are systematically identified, risk-assessed and control measures are identified and implemented to provide a safe and healthy workplace and minimise environmental impacts.

# Key Performance Indicators

No complaints raised by the community / surrounding businesses/stakeholders with regards to air emissions, dust or odour related to terminal operations.

## **Benzene and VOC Emission limits - Compliance with emission levels set by EPL570**

<b>Assessable Pollutant</b>	<b>Load limit (kg)</b>
Benzene (Air)	26,000.00
Volatile organic compounds – Summer (Air)	
Volatile organic compounds (Air)	1,250,000.00

## **Odour Limits – Compliance with requirements set by SSD5147 and EPL570**

SSD5147 - C29: The Applicant shall not cause or permit the emission of offensive odours from the site, as defined under Section 129 of the POEO Act

EPL570 – L6.1: No condition in this licence identifies a potentially offensive odour for the purpose of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997 provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour

# Sensitive Receptors

Sensitive receptors are identified by the EPA in the Approved Methods as anywhere someone works or resides or may work or reside, including residential areas, hospitals, hotels, shopping centres, play grounds, recreational centres, and the like.

The Terminal is adjacent to commercial and industrial receivers on all sides, although Parramatta River and Duck River separate it from receivers to the south and east. The nearest residential receivers are located approximately 400m to the north-east, 1.1km to the south-east, 600m to the south and 800m to the west.

**Figure F-5A** illustrates the location of the nearest sensitive receivers in relation to the Terminal.



**LEGEND**

**Receivers<sup>A1</sup>**

- Industrial Receiver
- Non-residential Receiver
- Residential Receiver
- 43 Oak Street, Rosehill<sup>2</sup>
- Project Area Boundary<sup>A1</sup>

**Residential Receivers<sup>A</sup>**

- R1 128 James Ruse Dr, Rosehill
- R2 82-100 James Ruse Dr, Rosehill
- R3 71 James Ruse Dr, Rosehill
- R4 92 Acquith St, Silverwater
- R5 1 to 9 Mockridge Ave, Newington
- R6 529 John St, Rydalmere
- R7 35 John St, Rydalmere

**Non-Residential Receivers**

- N1 Our Lady of Lebanon Maronite Church
- N2 CS Church, Silverwater
- N3 Sydney Korean Catholic Community Church
- N4 Sydney Bahai Centre
- N5 Our Lady of Lebanon Aged Care Hostel
- N6 Rosehill Child Care Centre
- N7 Rosehill Public School
- N8 Bordering Industrial Premises Adjacent in all directions

Source:  
Aerial Imagery - Neamap 2013 Imagery

<sup>A</sup> Shell Clyde Terminal Conversion Environmental Impact Statement, Aecom 2013, Figure 1-3.

<sup>A1</sup> Shell Clyde Terminal Conversion Environmental Impact Statement, Aecom 2013, Figure 23-1

Note:  
<sup>1</sup> Shapefile manually created

<sup>2</sup> Likely to be most affected by noise from traffic generated by the proposed project.

0 100 200 300 Metres

Scale: 1:12,000

Coordinate System: GDA 1994 MGA Zone 58

This map was prepared in accordance with the provisions of the Environmental Protection Act 1986. It is not a representation of the environment and does not constitute a warranty, representation, or statement of fact. It is provided for information only and should not be relied upon for any purpose. The user of this map is responsible for ensuring that it is used in accordance with the provisions of the Environmental Protection Act 1986. The user of this map is responsible for ensuring that it is used in accordance with the provisions of the Environmental Protection Act 1986.

# Dust

## Risk Assessment

The risk associated with dust generated at the Viva Energy Clyde Terminal facility is low. The highest potential for dust generation from routine activities at the facility is during vehicle movements.

## Controls

Potential for dust generation during non-routine activities is to be assessed and managed by Viva Energy's Permit to Work system (QHSSE-080-M).

Refer to ***Clyde Terminal Conversion Project –Environmental Management Strategy: Appendix F-5 – Construction and Demolition Air Quality Management Plan*** for specific controls (document to be updated to include Operations activities).

## Monitoring Requirements

Visual monitoring for dust is to occur during routine site activities.

Where dust generated from the facility is observed potentially leaving the facility this is reported according to Viva Energy's Environment Incident Notification local operating procedure (QHSSE-1-45M) and an incident report and investigation commenced according to Viva Energy's HSSE & SP Management System Manual. Note any incidents that have the potential to cause serious and material environmental harm will be reported directly to both the EPA and the Dept of Planning.

# Odour

## Risk Assessment

Due to the distance to the nearest sensitive receptors, the risk associated with odour generated at the Viva Energy Clyde Terminal facility is low to moderate.

Potential sources of odour during Operations include:

- Odours associated with hydrocarbon vapours leaving storage tanks.
- Odours generated during excavation and management of soil.

## Controls

Refer to ***Clyde Terminal Conversion Project –Environmental Management Strategy: Appendix F-5 – Construction and Demolition Air Quality Management Plan*** for specific controls (document to be updated to include Operations activities).

## Monitoring Requirements

Odour monitoring is achieved as part of the following activities:

- Odour levels to be observed and recorded during regular site surveillance. Potential for odour generation during regular activities may also be assessed during Job Start meeting and Barrier Thinking meetings.
- Potential for odour generation during non-routine activities is to be assessed and managed by Permit to Work.
- An odour survey of the facility conducted as part of the annual emissions survey. This consists of the following:
  - a perimeter walk of facility observing odour conditions along the way;
  - will be conducted during summer, as this is the most likely occurrence of odour detection due to temperature;
  - conducted by suitably qualified and experienced consultant; and
  - Results will be documented and distributed in accordance with Compliance Reporting section below EPA & DP&E.

Where odour is observed at the boundary or potentially leaving the facility this is reported according to Viva Energy's Environment Incident Notification local operating procedure (QHSSE-1-45M) and an incident report and investigation commenced according to Viva Energy's HSSE & SP Management System Manual.

Note any incidents that have the potential to cause serious and material environmental harm will be reported directly to both the EPA and the Dept of Planning.

# Volatile Organic Compounds (VOC) Emissions

## Risk Assessment

The risk associated with VOCs generated at the Viva Energy Clyde Terminal facility is low to moderate. Potential sources of VOCs include:

- Emissions associated with hydrocarbon leaving storage tanks.

## Controls

Refer to **Clyde Terminal Conversion Project –Environmental Management Strategy: Appendix F-5 – Construction and Demolition Air Quality Management Plan** for specific controls (document to be updated to include Operations activities).

## Tank List

Please note this list is dynamic and will change through different phases in the Project up to End State Terminal: this list is indicative only.

TANK NUMBER	TANK TYPE	TANK CONTENTS (2013 14)
Tank 15	VRT	DIESOLINE
Tank 22	VRT	DIESOLINE
Tank 23	VRT	DIESOLINE
Tank 27	VRT	DIESOLINE
Tank 36	EFRT	V-POWER
Tank 37	EFRT	V-POWER
Tank 38	EFRT	V-POWER
Tank 39	EFRT	PULP
Tank 4	VRT	DIESOLINE
Tank 40	EFRT	PULP
Tank 41	EFRT	PULP
Tank 42	EFRT	JET A-1
Tank 55	EFRT	V-POWER
Tank 56	EFRT	V-POWER (previously TOPS)
Tank 60	EFRT	V-POWER
Tank 61	EFRT	V-POWER
Tank 63	VRT	DIESOLINE
Tank 64	IFRT	JET A-1
Tank 65	IFRT	JET A-1
Tank 66	VRT	JET A-1 (previously Naphtha)
Tank 67	VRT	JET A-1 (previously Naphtha)
Tank 68	IFRT	JET A-1
Tank 80	VRT	DIESOLINE
Tank 82	EFRT	SLOPS
Tank 84	IFRT	PULP
Tank 85	VRT	JET A-1
Tank 86	EFRT	ULP
Tank 87	EFRT	ULP
Tank 90	EFRT	ULP
Tank 91	VRT	SLOPS
Tank 92	VRT	SLOPS
Tank 104	VRT	SLOPS
Tank 105	VRT	SLOPS
Tank 106	VRT	SLOPS
Tank 1704	IFRT	V-Power

Note: VRT – Vertical Roof Tank; EFRT – External Floating Roof Tank; IFRT – Internal Floating Roof Tank

# Monitoring Requirements

Monitoring of VOCs for Clyde includes the following activities:

- **Operations Surveillance and Assurance** including a program of site inspections of tanks pumps and pipelines. (Tanks inspected monthly via checklist, pump monitoring conducted twice a shift)
- **Conduct of Maintenance.** The maintenance program for the Clyde Terminal is documented in SAP PM which also generates instructions for equipment maintenance. Safety Critical Equipment is tracked nationally i.e. the target is to have zero safety critical maintenance items overdue. A specialist contractor is retained to carry out any required maintenance in a short timeframe.  
The tank maintenance program also includes maintenance on floating covers and associated vapour sealing systems as part of scheduled off stream inspections.
- **Emission Estimation.** Emissions from the storage tanks are estimated using the techniques in line with the National Pollutant Inventory (NPI) reporting process (as per Viva Energy's Air Emissions Controls and Reporting Process (QHSSE-108-M). These estimates are used both for submission to NPI and for the Annual Return required under EPL 570.

The NPI is a database of air, land and water emissions of 93 substances that have been identified as important due to their potential effect on human health and the environment.

The Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) administer this database. Data is submitted on a site by site basis and is reviewed and verified by the relevant State or Territory Environment Protection Agency (EPA). Once verified, the data is published on the NPI website annually for general public access.

Reporting emissions to the environment as part of the NPI is a legislative requirement if the reporting threshold is tripped within a reporting year.

The process for calculating and reporting air emissions is largely to comply with the NPI requirements. The reporting process has been divided into four stages as outlined below:

<b>STAGE 1 - REVIEW AND UPDATE</b>
Review updates to the National Pollution Inventory (NPI) guidelines and NPI Emission Estimation Technique Manuals methodology. Review and update the NPI reporting assets (facility) database. Review any infrastructural changes and new combustion sources. Update changes to the fuel speciation.
<b>STAGE 2 - DATA COLLATION</b>
Collate and validate data for each reporting facility.
<b>STAGE 3 - EMISSIONS CALCULATION</b>
Complete NPI threshold assessment to determine which sites are to be reported. Calculate emissions for each facility.
<b>STAGE 4 – EMISSIONS REPORTING</b>
Report emissions in NPI Online Reporting System. Report Total VOCs in the Viva Energy reporting system. Emissions publication externally on the NPI website.

Emissions are calculated using the methodology contained in the NPI Emission Estimation Technique (EET) manuals. The manuals that are used specifically for calculating emissions at the Clyde Terminal include:

- NPI Emission Estimation Technique Manual for Fuel and Organic Liquid Storage, Version 3.2, February 2010.
- **Annual emissions survey of the facility** to be conducted by an independent air quality consultant.
  - The survey will consist of boundary, ground-level VOC measurement and will aim to verify the EIS predictions with regards to VOC and Benzene concentrations.
  - The proposed method to use is USEPA TO-14A & TO-15: A sample of ambient air would be drawn into an evacuated passivated 'SUMMA' canister through a restrictive timer. The timer regulates the air flow so that it takes 24 hours to obtain a sample. The canister is then sent to NATA accredited laboratory for analysis by GC/MS for VOCs, including library match.
  - In the event of VOC screening levels being exceeded, an investigation of possible external sources and on site sources will be undertaken.

The proposed annual frequency of the emissions survey is based on the Clyde EIS conclusion as below:

*“Operation of the converted Clyde Terminal is not predicted to result in exceedances of applicable air quality criteria. Potential odour impacts from operation of the Clyde Terminal are also considered to be negligible. As such, no additional mitigation measures are considered necessary for operation of the converted Clyde Terminal”.*

Additionally, the annual frequency of the survey is consistent with other similar sized Viva Energy Fuel Storage facilities in Australia (in both Victoria and Queensland).

## Record Keeping

Documented routine site surveillance and assurance activities are retained on site for a period of 4 years, responsibility for their maintenance is with the Terminal Controller.

Records of maintenance are retained on site for a period of 4 years by the Terminal Controller.

Records regarding throughput are retained on site by the Terminal Manager, with annual emissions calculated in line with Environment Protection Licence (EPL570) and National Pollutant Inventory (NPI) requirements. Submissions pertaining to EPL570 are retained by the Terminal Manager, with NPI records retained by the Environment Operations Lead.

These records will be made available to DPE on request.

<b>Air Quality - Monitoring Requirements Summary</b>				
<b>Aspect</b>	<b>Description</b>	<b>Frequency</b>	<b>Record Keeping</b>	<b>Responsibility</b>
Complaints	Complaints register maintained	Ongoing, as required	Complaints Register retained on site for 4 years	Terminal Manager
Odour	Internal monitoring of odours Boundary walk	Ongoing, as required (at least annual)	Not required, may be noted in daily log Annual Odour survey report	Terminal Manager
Dust	Visual, no record required. May be noted in toolbox talks or daily log.	At all times	Not required	Terminal Manager/Operators /Contractors
VOCs	Terminal throughput data	At all times	Files retained on site	Terminal Manager
	Annual Returns	Annual	Lodged with EPA and retained on site	Terminal Manager
	NPI submission	Annual	Submitted to NPI database, calculations retained on company server	Environment Operations Lead
	Site Surveillance and assurance	At all times	Retained on site for 4years	Terminal Manager
	Maintenance Activities	As required	Retained on site for 4years	Terminal Manager
	VOC emissions survey	Annual	Retained on site for 4 years	Terminal Manager

## Complaints and Incident Management

Where air emissions (odour, dust etc) generated from the facility are observed potentially leaving the facility or an air quality complaint is received from the community this is reported according to Viva Energy's Environment Incident Notification local operating procedure (QHSSE-1-45M) and an incident report and investigation commenced according to Viva Energy's HSSE & SP Management System Manual. Note any incidents that have the potential to cause serious and material environmental harm will be reported directly to both the EPA and the Dept of Planning.

It is expected that if complaints are received from the community regarding air quality from the facility the above risk assessment will be reviewed and further monitoring activities considered.

# Compliance Reporting

Reporting on air quality will be completed according to requirements under the EPL 570 and NPI.

Under EPL 570, VOC emissions and any non-compliance with licence conditions relative to dust and odour are reported,

In order to comply with condition C30 of SSD5147, data collected from actions detailed in this monitoring plan will be collated an annual statement prepared in line with the anniversary date during July each year in accordance with condition D4(b) of SSD5147.

CONTROLLER USE ONLY		
Issue date	Document changes made and approved by owner	MoC # if change to procedure/process
26/3/15	Draft document issued by Colin Davis, Guy Mullarkey	n/a
10-07-2015	Revised draft issued by Colin Davis	n/a
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