terminals pty. ltd.

MELBOURNE SITE

ANNUAL ENVIRONMENT PERFORMANCE REPORT 2009

LICENCE NO. EM29227

Copy No. 6
Peter La Rose – Terminals

CONTENTS

APPENDICES

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 that would render the report misleading or inaccurate.

Signed: _____ Date: _____

George Horman, Managing Director
Terminals Pty Ltd

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1. INTRODUCTION

Terminals Pty Ltd Melbourne is situated on two distinct sites located on Coode Island which is in the docks area of Melbourne. The original Terminals' site is called 'Plant B' and was constructed in the early 1960s. The other site is called 'Plant C' and was purchased from Powel Duffryn in 1992. The Melbourne site is located approximately 5 kilometres west of the Melbourne CBD and is bounded by Footscray Rd to the north, Maribyrnong River to the west, Swanson Dock to the east and the Yarra River to the south.

The 'Plant B' terminal is located on the western side of Mackenzie Road, Footscray on reclaimed land between the Maribyrnong River and DP World's container storage. The address is 54-62 Mackenzie Road. This site is adjacent to the Maribyrnong River and houses the administration areas, main tank farm, boiler house, vapour emission control system, drum filling facility and truck loading gantries.

The 'Plant C' terminal is also located on the western side of Mackenzie Road, south of the Melbourne B facility. The address is 70-78 Mackenzie Road. This site is adjacent to the Maribyrnong River and Maribyrnong No.1 berth. It houses the main offices, tank farm and truck loading gantries.

In 1998, Terminals started the Coode Island Community Consultative Committee (CICCC) to cover its Melbourne site operations on Coode Island. In 1999, Melbourne site gained ISO 14001 certification for its Environmental Management System. In 2001, an Environment Improvement Plan (EIP) was developed by Terminals in consultation with EPA, other agencies and the Coode Island Community Consultative Committee. This covered two years from 2002 to the end of 2004. Subsequently a new EIP has been developed for four years from January 2005 to the end of 2008. Presently the third EIP has been developed to cover four years from January 2009 to the end of 2012.

In April 2004, EPA changed the licence conditions in Terminals' EPA licence (No. EM29227) to reflect an accredited EPA licence. This recognises a high level of environmental performance and is based on:

- Terminals' environment management system.
- Environmental Audit Program by an independent EPA environmental auditor for industrial facilities in conjunction with the internal environmental auditing system. The independent audit program is detailed by AWN consultants in correspondence to the EPA dated 23 October, 2003.
- Environmental Improvement Plan developed in consultation with EPA and community consultative committee (CICCC).

In September 2009, the EPA made changes to the licence; specifically Table 1: Emission Limits for Discharges to Air. The emission limits have been significantly reduced in line with the continual good environmental performance of the thermal oxidiser (combustor) over several years. The new EPA licence is detailed in Appendix G.

This annual environment performance report covers the 2009 calendar year.

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 was upgraded in 2009 to strengthen the aim of continual improvement through the setting of targets and objectives.

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 objectives and targets will be set and reviewed to achieve continual improvement.
- ✪ 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 were updated in 2006 to provide a greater environmental awareness. They 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 are 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. AUDIT PROGRAM 2009

EPA accredited licence audit in 2009 was carried out over two days in October 2009. This was the sixth audit of this type under our new accredited EPA licence. The audit recommendations from the 2009 report plus the incomplete actions from the previous audits are tabulated in Appendix A. The auditor reported an improved performance to completing recommendations from previous audits as per the following quote from the conclusion;

> *"Melbourne Terminal Accredited Licensee Environmental Audits 1 – 6 (2004 – 2009) identified 44, 42, 15, 27, 23 and 19 action items respectively. The number of audit action items identified per annum during the period 2006 to 2009 were significantly less than for the period 2004 to 2005, corresponding to an improvement in environmental management at the Melbourne Terminal. This was reflected in the excellent closure rate for previous audit action items and a significant improvement in the management of documentation relating to environmental issues noted previously."*

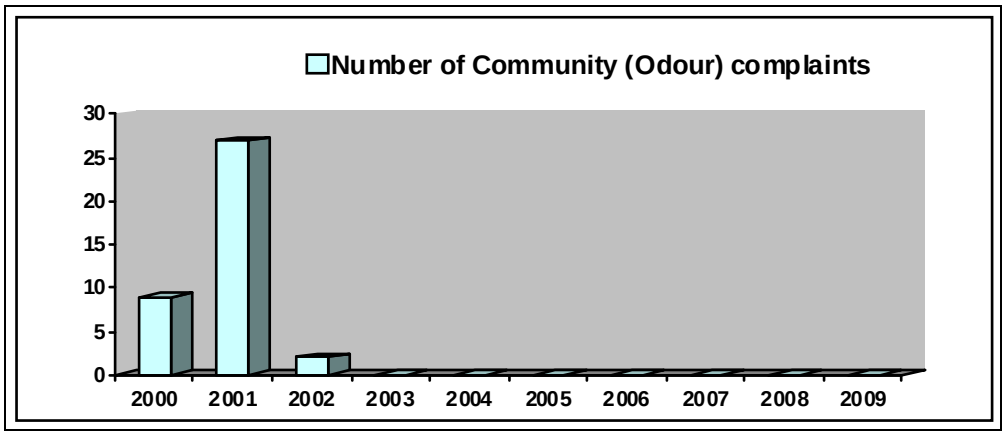
The internal audit program for 2009 totalled 11 audits of the Melbourne site including audit topics of operations, maintenance, training, incident reporting, management review, work permits and environmental management systems.

Lloyds Register audited the Melbourne site twice during 2009 for ISO 14001 EMS and ISO 9001 QMS. There were no major non compliances and one minor non compliance raised for the Melbourne site in September 2009. The item was to ensure operating procedures for tallow analysis and testing are put in place. All previous items were closed out.

The second round of MHF licensing resulted in a new 5 year MHF licence from December 2007 with no conditions. Worksafe have visited the site on several occasions over the last 12 months. This has included an extensive three day annual MHF licence audit in December 2009 and informally there appears no significant findings. There was no Improvement Notices during 2009.

4. COMMUNITY COMPLAINTS

There were no community complaints during 2009. Historically community complaints have been associated with odours. A graph of community (odours) complaints is detailed below.



Note: These complaints represent those that could be verified as emanating from, or caused by, Terminals. For instance, in 2001 there were a further 49 complaints but no odour sources could be found at Terminals or found caused by external operation.

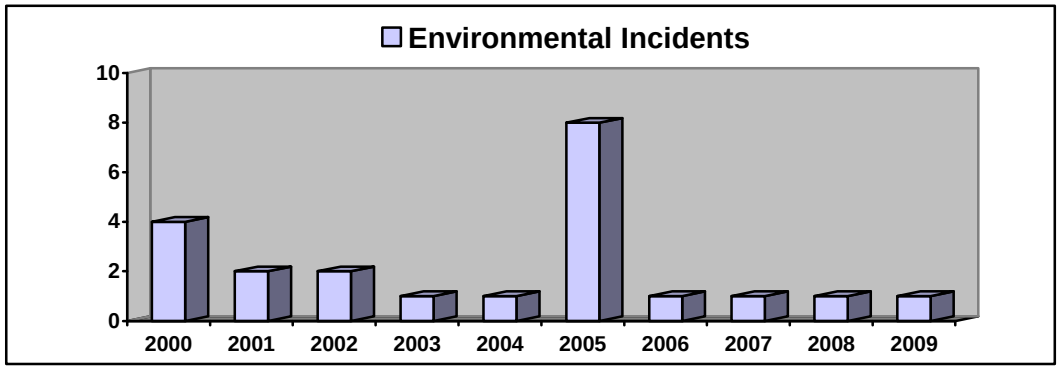
The major influences in reducing these odour complaints have been the improved methodologies in treating acrylate chemicals. The initial controls were purpose built caustic scrubber; two stage treatment of joining existing activated carbon VEC with existing caustic scrubbers; closing in odorous VEC building with extraction and general environmental awareness. The final solutions include completely enclosed bottom loading facilities using dry break couplings and, since December 2002, combustor treatment of vapour emissions at > 99.6 % effectiveness.

5. 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 and EPA infringement actions. But these incidents do not include odour complaints as reported previously, nor benzene emissions exceeding historical 51g/min licence condition, which regularly occurred until the thermal oxidiser (combustor) vapour emission control system was commissioned in November 2002 for benzene treatment.

In 2009; there was one environmental incident:-

- During the loading of a road tanker, there was an overflow of potassium hydroxide. The spill of approximately 300 litres was contained at the road tanker gantry at Plant B and cleaned up. The latter is a concrete containment area to prevent any adverse soil or groundwater contamination. The primary cause was bypassing the scully overflow system when it failed to allow loading. In addition, the operator and driver then did not provide adequate attention to monitoring the road tanker contents while filling. Actions to prevent a recurrence include counselling the operator; keeping overfill equipment tester under management only control and providing tool box training to all operators on the importance of integrity of critical control measures (ie not bypassing systems but getting maintenance to rectify a system when it does not work).



There were no non compliances to the waste water discharge criteria during 2006; 2007, 2008 and 2009. This is a significant improvement to the seven incidents in 2005 that related to waste water discharge criteria.

6. EPA WASTE DISCHARGES

6.1 AIR EMISSIONS

Tabulated below shows a comparison of the estimated air emissions from the various discharge points with the emission limits specified in revised 2009 EPA licence, Table 1, Emission Limits for Discharge to Air. Five limits are tighter than the 2004 version in keeping with the continual good performance of the thermal oxidiser (combustor) over several years. While the phenol instantaneous limit is less strict for practical measurement reasons and to reflect it is now treated at the highly effective combustor and also not discharged at ground level. Remaining twelve limits are the same. All emissions in 2009 are below the licence mass emission limits.

The air monitoring program was complied with as detailed in the Environmental Management Manual. The analysing of air emission discharge points during 2009 found no non compliances over 13 samples (26 tests) as detailed in Appendix E.

These 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 container filling quantities, duration in the tank and emission treatment effectiveness.

For 2005 and onwards; VOC is defined as per Victorian EPA definition of all hydrocarbons with a vapour pressure greater than 0.01kPa whereas previously the NPI definition of hydrocarbons with a vapour pressure greater than 0.272kPa had been used. In 2005; the result was an additional 153 kg total emissions to make the non speciated VOC total 1,211kg ie 13% increase.

Waste	EPA Emission Limits (2009)		Estimated Emissions (Kgpa)									
	Total Mass Rate (g/min)	Total Annual Mass Rate (Kg/ annum)	2000 -2001	2001 -2002	2002 -2003	2003 -2004	2004	2005	2006	2007	2008	2009
Acrylonitrile #	2	350	235	132	122	4	2	0	0	0	0	0
Benzene	36	450	6970	4000	1478	151	138	16	4	10	9	8
Butyl Acrylate	11	65	225	24	13	23	21	3	4	4	4	4
Ethyl Acrylate #	0.25	8	21	8	0	0	0	0	0	0	0	0
Methyl Methacrylate	11	200	736	94	41	64	65	11	10	11	11	11
Phenol	0.3	6	2	2	3	2.6	4.2	2.4	0.2	0.1	0.1	0.1
Propylene Oxide #	150	420	295	275	283	277	297	113	0	0	0	0
Toluene Di-isocyanate	0.015	0.3	0.1	0.1	0.1	0.1	0.1##	0.1	0.1	0.1	0.1	0.1
Non-Speciated VOC	370	8,400	6230	6400	4820	2790	2790##	1211	1101	1510	949	704
Carbon monoxide	40	1,100						510*	400*	370*	470*	431*
Total nitrogen oxides	240	3,500						1150*	910*	850*	1070*	976*
Total sulphur oxides	70	1,000						3*	3*	3*	3*	3*

Notes:

* This data is based on the combustion products from the combustor VECs and the boilers based on NPI emission factors and the total natural gas fuel plus equivalent combustion value of the VOC emissions treated by the combustor. The VOC fuel is about 5% of the natural gas mass usage and 3% of the combustion value of natural gas usage. Thus NPI emission factors seem appropriate.

\# These EPA Emission Limits are 2004 licence limits for reference as these products are no longer stored & not included in the 2009 version of Table 1, Emission Limits for Discharges to Air.

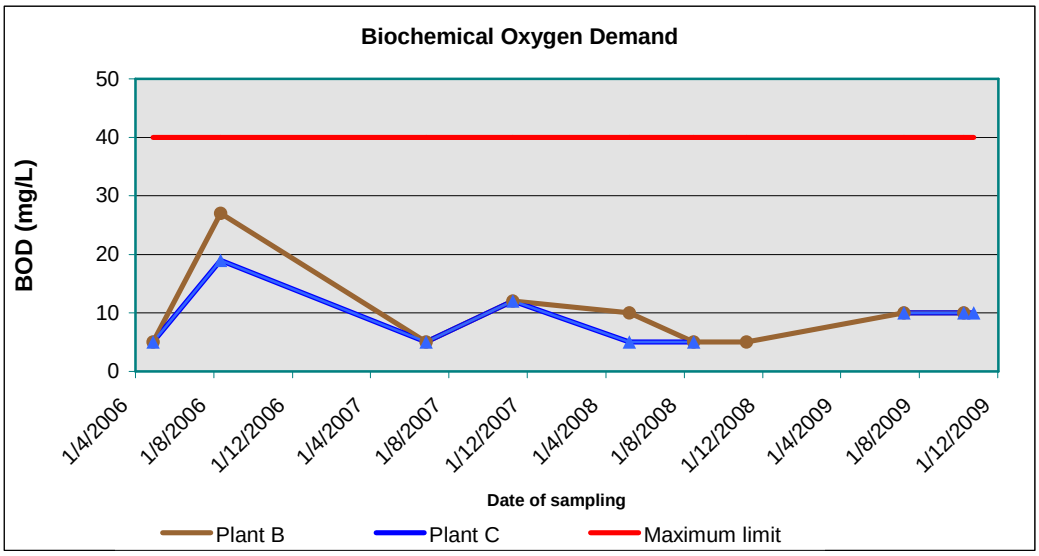
The 2003/04 financial year estimated emission was used for 2004 calendar year

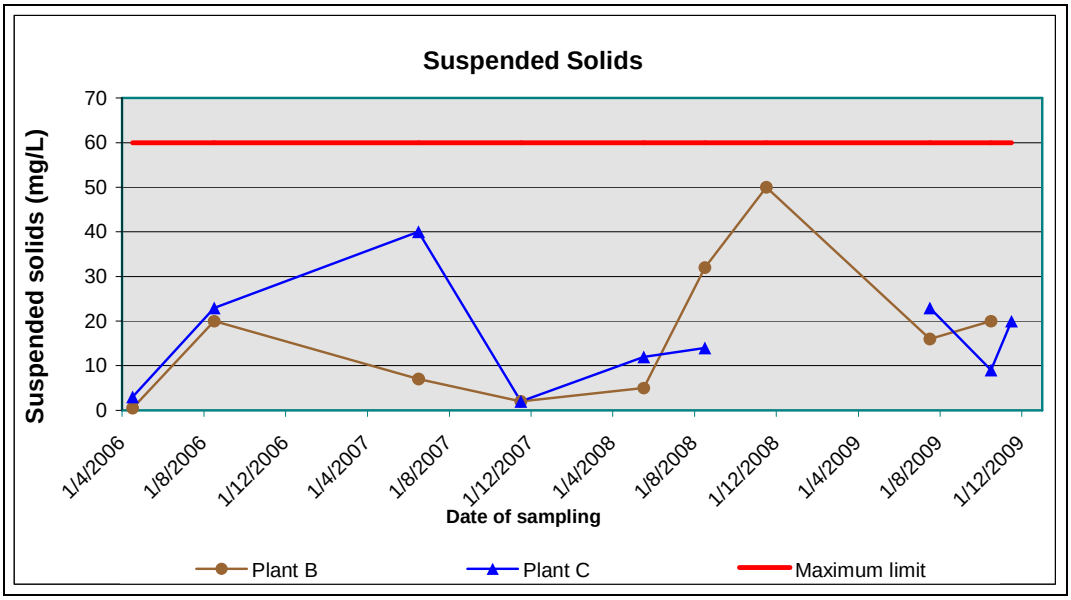
6.2 WASTE WATER MONITORING RESULTS 2009

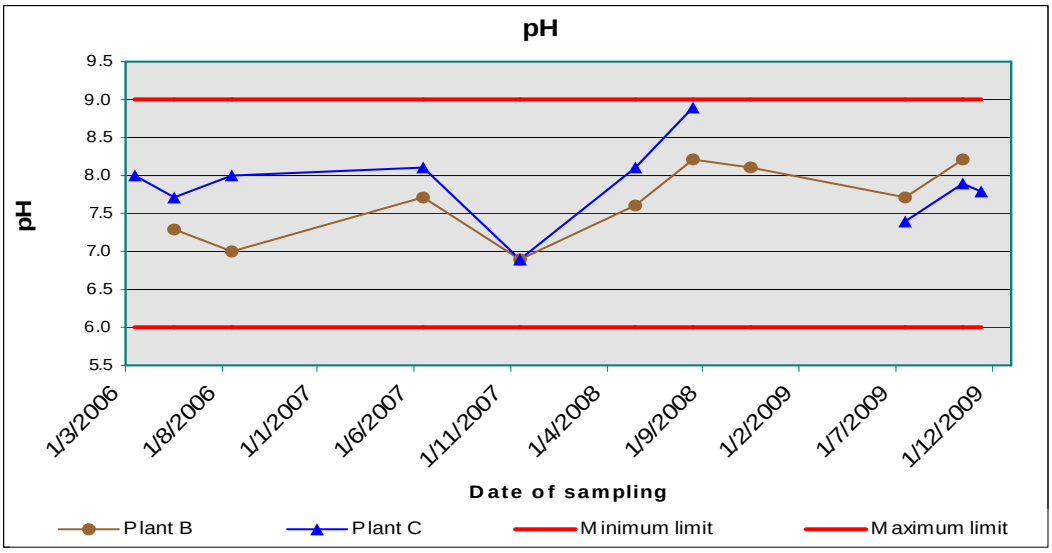
There were no non compliances to the waste discharge criteria specified in the Environmental Management Manual and tabulated below. This compares favourably with the five non compliances during the 2005 year.

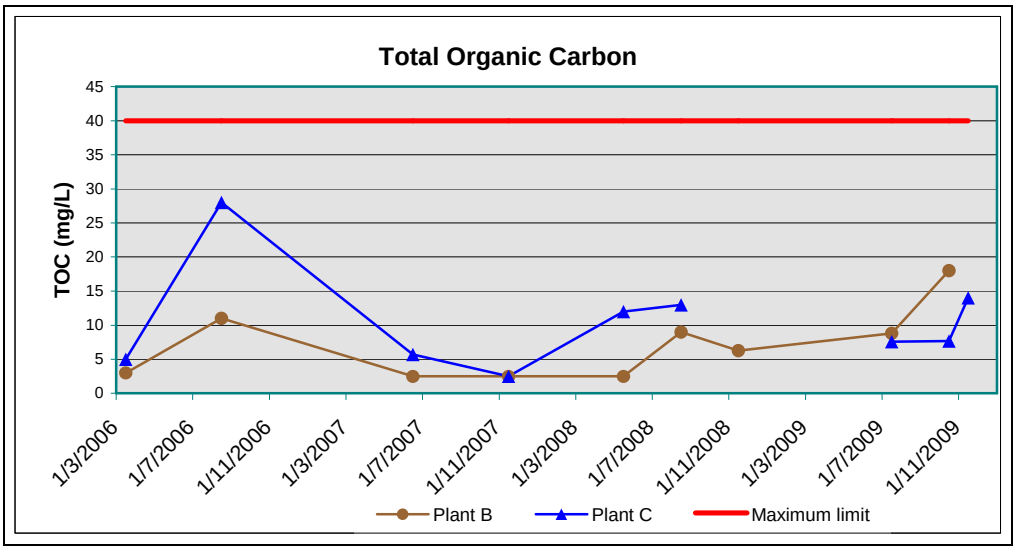
Performance Indicator Unit	Limit/s
Biochemical Oxygen Demand	**40** (mg/l) Maximum
Suspended Solids	**60** (mg/l) Maximum
Toxicity as determined by microtox	**100** Minimum
pH	**6-9**
Total Organic Carbon	**40** (mg/l) Maximum
Dissolved Oxygen	**5** (mg/l) Minimum
Flow rate	**200** kilo litres/day Maximum
Temperature	**Ambient**

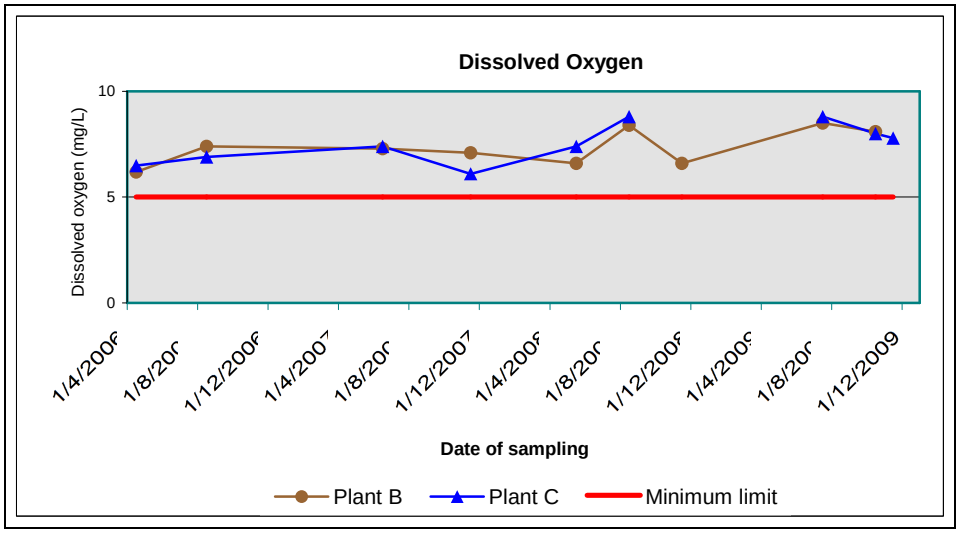
Discharge results for Plant B and C covering the last four years are detailed in the following graphs.




Suspended Solids
Suspended solids (mg/L)
70
60
50
40
30
20
10
0
1/4/2006
1/8/2006
1/12/2006
1/4/2007
1/8/2007
1/12/2007
1/4/2008
1/8/2008
1/12/2008
1/4/2009
1/8/2009
1/12/2009
Date of sampling
Plant B
Plant C
Maximum limit


pH
pH
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
1/3/2006
1/8/2006
1/1/2007
1/6/2007
1/11/2007
1/4/2008
1/9/2008
1/2/2009
1/7/2009
1/12/2009
Date of sampling
Plant B
Plant C
Minimum limit
Maximum limit



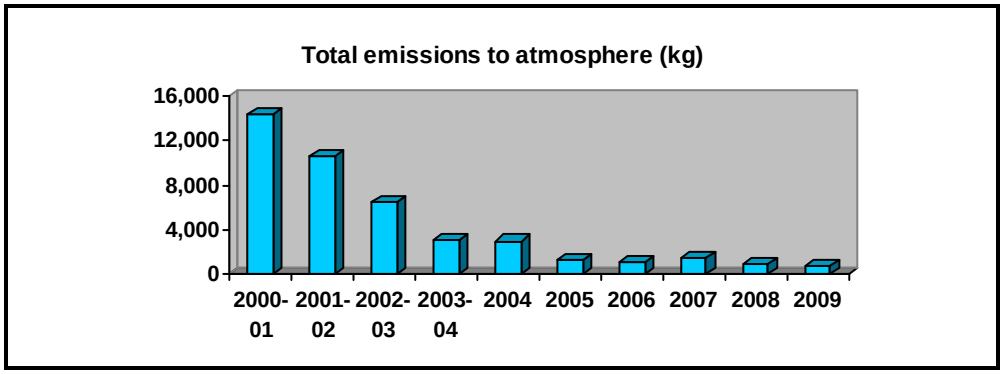


The results are detailed in Appendix E, called EPA Performance Monitoring Report 2009.

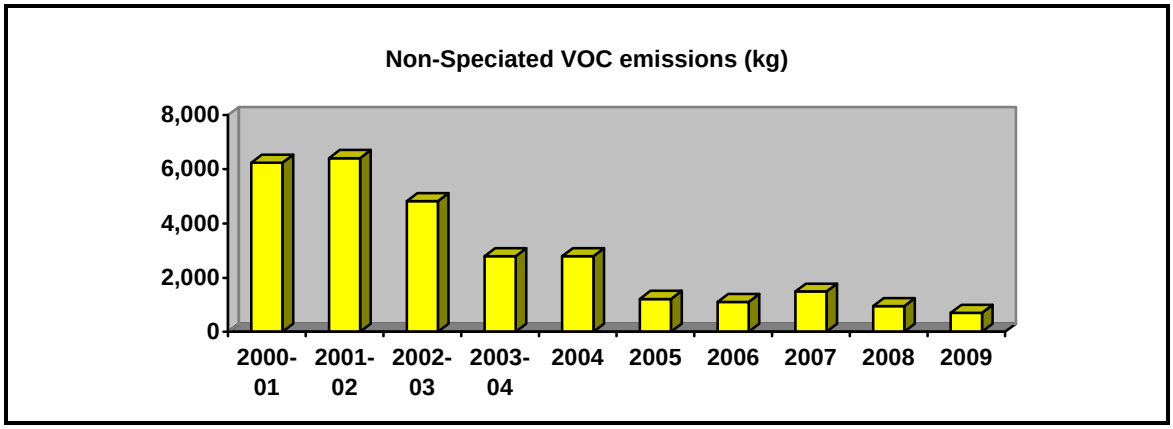
7. WASTE MANAGEMENT PERFORMANCE

The Environmental Management System reviews existing and develops new targets and objectives on an annual basis. This is also called the Waste Management Plan. The 2008-2009 environmental objectives and targets performance report for September Quarter is attached as Appendix B. The 2009-2010 environmental objectives and targets plan is attached as Appendix C.

Total emissions to the atmosphere are shown below. The new bottom loading facility at Plant B was commissioned by April 2008 and this has continued to reduce non speciated emissions in 2009.



Total non speciated VOC emissions to the atmosphere are shown below. These do not include the specific chemicals listed in EPA licence, Table 1, but do include all hydrocarbons with a vapour pressure greater than 0.0272 kPa (NPI definition) before 2005 and in 2005 plus afterwards, include those with a vapour pressure above 0.01kPa as per Victorian EPA definition.



Treatment systems effectiveness are generally conservative and include:

- Vapour return at 100%
- Combustor at 99.6% but initially (2002-03) combustor efficiency factor of 99.96% was used on actual design performance effectiveness. The assumption of 99.6% has been verified by previous results and confirmed by results in 2005, 2006, 2007 & 2008 as per Appendix E. The effectiveness could be higher but the accuracy is limited by the measuring sensitivity of the outlet results.
- Activated carbon bed at 90% after July 2001 and 85% previously due to workload and performance. Previous Annual Performance Reports verify treatment efficiency of greater than 90% except for low load conditions when accuracy is limited by the measuring sensitivity of the outlet results.
- Caustic scrubbers for acrylates range from 85% to 90% while two in series or scrubber with activated carbon VEC scored 98.5% but since December 2002, acrylates generally treated by the combustor
- Phenol scrubber at 95% and at 99.6% from July 2005 when new phenol tank (44) was commissioned and emissions treated by combustor.
- PO scrubber 99%. This assumption has been verified by analysing results.
- TDI ammonia scrubber plus activated carbon treatment at 99%.

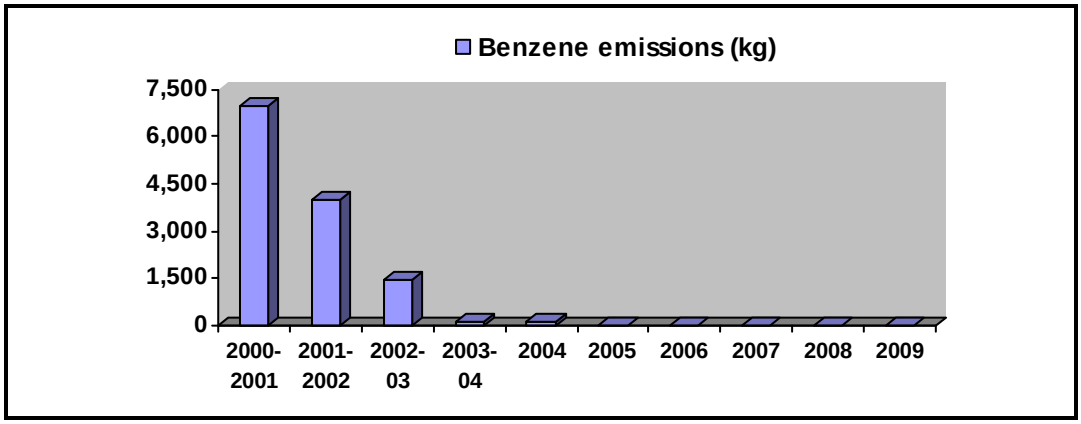
Efforts to reduce VOC emissions have been focused on reducing emissions of class 3 indicators, benzene and acrylonitrile, as well as odour generators, acrylates, as priority and then general volatile hydrocarbons. Overall, the combustor vapour emission treatment system has been the major factor in dramatically reducing the VOC emissions. From April 2008; the combustor handles all emissions from storage and loading operations for volatile chemicals.

The reductions in VOC emissions are demonstrated in the graph above and the following specific graphs. The historical and specific reasons are:

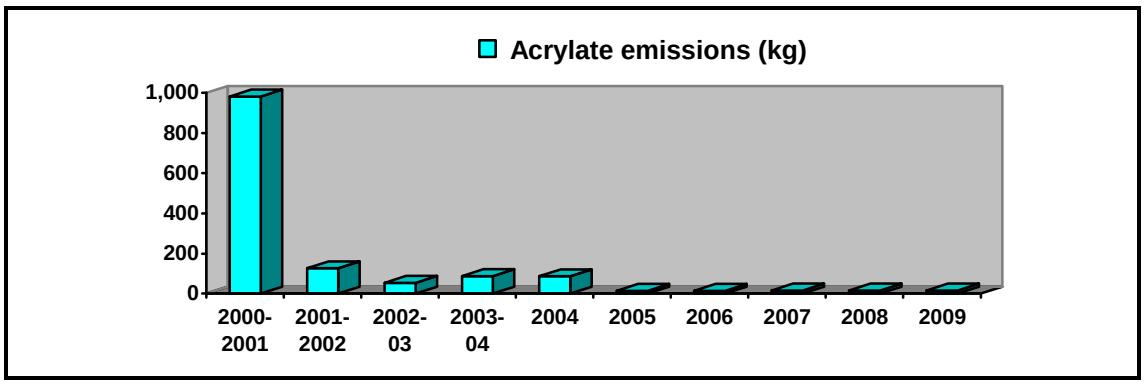
- Combustor started treating benzene and crude benzene emissions from November 2002.
- Combustor started treating acrylate storage tank emissions from December 2002 at Plant B.
- Combustor started treating acrylonitrile storage tank emissions from June 2003.
- Combustor started treating acrylate road tanker loading emissions from December 2004.
- Acrylonitrile storage tank was decommissioned in June 2004.
- During 2005, the east side storage tanks were decommissioned. This included all PO storage tanks being decommissioned by April 2005.

- Benzene and crude benzene were no longer stored nor handled from April 2005. However a new product of pygas (mainly benzene) has been stored from early 2006 in two semi pressurised tanks and one atmospheric tank. The semi pressurised tanks have further reduced the benzene emissions due to their higher pressure (less need to vent for Pygas vapour pressure) coupled with vapour balancing to road tanker unloading operations.
- Storage tanks at both Plants B and C have steadily been switched to the combustor with only seven tanks at Plant B west side remaining in 2005 on the activated carbon bed system. In 2006, remaining seven relevant tanks have been switched to the combustor.
- From April 2008; Plant B road tanker loading operations have been switched from carbon bed system to the combustor vapour treatment system. The carbon bed system is now only used as emergency backup for vapour emission treatment.
- Year 2009 is the first full calendar year with the combustor being fully commissioned. The continual waste reduction improvements over the several stages and years are well demonstrated by the above total emission graphs and now have reached the maximum achievement of the combustor.

Benzene emissions to air are graphed below and further demonstrate the VOC emission findings.



Acrylate emissions are graphed below.



Because of the significant number of odour complaints in 2001 from acrylate operations, several strategies were implemented to reduce odour (acrylate) emissions and complaints from handling 10-20 acrylate storage tanks located at different parts of the site. These treatment improvements included:-

- Two stage treatment process using available caustic scrubbers with activated carbon VECs.
- Installing a new purpose built caustic scrubber for acrylate treatment.
- Consolidating acrylates into one area to make use of best available caustic scrubbers then later combustor treatment in stages starting from December 2002.
- Exiting the highly odorous ethyl acrylate business in late 2001.

8. PRESCRIBED LIQUID WASTE

Overall, the total waste stream has remained at significantly decreased levels from 5,210 tonnes in 2005 to less than 1,000 tonnes per annum during 2006 to 2009. Further reduction has halted in 2009 due to extensive once off cleaning of Plant B pipelines to accommodate swapping to the new stainless steel pump suction lines; tank changes and tallow tank cleaning.

Total EPA prescribed liquid wastes transported from Melbourne site to an approved treatment facility are tabulated below plus an allowance for flammable aqueous waste being treated by the combustor since October 2007. Overall, this provides a total picture of the liquid waste generated on site. But the present on site treatment of flammable aqueous waste (estimated at 300 tonnes) by the combustor represents an additional significant savings in offsite prescribed waste treatment. A future proposal is to treat the combustible aqueous waste by the combustor providing further savings in offsite prescribed waste treatment.

Breakdown components and previous results are tabulated as a means to identify waste sources and minimisation strategies. In general terms, the Melbourne site has been undergoing major upgrading of its facilities while decommissioning and demolishing or relocating tanks from the east side of Mackenzie road. This has involved cleaning storage tanks, major renovations to tanks, new foundations including environmental liners and moving storage tanks.

PRESCRIBED LIQUID WASTE									
	2001/ 02	**2002/ 03**	**2003/ 04**	**2005**	**2006**	**2007**	**2008**	**2009**	**Comments**
	Tonnes								
Corrosive Washings	240	1255	1256	905.9	0	0	0		Propylene oxide gone
Tank & line washings (non flammable)	746	1350	5080	2787.4	Flammable 194.4 Non Flammable 375.8	703	376	574	Settling towards a minimal level & benefiting from waste reduction improvements plus stabilising storage service. However in 2009; there was extensive line cleaning at Plant B to accommodate swapping to new pump suction lines; tank changes & tallow tank cleans.
Ship first flush	58	2	0		0	0	0		Customers unable to handle pure waste separately
Phenol wastes	33	93	0	285.7	30	60.4	60.2	10.2	Back to usual
VECS waste (flammable)	3975	3342	1769	1230.3	324	169.8	300*	300*	Load on carbon VECS decreases as combustor takes increasing load from its 2002 commissioning to April 2008 where it handles all relevant storage & loading emissions
Total	**6340**	**6051**	**8105**	**5209.3**	**924.2**	**938.0**	**736.2**	**884**	

Note: * Estimate based on flammable aqueous waste treated by the combustor at 4 lpm x 60 mins x 5 hours average per day x 250 working days per year.

The two most significant trends over the last four years has been the Tank & Line washings and the VECS waste categories. Tank & Line washings appears to have started to stabilise in 2005 with a substantial decrease of 2,293 tonnes (45%) in tank and pipeline cleaning waste. Further substantial decreases have continued over the 2006 to 2008 period. A contributing factor to this decrease appears to be the segregating storm water project which was commissioned in five areas in 2005 and completed in early 2007. Also a majority of tanks have been renovated, including internal waste minimising pipework plus the settling of tanks in longer term service appear to be having an impact on reducing waste generation. However further reduction has halted in 2009 due to extensive once off cleaning of Plant B pipelines to accommodate swapping to the new stainless steel pump suction lines; tank changes and tallow tank cleaning

The waste from the carbon bed VEC system has continued to decrease significantly with the vapour treatment load being gradually switched to the combustor. Commissioning started in 2002 and from April 2008, the combustor handles all vapour treatment from relevant storage and loading operations. The carbon bed system is now used as an emergency backup only.

9. SOLID WASTE

The total waste transported off site in 2009 was 4.4 tonnes. This appears to be a relative minimum waste level. The breakdown of this waste into components with comparison to previous years is tabulated below.

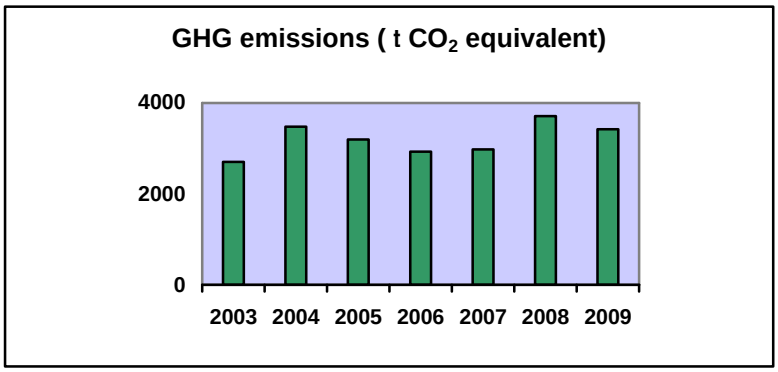
PRESCRIBED SOLID WASTE								
	YEARS							
	2001/02	2002/03	2003/04	2005	2006	2007	2008	2009
	(Tonnes)							
Foam pigs (F100)	1.5	3.8	7.6	4	2.7	4.4	4.6	4.4
Contaminated Soils including sandblasting grit (N120)	22.9	2.3	17.5	17.4			12.0	
Activated carbon (N210)		16	2.3	0.4	0.4			
Drums (N100)		2.2						
Sludges & residues (N205)	36.5							
Organic cyanides (M210)	26.9							
Polymerised acrylate (N180)				0.2				
TOTAL	**87.8**	**24.3**	**27.4**	**22**	**3.1**	**4.4**	**16.6**	**4.4**

A dominating theme is the upgrading of tanks, foundations and pipework during previous years. This causes waste from cleaning tanks/pipework, grit blasting tanks and removal of contaminated soil hot spots in accordance with our Groundwater Management Plan. The level of waste seems to have reached a consistent minimum relating to the use of foam pigs in cleaning pipelines for new product operations eg cleaning docklines & tank associated pipework for ship unloading. While in 2008, sandblasting grit was an additional waste from special cleaning of three new tanks back to metal to apply an internal protective coating for UAN (ammonia urea) service.

10. ENERGY EFFICIENCY AND GREEN HOUSE GASES

A level two energy audit was undertaken on 21st October 2003 by ERM. The energy assessment was undertaken as part of the Victorian EPA Protocol for Environmental Management (PEM) requirements, ie. a category C of the PEM requiring a level two energy and greenhouse gas assessment. With additional information, this report was accepted by the EPA in October 2005.

Greenhouse Gas (GHG) emissions are graphed below in equivalent tonnes of CO_2 emissions. These figures do not include the combustion products from treating the product vapour emissions.



These are derived from usage of natural gas for boilers (2) and combustor treatment units (2); electricity for pumps/fans/utilities and diesel for firewater pumps and forklifts/trucks. In 2009 one boiler was replaced by a hot water heater to heat tallow. Fuel usages are converted to energy consumption (GJ) and, in turn, to GHG emissions (t CO_2 equivalent) using standard emission factors from the AGO (Australian Greenhouse Office) website. The last seven years are tabulated below and cover the period of the combustor operating. The information is based on invoice meter readings. A minority of the records prior to 2005 cannot be found and these values have been estimated based on the available majority of data. In addition, the electricity meter reading for December 2007 is missing.

Fuel Type	2003		2004		2005		2006		2007		2008		2009	
	Fuel consumed	GHG emissions (t CO2. equivalent)	Fuel consumed	GHG emissions (t CO2. equivalent)	Fuel consumed	GHG emissions (t CO2. equivalent)	Fuel consumed	GHG emissions (t CO2. equivalent)	Fuel consumed	GHG emissions (t CO2. equivalent)	Fuel consumed	GHG emissions (t CO2. equivalent)	Fuel consumed	GHG emissions (t CO2. equivalent)
Natural Gas (GJ)	14,279	738	23,256	1,202	27,847	1,440	22,132	1,140	20,540	1,062	25,890	1,338	23,682	1,224
Electricity (KWH)	1,306,733	1,887	1,530,220	2,210	1,163,660	1,680	1,186,600	1,713	1,281,000	1,845	1,594,283	2,302	1,470,691	2,124
Diesel (kl)	25	68	25	68	25	68	25	68	25	68	25	68	25	68
Total		**2,693**		**3,480**		**3,190**		**2,925**		**2,975**		**3,710**		**3,415**

In the last three years; the breakdown of emission contributors was electricity around 62%, natural gas at about 36% and diesel at 2%. In 2009, electricity and natural gas usage have decreased by 8% and 13% respectively. While in 2008 these energies significantly increased by approximately 25%. The 2009 decreases may be indicating a settling down of energy use as the combustor has been fully online for more than a year although the high energy usage product, tallow came online in 2009. The GHG component factor has decreased for natural gas from about 45% in 2005 and 39% in 2006. While electricity usage increased 8% from 2006 to 2007.

Overall, the GHG emissions have decreased by 9% in 2009; while they increased by 25% in 2008; were consistent over 2007 & 2006; were reduced by 8% in 2006 and a further 8% in 2005. It seems 2008 represents a high energy usage year. The facility has undergone substantial changes over the last 7 years with most changes occurring in 2005 and significant changes in 2008. They were:

- Commissioning air dilution stream for road tanker loading as an additional feed to the combustor in late 2004; combustor is located at Plant B. The air dilution stream is operated with sufficient additional air to conservatively maintain this feed stream in the fuel lean range for safety reasons. This adds a substantial air stream that is energy (gas) hungry in order to keep the combustor at 890 C. In addition this involves a large air dilution fan that increases power usage.
- In 2007; the air dilution stream for road tanker loading has been modified to operate only when required rather than continuously during business hours. This reduces natural gas usage and electricity usage.
- Shutting down the boiler and activated carbon VEC system at Plant C east side during first half of 2005. In turn, reducing gas (boiler) and power (VEC fans) usage.
- Benzene and crude benzene tanks were decommissioned in April 2005. The loss of this stream as a fuel to the combustor means higher fuel usage to maintain the combustor temperature control but about 5% factor only.
- Upgrading tanks and transfer systems at Plants B and C west side facilities including new tank foundations and resulting in more efficient pump motors plus online time. This means less power usage when operations cease during upgrades and after when more efficient pump motors are used for loading and connected to automatic loading system that stops motors when not required.
- Decommissioning tanks on the east side and then either relocating them to west side or demolishing them. In turn, power usage decreasing on the east side but increasing on the west side as many of these tanks and systems are returned to service.
- In 2007; there has been greater tank utilisation and increased throughput as tanks on the west side are recommissioned after major upgrading. At beginning of 2006; there has been a total of additional 4,500 cubic metres tank capacity commissioned to Plant C and a total of additional 2,300 cubic metres tank capacity commissioned at Plant B. This has contributed to increased road tanker loading at Plant C and, in turn, greater power usage by the air dilution system at Plant B's combustor. Also during the second half of 2007; a

nitrogen generator was commissioned at Plant B. There has been a 38% increase in electricity usage over the last 4 months at Plant B. These have contributed towards an 11% increase in electricity usage at Plant B and a modest overall increase (8%) in electricity usage.

- Reducing combustor temperature set point from 890 to 750 C during 2006 to reduce natural gas (energy) usage and GHG emissions.
- In 2008; the new bottom loading at plant B was commissioned. This requires an air dilution stream for road tanker loading as an additional feed to the combustor. The air dilution stream is operated with sufficient additional air to conservatively maintain this feed stream in the fuel lean range for safety reasons. This adds a substantial air stream that is energy (gas) hungry in order to keep the combustor at 750 C. There was a similar increase in fuel usage in 2005 after the Plant C bottom loading air dilution system was commissioned in late 2004. In addition air dilution involves the large air dilution fan operating harder plus longer periods as loading throughput increases and, in turn, increasing power usage. The 2008 power usage increase at Plant B is consistent with increased electricity usage in 2005 at Plant B.
- Treatment of liquid waste in the combustor started in late 2007. This waste consists of flammable aqueous liquid and its burning is considered a GHG saving when considering the transport and treatment of the waste offsite.
- New bottom loading pumps at plant B are considered more energy efficient and are now automated so that they are only online when loading and not reliant on people turning them off; hence reduced energy usage from the past. In the future; an energy factor may relate to tanker throughput but first the sites need to reach a steady reference point.
- In 2009; energy changes are shutting down a small VEC fan that is no longer required and replacing a boiler with a modern more efficient hot water heater for heating the tallow product.

These effects are reflected in the following tables.

Electricity Usage (KWH)

	Plant B	Plant C West	Plant C East	Overall
2004	661,092	439,428	429,700	1,530, 220
2005	869,039	159,391	135,230	1,163,660
2006	1,048,000	138,100	0	1,186,600
2007	1,167,366	113,665	0	1,281,000
2008	1,485,777	108,506	0	1,594,283
2009	1.368747	101,944	0	1,470,691
Effect from previous years	8 % decrease after continual yearly increases	6% decrease after significant continual yearly decreases	East side shutdown in 2005.	8% decrease after continual annual increases since 2005

Natural Gas (GJ)

	Plant B	Plant C	Overall
2004	20,727	2,529	23,256
2005	26,375	1,472	27,847
2006	22,131	0	22,131
2007	20,540	0	20,540
2008	25,890	0	25,890
2009	23,682	0	23,682
Effect from previous years	9% decrease after large increase in 2008 and two annual decreases since 2005.	East side gas usage shutdown in 2005.	9% decrease after large increase in 2008 and two annual decreases since 2005.

In summary, overall the GHG emissions have decreased in 2009 after a high energy usage year in 2008 and fairly consistent levels through 2005 to 2007. The 2009 decrease is attributed to tuning of the road tanker air dilution duration in 2008 as this is the stand out heavy energy usage change. The largest factor in GHG emissions is the combustor located at Plant B in both natural gas and electricity as demonstrated by the Plant B figures. In 2008; the combustor system is fully commissioned with all tanks now connected. The new Plant B road tanker bottom loading via a new gas hungry plant B air dilute stream was commissioned by April 2008. This is considered the major cause of the huge spike in GHG emissions as similarly occurred in 2005 with the commissioning of the Plant C bottom loading air dilution stream in late 2004.

Full commissioning will assist in having a steady reference point for comparing GHG emissions as over the previous 5 years there has been several conflicting influences eg tank renovations, greater tank utilisation/ greater throughput & in turn increased loading (pump & air dilution fan power), nitrogen generator, combustor gas usage improvements, old top loading at Plant B and new bottom loading at Plant C plus now at Plant B and these include more efficient pump motors & online times.

With the combustor systems fully commissioned, the old activated carbon bed VECs is only required for emergency backup. This enables the switching of the carbon beds to a static system and shutting down the continuously online fans and steam desorption capability; saving energy usage. This new project initiative would require a safety study.

The status of the GHG reduction action plan is tabulated below.

Action	Status
- Improve combustor efficiency & Greenhouse Gas Emissions by:- • Trialling 50^{0}C reduced temperature set points for combustion • Minimising night time duty for combustor while no transfers.	Reduced combustor temperature set point to 750 C after EPA approval based on successful trials showed treatment effectiveness maintained above 99.6% ie the stated design performance by manufacturer.
- Shut down east side operations including boiler, VEC & pumps / fans/ utilities. Monitor reduction of natural gas by 10% & electricity by 20 – 25%.	Completed by July 2005. Boiler and VEC systems were located at Plant C east. Plant C east side electricity decreased by 100% & 69% in 2006 & 2005 respectively ie 429,700 to 0 KWH. This equates to 36% saving of the company electricity usage in 2006 terms. Natural gas usages for Plant C decreased by 100% & 42% per year over the last two years ie from 2,500 to 0 GJ. This equates to 11% savings of the company gas usage in 2006 terms.
- Replace motors with high efficiency motors as opportunity arises.	All new pump/motors are designed at maximum efficiency pump loading point. These have been commissioned at Plants C and B. Complete.
- Nominate Energy Manager for site.	Complete. Nominee is Engineering Manager, Paul Hayward.
- Regular reporting of energy and associated GHG emissions, as part of EIP.	Complete as per this annual report to the EPA.
- Minimise online duration for air dilution systems to combustor	Complete. Installed an interlock to stop air dilution stream to combustor when bottom loading of road tankers finished; minimising energy (gas) hungry usage.
- Minimise night time duty for combustor while no transfers	Under investigation and changed to pilot light online only project. Held up due to safety concerns of restarting combustor upon a demand but out of hours and site is not manned.
- Switch activated carbon bed VEC from continuously online to static system ie shutting down fans & steam desorption systems.	In 2009; small VEC fans shutdown and steam desorption is only occurring if required. Investigating main fan shutdown but needs further understanding of safety relating to air dilution if used in an emergency.

11. GROUNDWATER MANAGEMENT PLAN

11.1 WEST SIDE MONITORING RESULTS 2009.

The annual Groundwater Monitoring Program of the west side for 2009 calendar year was completed by WSP Environmental Pty Ltd. This included two six monthly rounds of sampling and analysing; quarterly gauging and a final annual assessment report. These reports are in accordance with our Groundwater Management Plan dated 30 November 2001. The final Annual Groundwater Monitoring Report by WSP is attached as Appendix F.

These results show:

- The reducing impact of historical Separate Phase Hydrocarbons found in the Plant B northern area and Plant C southern plus south central areas; continues from 2008. This is an outcome of the automatic recovery trench systems installed at Plant B northern and Plant C southern areas. These automatic systems have been online for more than 24 months and recover approximately 100 – 200 litres per annum per system. Only one well, B9, located at Plant C south central, showed any significant SPH level during the four rounds of gauging and similar to last year a maximum occurred during the December round but less than the 2008 finding.
- Down gradient off site monitoring wells meet the adopted criteria; ANZECC Guidelines for Marine Waters at 90% level of protection trigger values. During March 2009 sampling round three wells could not be sampled due to heavy construction works.
- Generally decreasing results compared with previous years and all results were below the adopted guideline levels. Only benzene at two on site wells (MW13 duplicate and 7 at Plant B) exceeded the adopted criteria in 2009 and were elevated. The MW 13 result was also elevated in 2008 while MW 7 was a replacement well and not sampled in 2008. It is noted that MW7 is located up gradient to the direction of the groundwater flow contours.

Terminals proposes to continue the existing bi-annual sampling and assessment and the trench plus skimming systems. The environmental consultant has recommended to increase the effectiveness of product recovery in the area of well B9 by making the well diameter larger or extending the product recovery trench in this area. In addition the environmental consultant has recommended further sampling and analysing of MW7 during the March round plus a further independent laboratory checking of MW13 analysis. Terminals agrees with these recommendations.

11.2 EAST SIDE MONITORING RESULTS 2009

The previous eastern parts of the facility were demolished and remediated during 2005 as per the Remediation Action Plan of July 2002. Final assessment reports culminating in a Statement of Environmental Audit signing off the clean up of the site for industrial use was received on 28th August 2006. A groundwater monitoring plan to assess any offsite impact has been developed and is part of the Statement of Environmental Audit. Initially this requires groundwater monitoring of key boundary wells every quarter for the first 15 months then six monthly and an assessment report on performance every 12 months. The first five quarterly sampling rounds have been carried out and have started the six monthly frequency from September 2007. The results have generally shown a decreasing trend.

The latest results (October 2009) are all below the target criteria. This is the third successive round of monitoring (September 2008, March 2009 & October 2009) with all results below the target criteria. This compares favourably with exceedances above target criteria in December 2005 of 12 analytes at 8 wells while in December 2006 found 3 analytes at two wells and in September 2007 found two analytes at one well.

Due to heavy construction works by the new site occupier, DP World, the March 2009 monitoring round consisted of only three monitoring wells out of thirteen wells. However the October 2009 monitoring round consisted of sampling from all thirteen wells of which eleven are now permanent wells, where eight are new, and only two are temporary wells.

The EPA auditor, LanePiper, reviewed the annual groundwater monitoring reports for financial years 2007, 2008 and 2009 in September 2009. The report concluded these groundwater monitoring reports :

> *'generally complied with the requirements outlined in the Groundwater Quality Management Plan, or otherwise agreed to by the Auditor. Those instances in which the GQMP was not fully complied with are considered relatively minor and do not significantly affect the quality or results of the monitoring program.'*

11.3 PLANT A MONITORING RESULTS

The annual Groundwater Monitoring Report of the previous Plant A site for 2008 was completed by WSP environmental consultants. The results are consistent with previous year's results and there are no analytes above the ANZECC guidelines. In 2008, EPA agreed for Terminals to cease groundwater monitoring of the Plant A site.

12. ENVIRONMENT IMPROVEMENT PLAN (EIP)

All items from the first EIP (2002 to 2004) are complete.

Some of the major achievements include:

- commissioning of majority of stages of combustor treatment unit, ie new vapour emission control system;
- upgrading of acrylate storage tanks and loading systems to sealed systems;
- fitting high density polyethylene impermeable liners under tank floor as tanks were renovated;
- implementing new exchanger area for Plant C and for acrylates;
- installing waste minimisation pipework for acrylate storage tanks; and
- installing backup emergency power supply for combustors and critical equipment.

This EIP concluded at end of 2004. A new EIP was developed for the following four years to the end of 2008. The status of the second EIP is summarised below.

Year	Total Number	Completed
2005 to 2008	62	60

Some of the major achievements include:

- installing five roofs and drainage systems over truck fills and exchanger areas to minimise waste by segregating rain water;
- refurbishing all tanks at Plant C expansion and upgrading their foundations;
- refurbishing all tanks at Plant B combustible area and upgrading their foundations;
- upgrading pumps, pipework, loading systems for above Plant B and C tank upgrades;
- installing waste minimisation pipework for above Plant B and C tank upgrades;
- installing emergency lighting for Plant B;
- decommissioning, demolishing and remediating east side facilities;
- shutting down boiler and carbon bed VECS on east side facilities;
- all flammable storage tanks are vented to the combustor;
- phenol tank is vented to the combustor;
- all flammable tanks have high pressure alarms as well as high level alarms;
- all tanks at Plant C are connected through hard piped exchanger areas;
- combustor temperature set point has been lowered to 750 C;

- domestic waste is connected to the sewer;
- install clay liner for Plant C tank compound floor
- received new accredited EPA licence with the leaving of the east side;
- installed & commissioned automatic PSH recovery systems at Plants B & C;
- installed above ground drainage system with pump filters instead of sediment & litter traps;
- maintenance manual updated;
- newsletter issued for October 2007 open day;
- Plant B bottom loading commissioned for Plant B flammable tanks;
- Removed old Plant B top loading gantry;
- All flammable road tanker loading vented to combustor;
- Topics from 1st EIP underwent an effectiveness evaluation study;
- Plant A groundwater monitoring completed.

This EIP concluded at end of 2008 and the remaining two actions were carried over to the next EIP. A new third EIP was developed for the following four years to the end of 2012. The third EIP is detailed in Appendix D. The status of the third EIP is summarised below.

Year	Total Number	Completed
2009 to 2012	20	3

Major achievements so far include:

- All Plant B tanks are now connected to sealed truck loading
- Automatic shutdown of dilute systems after ten minutes when not being used.

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