terminals pty. ltd.

MELBOURNE SITE

ANNUAL COMMUNITY

REPORT FOR 2008

Geoff Millard - Terminals

CONTENTS

1. SUMMARY

This annual report covers the Terminals' Melbourne operation at West Melbourne for the 2008 calendar year.

This year the site performed well although marring our efforts was one lost time injury and one large Canola Oil spill, but no offsite incidents or community complaints about odours.

Work continued on upgrading the west side facilities with the east side land being handed back to Port of Melbourne Corporation in January 2006.

There was only one environmental incident (which was the Canola Oil Spill above) and no waste discharge infringements.

As a result of continued efforts being made since 2002 to reduce volatile organic compound emissions, 2008 again saw no air emission non-compliances.

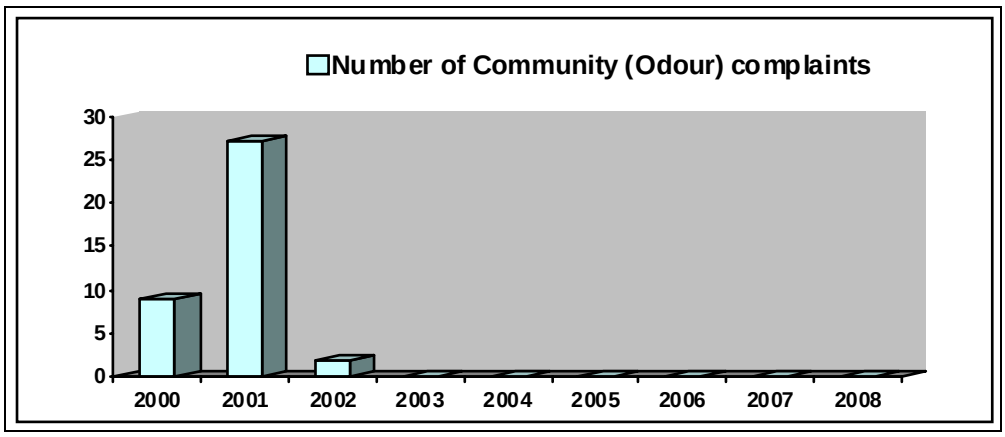
Greenhouse Gas emissions have increased 25% after 2% increase in 2007. This is mainly due to increased capacity, connection of all truck fills to dilute stream of combustor which is heavy gas and electricity user and installation of nitrogen generator. Much less waste is now being generated in the Carbon Adsorption System as it has no load now all vapours are run to the combustor.

The second Environmental Improvement Plan (EIP) has reached the end of its 4 year life span with 60 of 62 improvements now completed.

The bulk of the major upgrading work now completed, including closure and remediation of the East Side, and we are now entering the final 4 year phase of the site upgrade continuing the program of environmental, safety and technological improvements.

2. COMMUNITY COMPLAINTS

There were no community complaints during 2008. 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.

3. EPA WORKSAFE AND COMPANY AUDITS

EPA accredited licence audit in 2008 was carried out over two days in October 2008. This was the fifth audit of this type under our new accredited EPA licence. The audit recommendations from the 2008 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;

> *'Terminals Accredited Licence Environmental Audits 1- 5 (2004 -2008) identified 44, 42, 15, 27 and 23 action items respectively. The number of audit actions items identified during the period 2006 to 2008 was significantly less than the period 2004 to 2005, corresponding to an improvement in environmental management at the Melbourne Terminal. This was also reflected in the excellent closure rate for previous audit action items and the significant improvement in the management of documentation relating to environmental issues noted during the current audit.'*

The internal audit program for 2008 totalled 16 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 2008. One was the three yearly recertification audit over three days. The outcome was Terminals gaining three year recertification for ISO 14001 EMS and ISO 9001 QMS. There were no major non compliances and one minor non compliance for the Melbourne site. The item was to ensure there are processes in place to follow up actions arising from storage tank inspections.

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 2008; a carcinogenic licence audit and other visits. There were no Improvement Notices during 2008.

4. MAJOR CHANGES TO SITE PLANT, EQUIPMENT AND CONTROLS

The Melbourne site in 2008 continued with the upgrade program from the last few years.

The pace is now at a slower pace compared to previous years as the majority of infrastructure is now in place. The plan now is to slowly upgrade the remaining tanks at Plant B and upgrade bunds when tanks are complete.

Some of the major achievements include:

- installing three new tanks for storing liquid fertilizer (UAN);
- upgrade one tank and foundation at Plant B
- installing waste minimisation pipe work and under tank liners for one tanks at Plant B;
- commissioned new bottom loading gantry at Plant B;

5. SAETY AND ENVIRONMENTAL PERFORMANCE

5.1 SAFETY INCIDENTS

At Melbourne in 2008 there were one lost time injury (when operator twisted knee while walking over demolished tank base) and two work injuries.

There were no WorkSafe Improvement Notices issued this year.

There were two Reportable Site Incidents (spill of Canola from open man way and contractor nail gun injury).

There were no Prohibition/Penalty Infringement Notice/Prosecutions for 2008.

There were no Major Hazard incidents for 2008.

There were 30 internal incident reports raised during 2008 which were broken up into the following categories:

Type:	Injury	= 8%
	Dangerous/Unusual/Near Misses	= 33%
	Environmental	= 23%
	Critical Control Measures	= 5%
	Customer/Complaints	= 18%
	Quality System	= 15%
	Other	= 0%

There were two severity 3 incidents in 2008:

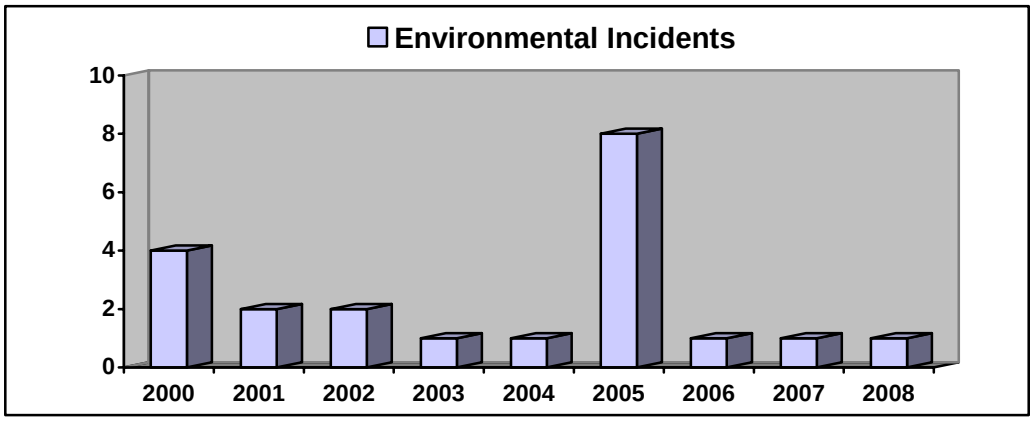
- Canola oil spill from open manway on tank
- Operator twisted knee while walking over old tank base

5.2 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 2008; there was one environmental incident:-

- During the unloading of road tankers, there was a spill from an open manway at tank 318. This resulted in a spill of approximately 2,500 litres of canola oil which was contained within the non hazardous compound. The latter has an impervious environmental liner to prevent any adverse soil or groundwater contamination. The primary cause was incorrect line up of valves during the road tanker unloading operations. Contributing factors included a multiple tank set up; manway left off the out of service tank; incorrect valve line up; using the draw off rather than filling line as well as no defined instructions for unloading of these road tankers. Actions to prevent a recurrence include ensure tank manway closed unless tank physically isolated; issue specific instructions on road tanker unloading relating to valve line up and counsel operators involved.



There were no non compliances to the waste water discharge criteria during 2006; 2007 and 2008. This is a significant improvement to the seven incidents in 2005 that related to waste water discharge criteria. The improvement is due to improved drainage infrastructure, clay liner at Plant C and testing of individual bunds before releasing water.

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 2004 EPA licence, Table 1. All emissions in 2008 are below the licence mass emission limits.

Waste	EPA Emission Limits (2004)		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
Acrylonitrile	2	350	235	132	122	4	2	0	0	0	0
Benzene	36	1500	6970	4000	1478	151	138	16	4	10	9
Butyl Acrylate	11	65	225	24	13	23	21	3	4	4	4
Ethyl Acrylate	0.25	8	21	8	0	0	0	0	0	0	0
Methyl Methacrylate	11	200	736	94	41	64	65	11	10	11	11
Phenol	0.055	6	2	2	3	2.6	4.2	2.4	0.2	0.1	0.1
Propylene Oxide	150	420	295	275	283	277	297	113	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
Non-Speciated VOC	530	9300	6230	6400	4820	2790	2790#	1211	1101	1510	949
Carbon monoxide	40	1100						510*	400*	370*	470*
Total nitrogen oxides	240	9500						1150*	910*	850*	1070*
Total sulphur oxides	70	18000						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. In addition, in 2008 monitoring data covering 14 samples (27 tests) showed full compliance to and generally less than 10% of the licence emission limit. Results are detailed in Appendix E.

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

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

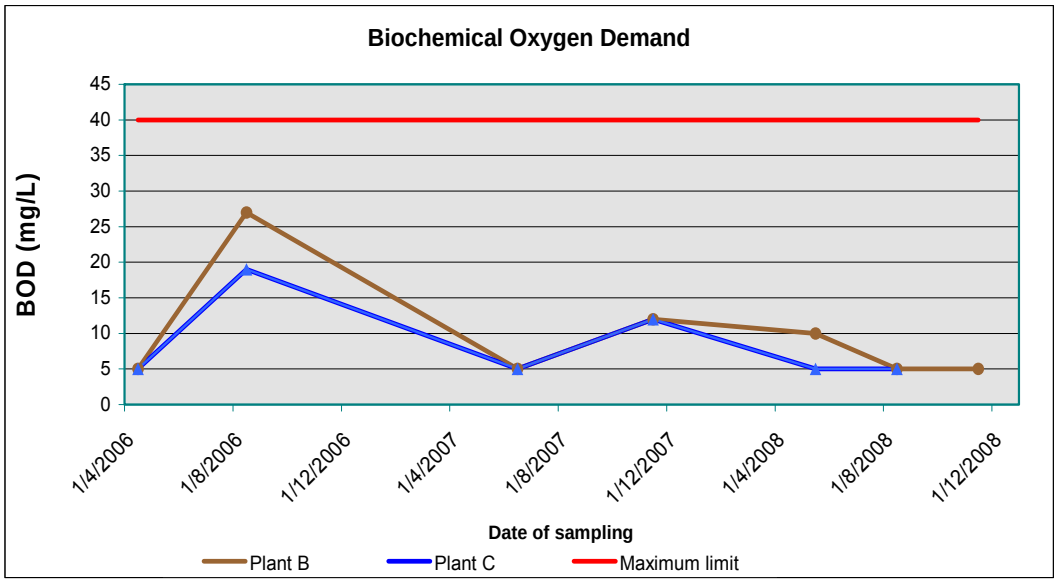
used. In 2005; the result was an additional 153 kg total emissions to make the non speciated VOC total 1,211kg ie 13% increase.

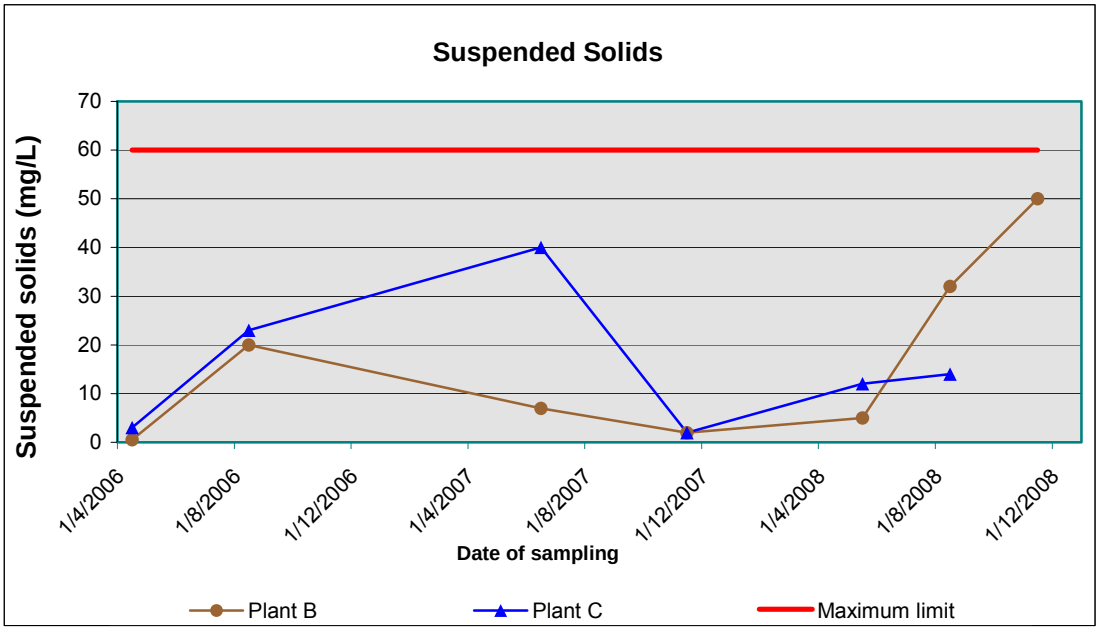
6.2 STORMWATER DISCHARGES

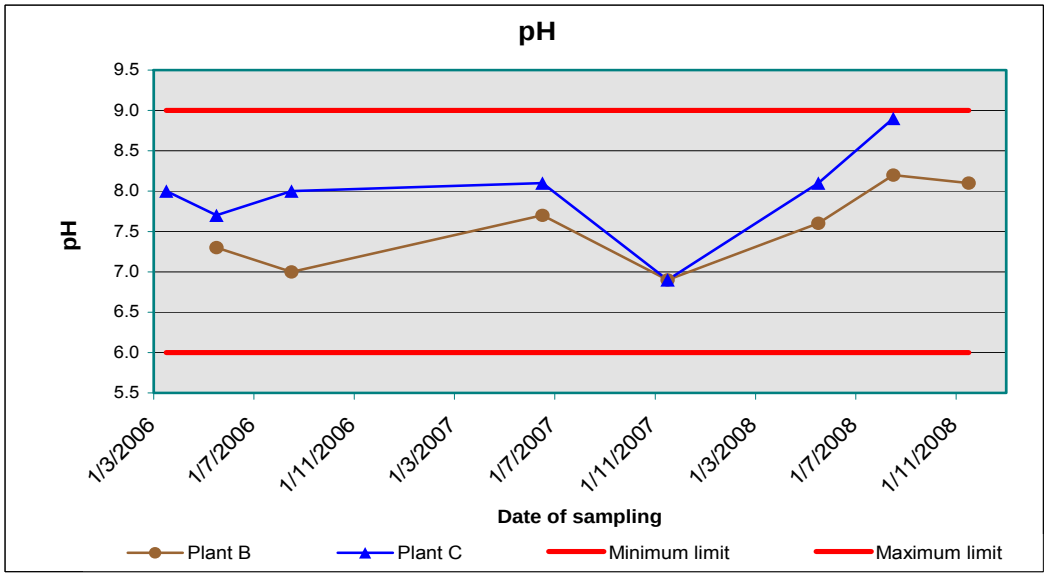
There were no non compliances to the waste discharge criteria specified in the Environmental Management Manual and tabulated below. This compares favourably with the five non compliances during the 2005 year.

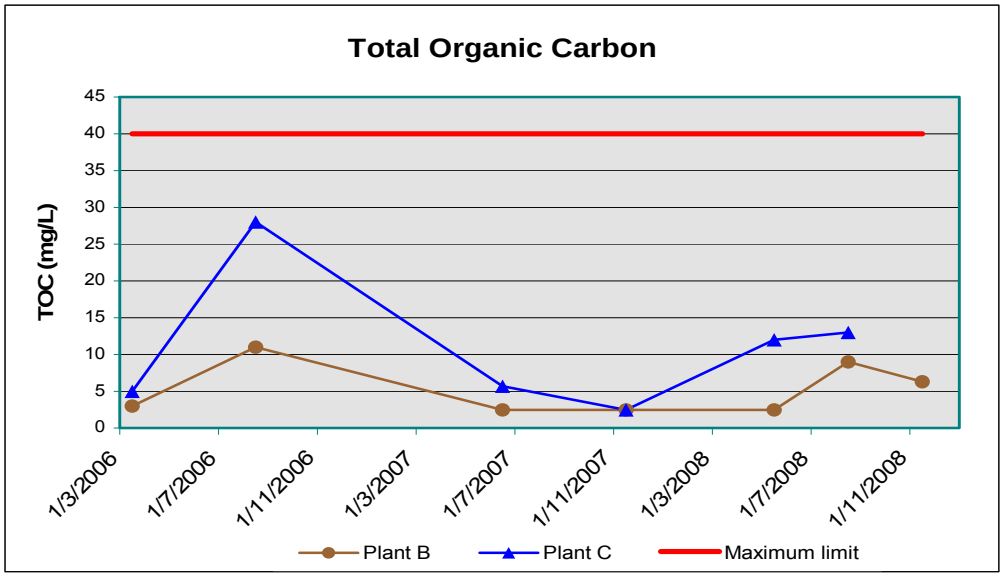
Performance Indicator Unit	Limit/s
Biochemical Oxygen Demand	**40** (mg/l) Maximum
Suspended Solids	**60** (mg/l) Maximum
Toxicity as determined by microtox	**100** Minimum
pH	**6-9**
Total Organic Carbon	**40** (mg/l) Maximum
Dissolved Oxygen	**5** (mg/l) Minimum
Flow rate	**200** kilo litres/day Maximum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

Discharge results for Plant B and C covering the last three 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
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
1/7/2006
1/11/2006
1/3/2007
1/7/2007
1/11/2007
1/3/2008
1/7/2008
1/11/2008
Date of sampling
Plant B
Plant C
Minimum limit
Maximum limit

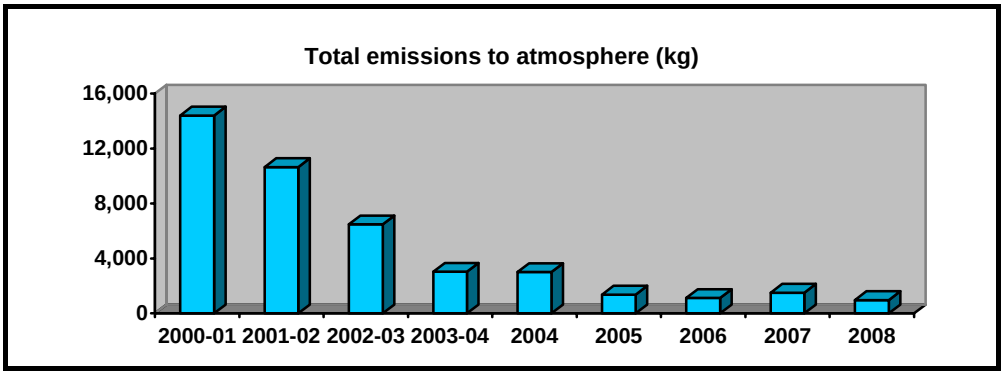

Total Organic Carbon
TOC (mg/L)
45
40
35
30
25
20
15
10
5
0
1/3/2006
1/7/2006
1/11/2006
1/3/2007
1/7/2007
1/11/2007
1/3/2008
1/7/2008
1/11/2008
Plant B
Plant C
Maximum limit

7 WASTE MANAGEMENT PERFORMANCE

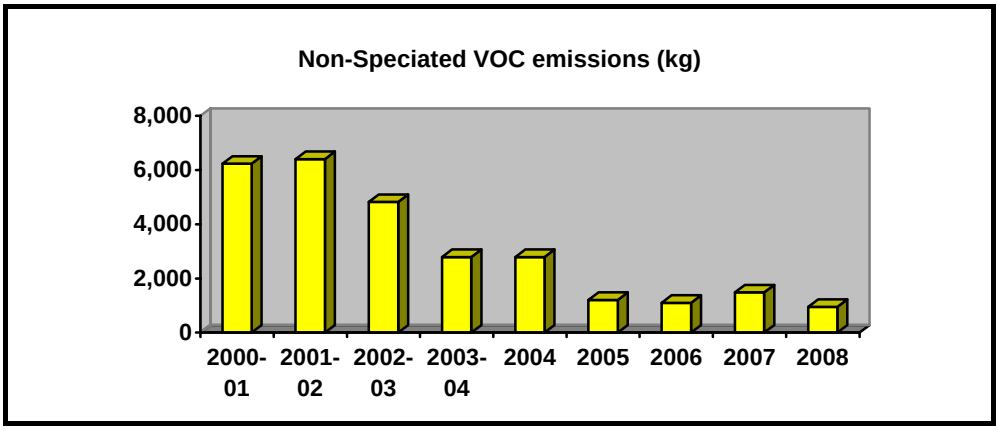
The Environmental Management System reviews existing and develops new targets and objectives on an annual basis. This is also called the Waste Management Plan.

The analysing of air emission discharge points during 2008 found no non compliances over 14 samples (27 tests). In fact results were usually less than 1% of the licence emission limit.

Total emissions to the atmosphere are shown below. The new bottom loading facility at Plant B was commissioned by April 2008 and has reduced the emissions by more than 100 Kg. These are non speciated emissions.



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. 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%.

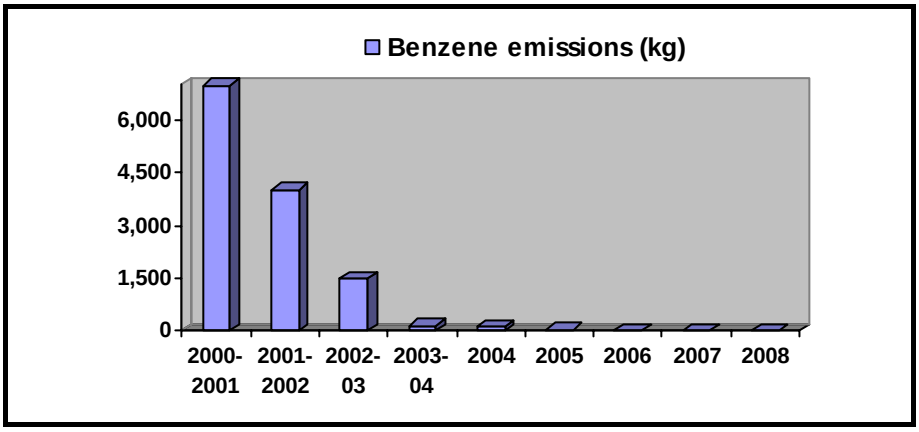
Efforts to reduce VOC emissions have been focused on reducing emissions of class 3 indicators, benzene and acrylonitrile, as well as odour generators, acrylates, as priority and then general volatile hydrocarbons. Overall, the combustor vapour emission treatment system has been the major factor in dramatically 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:

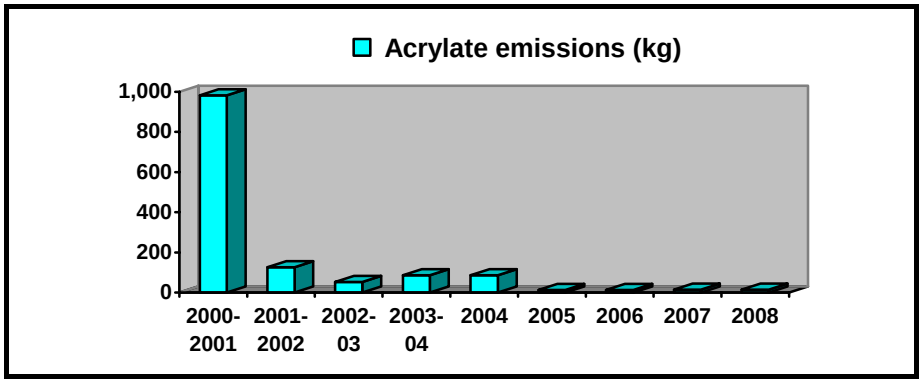
- Combustor started treating benzene and crude benzene emissions from November 2002.
- Combustor started treating acrylate storage tank emissions from December 2002 at Plant B.
- Combustor started treating acrylonitrile storage tank emissions from June 2003.
- Combustor started treating acrylate road 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.

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.

7.1 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 2008. Further reduction has occurred in 2008. This is further to the 35% decrease in waste in 2005 and a longer term trend reduction in waste levels over the last seven years.
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**	
	Tonnes							**Comments**
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	Settling to a minimal level & benefiting from waste reduction improvements plus stabilising storage service.
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	Back to usual
VECS waste (flammable)	3975	3342	1769	1230.3	324	169.8	300*	Load on carbon VECS decreases as combustor takes increasing load from its 2002 commissioning to April 2008 where handles all relevant storage & loading emissions
Total	**6340**	**6051**	**8105**	**5209.3**	**924.2**	**938.0**	**736.2**	

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 three years have been the Tank & Line washings and the VECS waste categories. Tank & Line washings appear 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 pipe work plus the settling of tanks in longer term service appear to be having an impact on reducing waste generation. 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.

7.2 SOLID WASTE

The total waste transported off site in 2008 was 16.6 tonnes. The breakdown of this waste into components with comparison to previous years is tabulated below.

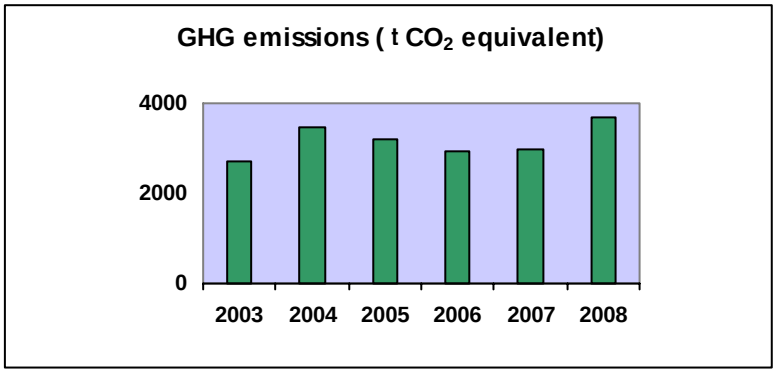
PRESCRIBED SOLID WASTE							
	YEARS						
	2001/02	2002/03	2003/04	2005	2006	2007	2008
	(Tonnes)						
Foam pigs (F100)	1.5	3.8	7.6	4	2.7	4.4	4.6
Contaminated Soils including sandblasting grit (N120)	22.9	2.3	17.5	17.4			12.0
Activated carbon (N210)		16	2.3	0.4	0.4		
Drums (N100)		2.2					
Sludges & 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**

A dominating theme is the upgrading of tanks, foundations and pipe work during previous years. This causes waste from cleaning tanks/pipe work, 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 dock lines & tank associated pipe work for ship unloading. While this year, 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.

8 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. 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 six 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	
	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
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
Diesel (kl)	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

In 2007 and 2008; the breakdown of emission contributors was electricity around 62%, natural gas at about 36% and diesel at 2%. In 2008, electricity and natural gas usage have increased by 24% and 26% respectively. While from 2005 to 2007, Natural Gas has shown a steady decrease of 7% from 2006 and 21% from 2005. 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 increased by 25% in 2008; were consistent over 2007 & 2006; were reduced by 8% in 2006 and a further 8% in 2005. The facility has undergone substantial changes over the last 6 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.

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
Effect from previous years	27 % increase after continual yearly increases	5% decrease after significant continual yearly decreases	East side shutdown in 2005.	24% increase 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
Effect from previous years	26% increase after two annual decreases since 2005.	East side gas usage shutdown in 2005.	26% after two annual decreases since 2005.

In summary, overall the GHG emissions have increased substantially in 2008 after fairly consistent levels through 2005 to 2007 and significant improvements over the last five years. 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 last 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. 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.	

9 GROUNDWATER MANAGEMENT PLAN

The annual Groundwater Monitoring Program of the west side for 2008 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

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. 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 12 months and recover approximately 100 – 200 litres per annum per system. In addition, with local construction work occurring, a further automatic recovery system was installed at Plant B northern area; located upgradient of the new boundary system. Only one well, located at Plant C south central, showed any SPH level during the December round.
- Down gradient off site monitoring wells meet the adopted criteria; ANZECC Guidelines for Marine Waters at 90% level of protection trigger values. This ANZECC criteria is changed to Marine 90% level to be consistent with criteria being generally adopted for this area of Maribyrnong river.
- Generally decreasing results compared with previous years. Only one analyte at one well (MW13) exceeded the adopted criteria in 2008.

Terminals proposes to continue the existing bi-annual sampling and assessment. The environmental consultant has recommended a tuning of the gauging program from quarterly to six monthly as areas where PSH has been identified have PSH skimmer pumps installed and wells in these areas are checked monthly. In addition the environmental consultant has recommended a tuning of the analysing program to change the SVOC suite to include analysis for Total Phenol, Phthalates and PAH thereby removing the unnecessary compounds which have not been detected over the last five years. Terminals agrees with these recommendations.

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 2008) are all below the target criteria for the first time. 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.

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. EPA has agreed for Terminals to cease groundwater monitoring of Plant A site.

10 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 pipe work 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. This has been approved by the EPA and community consultative committee (CICCC). The new second EIP and its status is summarised below. Steady and consistent progress is being shown as at end of 2008, a total of 60 actions have been completed compared to 39, 35 and 14 being completed by end of 2007, 2006 & 2005 respectively.

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, pipe work, loading systems for above Plant B and C tank upgrades;
- installing waste minimisation pipe work 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.

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