

**Shell Geelong Refinery Environmental Improvement Plan 2007 - 2009**

Segment	Aspirational Goal	Objective	Strategy	Target	Status (Nov 2008)		
Water Management	Maximise efficient use of water resources and further improve quality of effluent streams	Improve quality of water discharged from the refinery by improved management of refinery treatment facilities	Set list of key performance indicators (KPIs) for refinery effluent treatment systems	Set KPIs	In progress		
			Monitor effluent quality within refinery effluent treatment systems	Monitoring results within KPIs	Not commenced. Will be commenced following completion of above strategy.		
			Mark site drains to remind staff & contractors that all refinery drains ultimately discharge to Corio Bay	Marking of drains completed in 2008	In progress		
		Reduce dissolved salt in process water streams to enable optimal current and future reuse of recycled water	Improve operational controls to minimise salt water being pumped with skimmings.	Continue activities to segregate salt water streams from process water streams	Effluent streams meeting TDS of 1800ppm (average) and 3000 (daily max)	In progress	
						In progress	
		Effective management of the refinery interface with the intertidal zone	In consultation with relevant Authorities, continue to investigate practical options to maximise survival of fish living in salt cooling water intake	Study/review initiated in 2007	Ongoing		
		Reduce potable water consumption	Develop a Water Focus Team to assess feasible opportunities (such as collection of roof water runoff, waterless urinals etc) for reducing water consumption and opportunities for reuse	Continue to progress planning for Northern Water Plant in conjunction with Barwon Water	Establish Team in Q1 2008	Completed	
						Subject to relevant Federal, State and local authority approvals	In progress & ongoing
Energy & Greenhouse Gas emissions	Continue to drive efficient energy use and reduction of Greenhouse Gas (GHG) emissions from refinery operations	Further Improve Energy Efficiency to reduce GHG emissions	Develop refinery Energy and Greenhouse Gas Emission Management Plan	Aspire to overall refinery energy use reduction per barrel feedstock processed by end 2009	In progress		
			Maintain & improve the refinery's Energy Management System		In progress & ongoing		
			Develop an Energy Focus Team to assess feasible opportunities for reducing energy consumption. Seek opportunities for further reduction of refinery steam use		Completed		
			Optimise combustion efficiency to reduce CO2 emission		In progress & ongoing		
		Quantify abatements afforded in refinery Offset programs	Engage consultant to calculate emission offsets from tree planting program	Continue to monitor energy use across the site	Report publicly on energy management, emission reductions and abatement activities	Annual quantification of greenhouse gas offsets	In progress
						Complete monitoring and reporting as required	In progress & ongoing
						Annual reporting	Not commenced. Report to be completed end December 2008.
						Complete review in 2008	In progress & ongoing
Waste Management	Drive continuous improvement in environmental waste management, reduction and resource recovery	Divert waste from landfill by improved waste segregation and increased recycling	Implement the refinery's Waste Reduction Action Plan (WRAP)	Targets as per WRAP	In progress & ongoing		
				Continue to educate maintenance, operations staff and contractors of long term benefits of waste reduction at source point and recycling systems as per WRAP	Targets as per WRAP	In progress & ongoing	
				Continue to improve Schoe Park composting process	Complete review in 2008	In progress & ongoing	
				Waste reduction opportunities	Complete review in 2008	In progress & ongoing	
			Continue to seek opportunities for reuse of spent RCCU catalyst to divert from landfill	Targets as per WRAP	In progress & ongoing		

**Shell Geelong Refinery Environmental Improvement Plan 2007 - 2009**

Segment	Aspirational Goal	Objective	Strategy	Target	Status (Nov 2008)	
Air Quality	Improve ambient air quality by continuing to reduce air emissions from the refinery	Continue to improve quality of air emissions from the refinery	Implement the volatile organic compound (VOC) emission reduction project	VOC emissions less than 750 tonnes per year from refinery tanks and VRU by end 2009 as per EPA licence	In progress	
			Upgrade the cracker (RCCU) particulate separation facilities	Particulate emissions below 50mg/m3 from 30 April 2007	Completed	
			Review opportunities for further reduction of refinery flaring	Complete review in 2008	In progress	
			Aim to further reduce process fugitive emissions where practicable via improvements to the leak detection and repair (LDAR) program	Review and enhance LDAR program in 2008	In progress & ongoing	
			Reduce amine system impacts on sulphur recovery efficiency	HDS1 project to be completed in 2007	Completed	
			Maximise early production of ultra low sulphur fuels	Full production of ultra low sulphur diesel (10ppm) by 2009 and low sulphur premium unleaded fuel (50ppm) by 2008	Completed	
			Ensure refinery emissions will not cause ground level concentration to exceed SEPP & NEPM Intervention/ Investigation levels	Continue to monitor ambient air in the vicinity of the refinery commensurate with the risk posed from refinery emissions	Refinery emissions not to cause ambient air concentration greater than guideline levels	In progress & ongoing
				Publicly report ambient monitoring results for Benzene, PM10, Fluoride and SO2	Bi-annual public reporting via refinery website	In progress & ongoing
Soil & Groundwater	Ensure historical soil & groundwater impact is managed effectively in a risk based framework and that the potential for future impact is minimised	Containment of on-site impacts and management of off-site soil & groundwater impacts	Maintain effective boundary containment and control measures	Prevent further migration of impact off-site	In progress & ongoing	
			Demonstrate through effective monitoring that objective is met	Implement the Groundwater Monitoring Plan (GWMP)	In progress & ongoing	
			Continue investigations, detailed studies and Ecological Risk Assessment (ERA) to determine if historical impact poses potential risk to Corio Bay	Quantification of Risk and develop site specific ecological investigation levels	In progress & ongoing	
			Develop risk based management plans to minimise impact on the receiving environment based on data and outcomes of the ERA	Management Plans in place	In progress & ongoing	
			Reduce non-aqueous (undissolved) phase hydrocarbon on-site	Further review/enhancement of primary source management systems, controls, programs and procedures	Minimise potential for impacts to soil & groundwater resulting from loss of containment	In progress & ongoing
				Review and enhance strategies for long term recovery of on-site non-aqueous phase liquid	Implement enhanced strategies	In progress & ongoing
Community Amenity	Ensure refinery activities do not detract from the amenity of the surrounding community	Reduce noise levels attributable to the refinery	Investigate if tanker truck movements to/from the refinery can be influenced to minimise access to residential areas	Undertake investigation in 2008	In progress	
		Continue to improve site boundary aesthetics where practicable	Work with the City of Greater Geelong to support the development programs for the elimination of illegally dumped waste in the Geelong Refinery buffer zone & foreshore	Reduced occurrences of illegally dumped waste	In progress & ongoing	
			Continue implementation of the refinery's sustainable land management plan	Review outcomes of the SLMP program in 2008 and determine future improvements and opportunities	In progress	
		Reduce emissions of odours attributable to the refinery	Continue to reduce identified odour sources where practicable	No odours offensive to the senses of humans detected offsite	In progress & ongoing	
Proactive Environmental Management	Continue to implement effective environmental management systems to continuously improve environmental performance, prevent the occurrence of incidents and facilitate rapid emergency response	Leverage from Contractor "Environment Reps" network to raise the level of environmental awareness on site	Hold specific "Environment Reps" meetings, including participation from operations, maintenance and contractors	Four meetings to be held per year	In progress & ongoing	
		Prevent incidents and be ready to respond if they occur	Continue to maintain effective emergency response procedures	Complete regular exercises to test the effectiveness of the Marine Oil Spill Response Plan	In progress & ongoing	