terminals pty. ltd.

GEELONG SITE

ANNUAL ENVIRONMENT PERFORMANCE REPORT FOR 2007/2008

LICENCE NO. EW214

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DECLARATION

I hereby state that I have authorised the preparation and issue of this Environmental Performance Report and that it is complete, correct and accurate to the best of my knowledge and belief. I am unaware of any past or current circumstances which would render the report misleading or inaccurate.

_____ Date: _____

George Horman

Managing Director, Terminals Pty Ltd

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Manager South West Region - EPA	.....	1
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1. INTRODUCTION

Construction of the Geelong Terminal in Wharf Road, Corio, began in 1972 and has expanded steadily to its present size and complexity. The Terminal has at present 5 Horton pressure spheres of a total capacity of 21,060m^3. Product currently allocated for storage is Vinyl Chloride Monomer in four spheres and Butadiene in the other sphere. Butadiene sphere was commissioned in October 2006.

Ten (10) conventional tanks were erected of various sizes with a total capacity of 7,700 cubic metres over these years. These tanks are for general usage such as, vegetable oils, industrial chemical, petrochemicals and petroleum products. Also one semi pressurised (70 kPa) tank, called Tank 2.10, of 2200 cubic metre capacity was built in 1999 to store Mono Iso Propyl Amine (MIPA) and now stores general flammable products or other general chemicals. Additionally in May 2008, four new conventional storage tanks were commissioned in Bitumen service. Two grades of bitumen are handled and each grade is stored in a 6,500 cubic metres tank plus a 500 cubic metres day tank.

Products are generally handled into and out of the terminal by:

a) sea-going parcel tankers from the refinery pier berth used co-jointly with the Shell Company;

b) Road Tankers;

Tank 2.10 material can also be transferred to Shell, if appropriate, by connecting a short pipe spool.

The plant generally operates on a 5-day, 3-cycle shift operation.

In July 1996, Geelong site gained ISO 14001 certification for its Environmental Management System. In 2000, EPA reviewed our EPA licence. Consequently, Terminals was directed to develop an Environment Improvement Plan, (EIP), and subsequently an annual report by 30th September of each year, consisting of interpretation of existing monitoring data including air, water, land plus EPA reportable incidents and any changes proposed to the Environment Improvement Plan, dated July 2000. Further in April 2007 a new licence was issued incorporating the new butadiene sphere, thermal oxidizer (combustor) for treating butadiene waste, ammonia refrigeration package and other equipment. This licence includes air emission discharge limits and annual performance reporting to the EPA by 30th September each year and is included as Appendix A. In addition the licence covers a Monitoring Plan for air, water and groundwater. This was approved by the EPA in July 2007 and is included as Appendix B. This performance report will assess Terminals compliance to this Monitoring Plan.

From September 2001, Terminals has submitted annual performance reports (called EIPs prior to 2007) covering its environmental performance for the financial year. This is the eighth annual performance report covering 2007-2008 financial year and the second under the new EPA licence.

In March 2005, Terminals started the Geelong Community Consultative Committee (TGCCC) to cover its Geelong site operations at Wharf Road, Corio. Terminals has developed an Environment Improvement Plan in conjunction with the TGCCC and the EPA to cover the next three years. It has been approved by the TGCCC and the EPA. It is included as Appendix C.

2. ENVIRONMENT POLICY

Terminals Pty Ltd has an integrated approach in its Environment Management, Safety Management and Quality Management Systems with the underlying themes of protecting the environment and safety of all people as well as continual improvement.

The Environment Policy is shown below.

ENVIRONMENT POLICY

It is the policy of Terminals to operate our facilities in a manner that will protect the environment.

This policy is founded on:-

- Identifying and managing the environmental risks associated with our business.
- Providing training and promoting environmental awareness and responsibility amongst all employees.
- The efficient use of resources and minimisation of waste or loss.
- Periodic environmental assessments of our facilities, from which ongoing improvement programs will be implemented.
- Compliance with regulatory requirements is the minimum acceptable level of performance.

In addition, all employees and contractors, working on site, are inducted to the site. This includes signing Terminals Health, Safety and Environment rules. The HSE rules are:

HEALTH, SAFETY AND ENVIRONMENT RULES

All Terminals' employees are to abide by the following rules.

1. Possession and/or consumption of intoxicating liquor, or drugs not prescribed by a medical practitioner are forbidden in Terminals' operating facilities. Attendance at work under the influence of intoxicating liquor or drugs is not permitted.

2. Physical and verbal abuse, harassment, and/or discrimination of any kind is forbidden.

3. Horseplay and practical jokes are prohibited on Terminals' premises.

4. All employees shall comply with working/operating procedures as per Operating Procedures (including MSDS), Environment Management and Safety Management Manual or instructions.

5. Personal protective clothing and equipment provided by Terminals must be worn as per Safety Management Manual, Operating Procedures and Emergency Plan or instructions.

6. All warning and environment/safety signs must be obeyed.

7. No safety/environment device or system (eg. machine guards, fire pumps, critical operating interlocks, vapour emission control, groundwater control, etc) shall be made inoperative nor compromised as per the Operations Procedures and Environmental Management Manuals. .

8. All injuries, no matter how slight, must be reported to a person's immediate supervisor.

9. All bund valves must be always shut except as per draining procedures (Operations or Environmental Manuals).

10. All spills or leaks of solid, liquid or gaseous materials (which are dangerous goods or environmental hazardous) must be immediately reported to supervisor; contained and cleaned up promptly as per Emergency Procedures Manual and management instruction.

11. All work areas and amenities must be kept safe and tidy. Access to fire fighting, emergency equipment and emergency exits must be kept clear at all times.

12. Cross ties between potable (drinking) water and any other system, without back flow protection, are prohibited.

13. All road tankers, drums and transfer equipment shall be earthed when flammable chemicals are handled.

14. Pigs, when contaminated with natural oil, must be immediately placed in drums full of water with closed lid.

15. Smoking is not permitted on site.

3. ANNUAL AUDIT PROGRAM

The internal audit program for 2007 calendar year totalled 15 audits of the Geelong site including audit topics of operations, maintenance, training, incident reporting, management review, work permits and environmental management systems. A further six audits have been conducted in the first half of 2008. Internal EMS Audit Summary, incorporating action plan, is attached as Appendix D.

Lloyds Register audited the Geelong site for EMS ISO 14001 and QMS ISO 9001 compliance in November 2007. There were no major nor minor non-conformances.

The second round of MHF licensing resulted in a new 5 year MHF licence from July 2007. Worksafe have visited the site on several occasions over the last 12 months. This has included a carcinogenic licence audit, oversight visit and an extensive annual MHF licence audit in July 2008. There has been only one Improvement Notice, which related to access to operate manual valves for adding foam to storage tanks in a fire emergency. This has been rectified by adding actuators to these foam valves with activation at ground level.

4. ENVIRONMENTAL INCIDENTS

Historical trend of environmental incidents is detailed below. These are defined as spills greater than 200 ltrs, EPA reportable incidents (ie cause or likely to cause an offsite discharge or odour), licence breaches, monitoring program (air, water and groundwater) criteria exceedances and EPA infringement actions.

There were six environmental incidents:-

- When doing emission calculations for 2007/2008 financial year, it was found that the methyl ethyl ketone (MEK) emissions exceeded the new annual licence limit (1825 kg/year). The last three years of emission results before 2007 showed that the total annual mass rates for MEK were below the new licence criteria. Throughput for MEK has more than doubled over the last 24 months from about 2,400 cubic metres per annum to 4,900 cubic metres per annum resulting in an additional 850 kg emissions due to working losses and in turn contributing towards the Total Annual Mass limit being exceeded by 1093 Kg. The mass emission rate limit for MEK was never exceeded ie 400 g/min maximum compared to licence limit of 700 g/min. Hence the cause of the annual mass emission exceedance was more ship parcels over the 12 months rather than any peak emission rates to atmosphere.

  The preventative action is to transfer MEK product from the existing conventional atmospheric storage tanks to a semi pressurised tank (T 2.10) in September 2008. This set up will include returning vapours to the ship during ship unloading operations and the tank pressure rating avoids diurnal breathing to atmosphere. This will prevent storage tank emissions and overall reduce MEK waste emissions from 2,918 kg (07-08) to less than 1,400 kg (08-09 estimated).

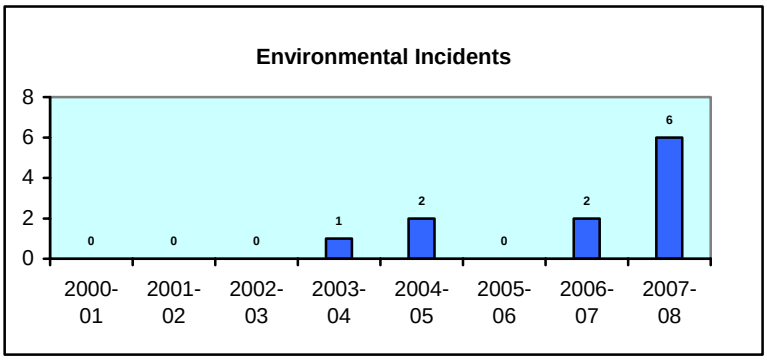
- New EPA licence clauses 1.4, 1.5 & 1.6 were inadvertently breached when a new chemical of n-hexane was put into a storage tank without first seeking and gaining approval from the EPA. An internal incident report was raised and the cause investigated. The outcome is to initiate a system to check all new EPA licence clauses when clients request storing new chemicals via the Terminals Client Enquiry Form.

- In May 2008, approximately 200 litres of a heating oil spill escaped from our site boundary onto a dirt vehicle accessway adjoining our site. It was contained before discharging into Corio Bay or any further. The hot oil spill emanated from a safety valve connected to a bitumen hot oil heater due to changing process conditions after normal operating hours. EPA was notified and inspected the clean up process. The preventative actions are primarily to construct additional containment means for safety valve discharges of oil and rectify process conditions that caused the safety valve to overpressure and discharge.

- Two stormwater monitoring events were missed in September 2007 and June 2008 quarters. This is a breach of our approved Monitoring Program (2007). An internal incident report was raised and the cause investigated. The latter was missed when three instead of the set of four samples were taken and missing the critical sample. The preventative actions are to include these monitoring events into the well managed maintenance planner to ensure all monitoring is carried out and appropriate checking of all samples are being taken.

- There was no testing of NOx when the combustor discharge was tested over the last twelve months. This is a breach of our approved Monitoring Program (2007). An internal incident report was raised and the cause investigated. The latter was inadvertently missed when analysing for carbon monoxide and butadiene during combustor operation in conjunction with a butadiene ship unloading operation. The preventative actions are to ensure clarifying of combustor testing when commissioning contractors to undertake this work.

Chart 1



There were no community complaints during 2007/2008. Historically this is consistent with the performance of no community complaints.

5. AIR DISCHARGE

5.1 Air Emissions

Tabulated below shows a comparison of the estimated air emissions with the emission limits specified in revised 2007 EPA licence, Table 1, which came into effect in April 2007. All emissions in 2007-08 are below the new licence mass emission limits except Methyl Ethyl Ketone. The last three years of emission results before 2007 showed that the total annual mass rates for MEK were below the new licence criteria. Throughput for MEK has more than doubled over the last 24 months from about 2,400 cubic metres per annum to 4,900 cubic metres per annum resulting in an additional 850 kg emissions due to working losses and in turn contributing towards the Total Annual Mass limit being exceeded by 1093 Kg. The mass emission rate limit for MEK was never exceeded ie maximum was 400 g/min compared to licence limit of 700 g/min. Hence the cause of the annual mass emission exceedance was more ship parcels over the 12 months rather than any peak emission rates to atmosphere.

The preventative action is to transfer MEK product from the existing conventional atmospheric storage tanks to a semi pressurised tank (T 2.10) in September 2008. This set up will include returning vapours to the ship during ship unloading operations and the tank pressure rating avoids diurnal breathing to atmosphere. This will prevent storage tank emissions and overall reduce MEK waste emissions from 2,918 kg (07-08) to less than 1,400 kg (08-09 estimated).

Waste	EPA Licence Total Mass Rate (g/min)[2]	Estimated Maximum Mass Rate for 2006-07 (g/min)	Estimated Maximum Mass Rate for 2007-08 (g/min)	EPA Licence Total Annual Mass Rate (Kg/annum)	Estimated Emissions for 2006-07 (Kg/annum)	Estimated Emissions for 2007-08 (Kg/annum)
1,3 Butadiene[6]	25	23.8	0.03 [7]	135	124	5.1
Carbon Monoxide[5]	20	2.6	3.3 [7]	930	14	23.1
Gasoline	600	360	420	1825	888	822
Methyl ethyl Ketone	700	490	400	1825	2596	2918
Non-specified VOC [3]	1300	310	730	4000	1995	2032
Total Nitrogen [1] oxides[5]	50	18	23	1300	94	112
VCM [4]	25	0	19	100	0	11.5

Notes:

(1) 'Total Nitrogen oxides' means the sum of all oxides of nitrogen expressed as nitrogen dioxide.

(2) 'Total Mass Rate' includes emissions in gram per minute for all discharge points but excludes safety releases.

(3) 'Non-specified VOC' means the sum of emissions of all volatile organic compounds not otherwise listed in above table.

(4) Emission only during vessel degassing.

(5) This data is based on the combustion products from the combustor based on NPI emission factors for natural gas usage for large wall fired boilers (Table 25) including, in 2008, hot oil heaters plus butadiene burned. Butadiene was considered as butane (Table 29) as heat of combustion values are within 3% and the chemical formulae differs only by four hydrogens. Estimated NOx mass rate in grams/minute is based on a worst case basis of actual maximum butadiene flow rates to the combustor per hour; and this estimate has included natural gas usage by the hot oil heaters. It was noted that natural gas usage was approximately 5% of the butadiene burned in both years. The additional nitrogen with the butadiene treated was not accounted for in the above estimates of the combustion products.

(6) In 2007-2008; the butadiene emission estimates are based on a combustor treatment efficiency of 99.99% based on eight sample results from four testing periods over the last two years. The butadiene discharge results have been below the level of detection for every test. The AWN report states greater efficiency results of 99.9996% whereas this efficiency assumption is based on the reported highest detection level (0.05 g/min) in conjunction with the combustor hours of operation. Hence 99.99% is considered a conservative estimate of efficiency. In 2006-07; the minimum design treatment efficiency of99.6% was used for emission estimates.

(7) These results are measured discharge values during combustor operation of treating butadiene venting stream. Butadiene results are from four tests during two testing periods and where all results were below the level of detection. For this exercise the results were conservatively taken as the level of detection rather than zero. Carbon monoxide results are from two combustor discharge samples during one butadiene venting period.

VOC is defined as per Victorian EPA definition of all hydrocarbons with a vapour pressure greater than 0.01kPa whereas the NPI definition is hydrocarbons with a vapour pressure greater than 0.272kPa. This means emission estimates are conservative and are likely to be greater than NPI estimated VOC amounts

The hydrocarbon emission estimates are based on US Tanks 4.0 or API 42 software calculations as a function of storage tank dimensions, chemical physical properties, and tank or container filling quantities and duration in the tank. Estimated maximum emission rates per minute are based on the same software methodology but for maximum filling rates of a storage tank during one hour ie worst case.

Butadiene emissions are based on the combustor feed rate plus a calculated butadiene concentration derived from the pressure and temperature of the contents within the sphere or quantity from the contained volume and, overall, a 99.99% estimated combustion efficiency. This butadiene treatment efficiency has changed from 2006-07 as now based on having eight butadiene discharge measurement results over four testing periods over two years while previously used the minimum guaranteed design treatment efficiency (ie 99.6%). All results have been below the level of detection. This efficiency estimate is based on the highest level of detection (ie 0.05 g/min) in conjunction with the combustor hours of operation and hence considered a conservative low efficiency factor. This is conservatively low when considering the AWN reported efficiency of 99.9996% detailed in Appendix F.

The butadiene maximum emission rate per minute is based on the average measured results during four samples over two testing periods. All results were below the level of detection but this value was conservatively used as the estimated emission rate. The monitoring of the combustor performance was carried out while venting the sphere and separately a combination of sphere venting and degassing the dockline during butadiene ship unloading in September and December 2007, respectively. The results showed full compliance to the licence mass rate of 25 g/min by a factor of around 1,000 and were below the level of detection ie 0.01 and 0.05 g/min. Specifically AWN has reported a combustor treatment efficiency of 99.9996%. This highlights the compliance to the EPA emission limit and the conservatively high reporting of butadiene emission rates in the above table. Butadiene monitoring results are detailed in AWN reports attached as Appendix F.

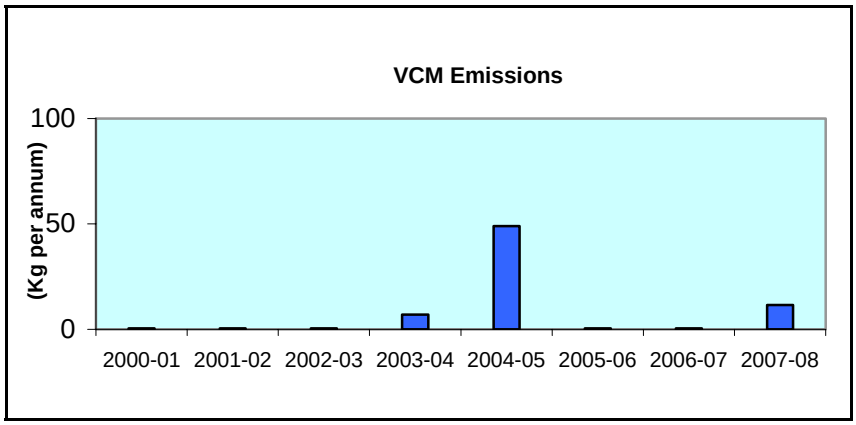
A table showing general chemical emissions per annum for each chemical and tank is detailed in Appendix E.

There was no testing of NOx during the combustor testing of CO and butadiene. This is a breach of the approved monitoring program.

5.1.1 VCM Emissions to Air

There are no vinyl chloride emissions to air from the storage and handling operations. The exception is any emissions due to planned ten year internal inspections of the four spheres or any leaks. This is detailed below.

Chart 2



These VCM emissions represent planned sphere internal inspections which occurred in February 2008 (sphere 2100), February 2005 (sphere 2200), August 2004 (sphere 2300) and the 7kg leak ex GRS vessel in March 2004. They do not include fugitive emissions which are detailed in section 5.2, called Leak Detection Program.

5.1.2 Previous Air Emissions from Hydrocarbons

Historical air emissions compared to the previous licence criteria are detailed below.

Chart 3

Graphs the maximum cases of average tank emissions per day for each year over July 2000 to June 2006 (previous to new April 2007 licence).

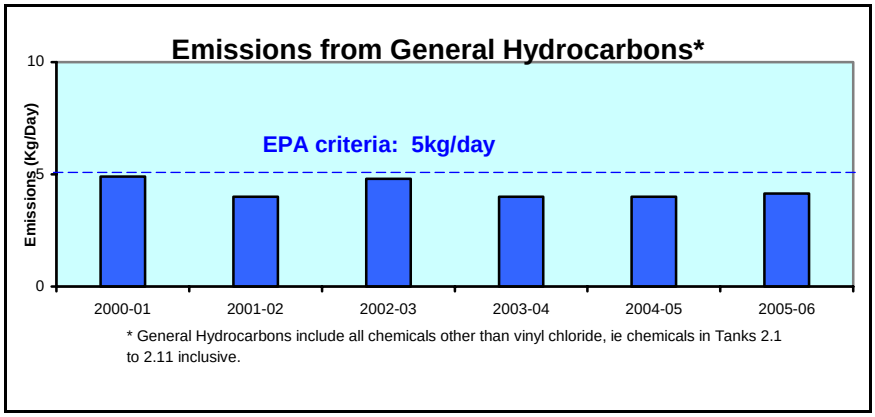
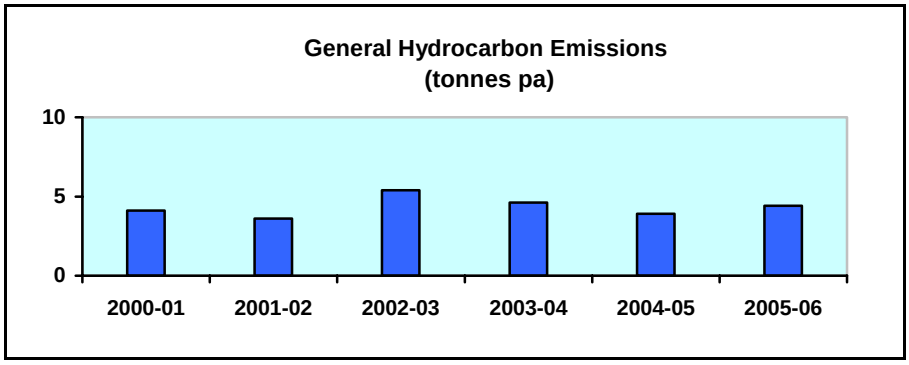


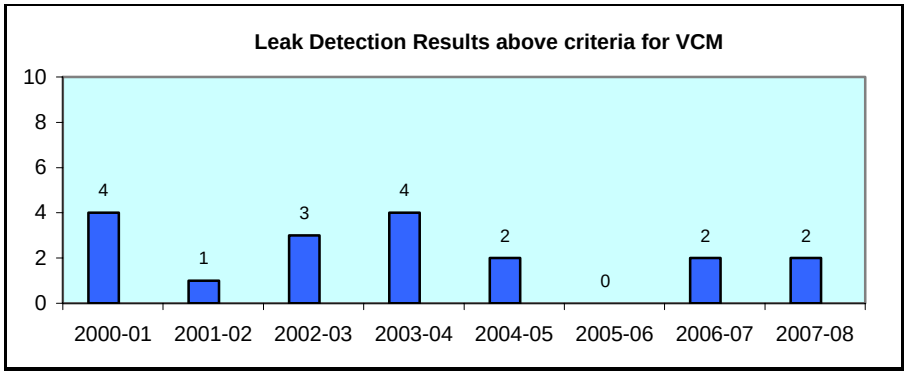
Chart 4



5.2 Leak Detection Program

Terminals has a comprehensive leak detection program mainly for Vinyl Chloride Monomer, recently implemented for Butadiene and previously Tank 2.10 material when in MIPA or gas condensate service. This involves checking every flange, gland and fitting over an 8 week cycle.

Chart 5



The criteria is 10ppm reading at 15cm from the source using a Photo Ionisation Detector (PID). Generally leak sources are valve packings around valve items or flanges that are rectified by tightening the gland packing or flange. For 2007-08; there were two VCM fugitive emissions detected at valve stems compared with a total of 6,454 results. These were rectified on the same day basis. There were no leaks detected for Butadiene during 2,643 tests.

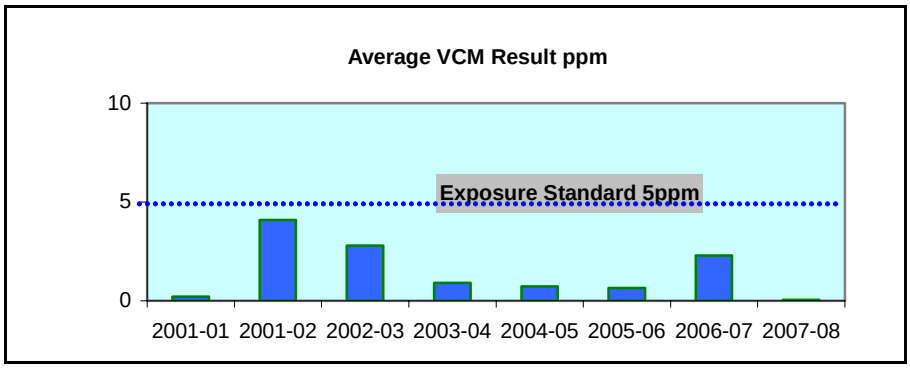
Summary Table of Leak Detection Results									
		2000-01	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**
VCM	No of results	3,515	3,679	3,822	4,020	4,088	6,312	6743	6,454
	No. of results above 0 ppm	12	5	4	3	2	0	2	3
	No. of results above criteria level	4	1	3	4	2	0	2	2
Tank 2.10 Material	No of results	732	1,529	2,146	680	3,100	1,260		
	No. of results above 0 ppm	1	0	8	0	0	0		
	No. of results above criteria level	1	0	2	0	0	0		
Butadiene	No of results							834	2,634
	No. of results above 0 ppm							0	0
	No. of results above criteria level							0	0

5.3 Onsite Air Monitoring

5.3.1 VCM

Ambient or personal air monitoring for VCM showed no emissions of concern based on Worksafe exposure standards of 5ppm over 8 hours and the Short Term Exposure Limit of 15ppm over 30 minutes.

Chart 6



A detailed analysis of VCM results is tabulated below.

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Average (ppm)	0.21	4.1	2.8	0.9	0.7	0.64	2.2	0.04
Standard deviation (ppm)	0.95	23.4	10.9	2.7	2.0	2.1	8.2	0.07
Number of samples	43	83	72	78	52	60	89	44

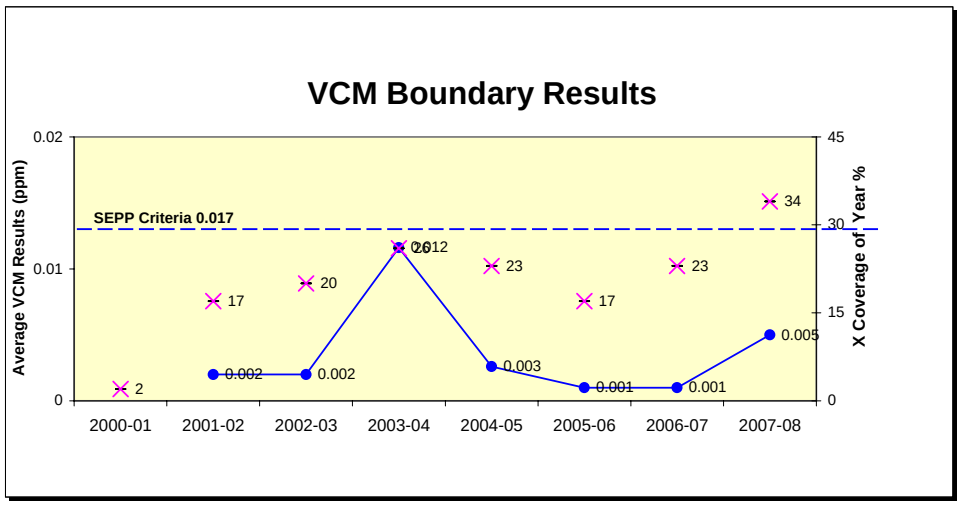
The vast majority of results were below the level of detection; which was 0.01 ppm. The score of detection level rather than zero was conservatively used for estimating above results. The results were low and consistent indicating a well controlled site. The sampling covered personal monitoring involving road tanker loading and general duties over eight hours. Charcoal passive badge monitors were used.

5.4 Boundary Air Monitoring

5.4.1 VCM

Plant boundaries in all directions are monitored for VCM usually for a period of 5-9 days every month. These samples are taken using the charcoal passive badge monitors. These results are assessed against the SEPP (Air Quality Management) value for VCM which was changed in 2003 from 0.033 ppm to 0.017ppm for estimated ground level concentration outside plant boundary from dispersion modelling. These results are generally an order of magnitude below the criteria.

Chart 7



In 2000-01 there were no results detected above the instrument sensitivity which was generally 0.1ppm and trialled at 0.001ppm for one set of longer duration samples. These high sensitivity results were not meaningful compared to the SEPP criteria so this led to the trials on sensitivity and consequently improved to 0.001ppm. The 2000-01 VCM result was not graphed due to the sensitivity level being generally above the SEPP criteria.

This year's results had an average of 0.0057 from 54 samples with a standard deviation of 0.0047 and analysis of sensitivity of either 0.010 or 0.001ppm. There were no results above the SEPP criteria of 0.017 ppm. The vast majority of results were below the level of detection. The score of detection level rather than zero was conservatively used for estimating above results and this resulted in a higher average than previous years due to the number of results at the higher sensitivity level of 0.010 ppm.

5.4.2 BUTADIENE

During this reporting 12 months; ambient monitoring results for butadiene were not detected in concentrations exceeding the reporting limit in either the combustor stack or ambient locations during the sphere venting. Ambient air monitoring has been carried out on one occasion during the ship unloading operation in September 2007. The ambient sampling set involved one upwind and two downwind at the worst location predicted from dispersion modeling. This completes the ambient monitoring program covering three ship unloading operations.

Specifically all ambient butadiene results were below the detection limit of 0.003 mg/Nm3 compared to the EPA SEPPA Schedule B intervention level for butadiene of 0.11 mg/m3 for a one hour averaging period. This approximately corresponds to a three minute average concentration of 0.20 mg/m3 and a 24 hour average concentration of 0.057 mg/m3. Compliance is readily indicated for both source orientated (approximate three minute average) and background (approximate 24 hour average) monitoring programme. Butadiene monitoring results are detailed in AWN reports attached as Appendix F.

6. STORMWATER MONITORING RESULTS

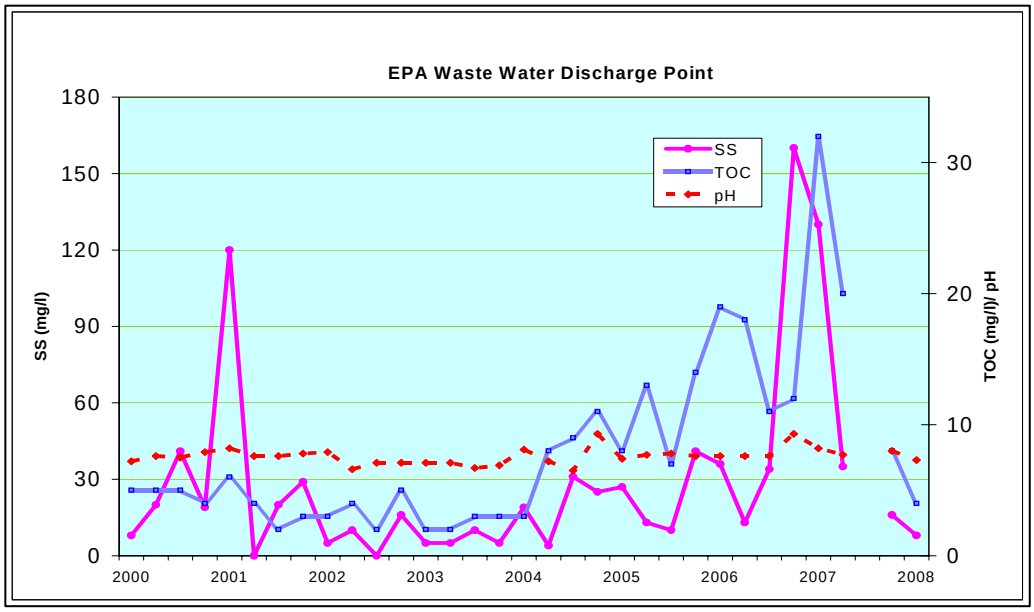
There were two non compliances over the last 12 months to the Monitoring Program (2007) and previously the Environmental Management Manual. These were for missing water samples in the September quarter 2007 and the June quarter 2008. The latter involved taking three samples instead of four samples where the critical sample was the one missed. An incident report was raised and the cause investigated. The outcome is to ensure a sampling prompt is included in the maintenance schedule and to ensure appropriate checking of samples takes place.

Historically, there have been only two non compliances previously; in 2001 and 2004.

Date	SS (mg/l)	Toxicity (%)	Visible Oil/Grease	pH	TOC (mg/l)
2000	9			7.2	5
	20			7.6	5
	41			7.5	5
	19			7.9	4
2001	120			8.2	6
	<5			7.6	4
	20			7.6	2
	29			7.8	3
2002	5	100	Nil	7.9	3
	10	100	Nil	6.6	4
	<5	100	Nil	7.1	2
	16	100	Nil	7.1	5
2003	5	100	Nil	7.1	2
	5	100	Nil	7.1	2
	10	100	Nil	6.7	3
	5	80	Nil	6.9	3
2004	19	100	Nil	8.1	3
	4	100	Nil	7.2	8
	31	100	Nil	6.5	9
	25	100	Nil	9.3	11
2005	27	100	Nil	7.4	8
	13	100	Nil	7.7	13
	10	100	Nil	7.8	7
	41	100	Nil	7.6	14
2006	36	100	Nil	7.6	19
	13	100	Nil	7.6	18
	34	100	Nil	7.6	11
	160	100	Nil	9.3	12
2007	130	100	Nil	8.2	32
	35	100	Nil	7.7	20
	16	100	Nil	8.0	8
2008	8	100	Nil	7.3	4
LICENCE LIMIT:	**80**		**Nil**	**6-9**	**40**

The stormwater discharged from the premises to Corio Bay was sampled twice over the 12 months rather than every quarter. Any exceedances to these limits requires an Incident Report to be raised so follow up action can be determined. Results are detailed in the graph below.

Chart 8



7. GROUNDWATER MONITORING

The April 2007 EPA licence condition 2.2 requires reporting of groundwater monitoring results as detailed in the EPA approved monitoring program, dated July 2007. Previously this section reported on the same parameters but under a different arrangement of a joint Terminals and Shell management plan for identified hydrocarbon impact at the Terminals' site on Wharf Road, North Shore since August 1998.

As per the approved monitoring program; monitoring of five hydraulically down gradient monitoring wells for TPH and BTEX occurred in July 2008. Results found all analytes were below the ANZECC Guidelines for Protection of Aquatic Eco systems – Marine Water (1992) and Fresh and Marine Water Quality (2000). Low levels of TPH, predominately in the C_{10} to C_{36} fraction, were found. These levels were consistent or decreasing when compared with previous year's results. Results are detailed in the OTEK Australia report, attached as Appendix G.

OTEK report gauged all monitoring wells and found consistent results to previous years in terms of both location and quantity of SPH. Four wells showed a SPH level compared with five wells in 2007 report. These wells are located in the north eastern part of the site, opposite Shell. In addition, Shell undertake quarterly monitoring of all 19 monitoring wells for water and SPH levels as well as regular analyzing of all wells. Results are consistent with previous results.

In summary, the Shell data and groundwater monitoring report by OTEK continues to support the theory that the plume is stable, not increasing and all downgradient results meet the ANZECC Guidelines for Protection of Aquatic Ecosystems. At this stage, the plan is to continue the existing monitoring programs by Shell and Terminals.

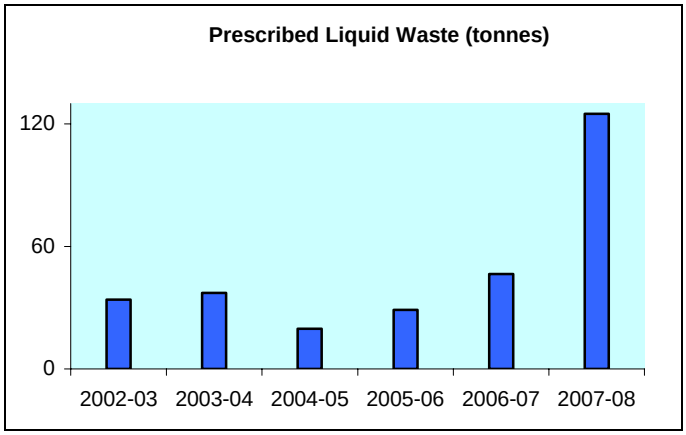
8. PRESCRIBED WASTE

8.1 Liquid Waste

Prescribed liquid waste is generally line and tank washings and contaminated stormwater. Where possible, liquid waste is minimised, reused (eg. MEG pipeline flushings) and recycled (eg. flushings of Shell solvents).

Total prescribed liquid waste being treated off site over the last six years, is shown below.

Chart 9



The increased waste quantity was caused by:

- Washings from cleaning a tank (2.8) from a waxy service
- Product slops due to greater number of ship parcels and the previous recycling of this stream has been eliminated.

The breakdown of the prescribed liquid waste is detailed below and compared with last year's results.

	2006-07	2007-08
Flammable solvent based wastes (F160)	0	0.6
Tank and pipeline cleaning (L150)	30	80.5
Flammable organic solvents (G120)	16.6	6.8
Oils/water hydrocarbon mixtures (J130)	0	17.2
Non flammable solvent based wastes – slops (F120)	0	18.9
Total	**46.6**	**124.0**

8.2 Sewage

The sewage was connected to the sewer mains in October 2005 to Barwon Water. The average weekly sewage quantity is estimated at around 7,000 ltrs/week, resulting in an annual quantity of 360K litres.

8.3 Solid Waste

Prescribed solid waste consists of contaminated sponges, pigs and rags. This was 0.60 tonnes for the last 12 months compared with 0.90 tonnes for the previous 12 months. These are generated from mostly cleaning wharf lines. This solid waste is collected and transported off site by Energy Recovery Pty Ltd, who steam the waste to recover the organic solvent. The foam sponges (pigs) are then incinerated. Any chemically contaminated material is contained and disposed of separately under EPA approval.

Otherwise solid waste generated on site is predominately domestic/industrial rubbish. This is collected in waste bins. Approximately 1.5 cubic metres of waste is disposed to landfill per week. Therefore 78m^3 (62.4 tonnes) of non-prescribed domestic and industrial waste is disposed to landfill annually.

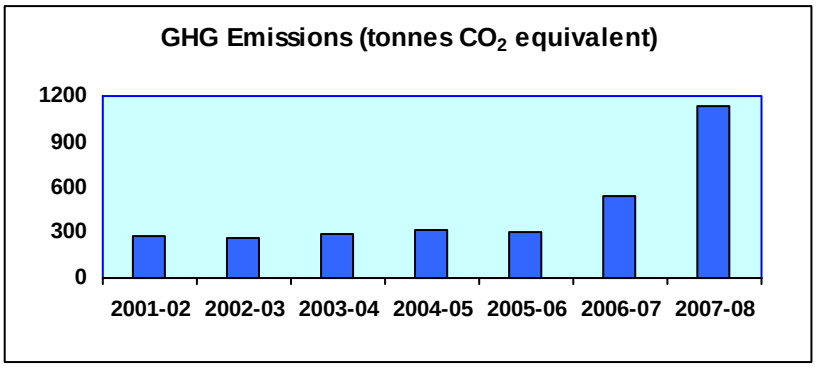
Administrative paper products are collected on a routine basis. Approximately 1 m^3 of paper products is collected and recycled quarterly. Therefore, a total of 4 m^3 (0.6 tonnes) of paper product is generated annually.

9. ENERGY EFFICIENCY AND GREEN HOUSE GASES

A level one energy audit was undertaken in September 2003 by ERM and submitted to the EPA in 2003. The energy assessment was undertaken as part of the Victorian EPA Protocol for Environmental Management (PEM) requirements, ie. a category B of the PEM requiring a level one energy and greenhouse gas assessment.

Energy usage in terms of Greenhouse Gas (GHG) emissions are graphed below in equivalent tonnes of CO_2 emissions.

Chart 10



These are derived from electricity for pumps/fans/utilities and diesel for firewater pumps and forklifts/trucks. In October 2006 a butadiene sphere storage and handling project was commissioned. This new equipment involved natural gas usage for the first time to operate a combustor (thermal oxidizer) to treat butadiene emissions; and substantial increase in electricity to operate a 144 kW capacity refrigeration system plus combustor air supply fan and butadiene transfer pumps. This current year is the first full year with the Butadiene operations. Further in May 2008 bitumen storage and handling operations were commissioned. This involves two hot oil heaters fueled by natural gas and two large circulating pumps operating continuously to maintain the bitumen handling at above 150 C. Also the bitumen fumes during a bitumen ship discharge are treated by the combustor requiring more natural gas and electricity for fan motors plus more electricity for transfer pumps. The electricity usage has increased from 201,356 in 2005-06 to 364,549 kWhrs for 2006-07 and further to 777,793 kWhrs for 2007-08. It appears the bitumen project can account for a substantial amount of the increase with the commissioning of the hot oil heating system early in 2008. Natural gas usage has increased from 64,298 MJ in 2006-07 to 152,244 MJ in 2007-08.

Electricity, natural gas and diesel usage is converted to GHG emissions (tonnes CO_2) using standard emission factors from the Australian Greenhouse Office (AGO) website. For 2007-08, electrical usage was 777,793 kWhours, equating to 1,123 tonnes of CO_2 emissions. Natural gas usage was 152,244 MJ, equating to 7.9 tonnes of CO_2 emissions. Electricity and natural gas usage is based on invoice meter readings. Historically, a minority of the records cannot be found and these values have been estimated based on the available majority of data. The reported natural gas readings in 2007-08 were not considered reliable and this usage was based on the monthly invoice costings which appear to match expected operational demands. Whereas the diesel usage is fairly consistent at 2,400 ltrs per annum.

GHG emissions (t CO_2 equivalent)

Fuel Type	01/02	02/03	03/04	04/05	005/06	06/07	07/08
Electricity	276	260	288	308	291	527	1123
Natural Gas	-	-	-	-	-	3.3	7.9
Diesel	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Total	283	267	295	315	297	537	1137

The breakdown of emission contributors are electricity around 99%, while natural gas and diesel are approximately 0.5% each. This breakdown is consistent with last years results.

Historically the GHG reduction action plan was limited to administrative measures with no actions of potential savings of 3 year payback. The main reason is the energy usage and overall greenhouse gases are minimal. However, with the new butadiene project and the bitumen project; energy usage and GHG have significantly increased as expected, albeit they remain at the low end of the PEM category B description. Fine tuning opportunities will be investigated as part of the new EIP. These could involve improving refrigeration effectiveness; reducing combustor temperature and in turn gas usage; investigating treating bitumen fumes in the hot oil heaters rather than combustor and improving bitumen heating effectiveness.

10. ENVIRONMENT IMPROVEMENT PLAN (EIP)

In March 2005, Terminals started the Geelong Community Consultative Committee (TGCCC) to cover its Geelong site operations at Wharf Road, Corio. Terminals has developed an Environment Improvement Plan in conjunction with the TGCCC and the EPA to cover the next three years to the end of 2008. This has been approved by the TGCCC and EPA and is included as Appendix C plus the updated status of the EIP actions.

Some of the major achievements include:

- Recycling water from sphere outages to Geelong council
- Installing a new remote water injection system to VCM spheres
- Installing high level alarms on all general chemical tanks
- Continuing annual groundwater monitoring program
- Replaced remaining asbestos gaskets in VCM service by completing the sphere 2100 internal inspection
- Minimise road tanker use of Shell Parade during school pickup and drop off times
- Replaced damaged motors for general chemical service with higher efficiency motors
- Installed under tank liner with leak detection on new tank 2.11 and installed concrete floor foundations with leak detection on sump on new bitumen tanks 2.12, 2.13, 2.14 & 2.15. This reduces the possibility of subsurface contamination from tank floor leaks.
- Continued various annual environmental reports.

The EIP status is summarised below.

Year	Targets/Actions	Completed
2005 to 2008	25	22