



# **Qenos 2009 Operations report to ACNCG**

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This report has been prepared to summarise the Qenos Altona environmental management program including community consultation for 2009 to the Altona Complex Neighbourhood Consultative group (ACNCG).

## **2009 – An overview**

In 2009, Qenos achieved excellent results in environmental performance with a range of existing and new programs contributing to positive outcomes in the areas of water efficiency, energy reduction, reportable incidents, emissions and trade waste. No EPA licence or trade waste licence non-compliances were recorded in 2009. Qenos also continued to initiate and participate in community consultation and hosted numerous site visits for industry and community groups. Health and safety of the workforce remained a priority with low injury rates recorded and continued work to ensure the safety and health of employees.

## **The Audit Program 2009**

Qenos continued its Environmental Audit program in 2009 through two key activities:

### **Safety Health & Environment Operating System (SHEOS) audit**

An internal audit of SHEOP 6.5, Pollution Prevention conducted in November 2009 found that the Pollution Prevention system was effective. The audit identified four continuous improvement actions related to improving the system documentation.

### **Regulatory Compliance Audit**

An internal regulatory compliance audit completed at the Olefins site in 2009 identified no issues. This audit checks for compliance with the EPA licence and the City West Water (CWW) trade waste licence.

## **Improving the environment**

### **Environment Improvement Plan (EIP)**

The 2009 Environment Action Plan (EAP) contained 30 actions, with a focus on:  
Greenhouse gas reduction/energy efficiency – 13 actions  
Water and wastewater reduction – 7 actions  
Flare system improvements – 5 actions  
Training, transported waste and odour – 5 actions.

Progress on the EAP was discussed at each of the Environment Monitoring Team (EMT) meetings and case studies of completed items were highlighted to steward the level of improvement gained.

Of the 30 actions, 24 were completed in 2009 and five were started; these five actions and the remaining action have been included in the 2010 EAP.

**Table 1 EAP status**

Items Completed in 2009	Deferred Items	Items continuing into 2010	Total Items
24	0	6	30

**Responding to community complaints**

In 2009 Qenos accepted 15 complaints from the community. Each complaint was investigated and documented and feedback was given as follows:

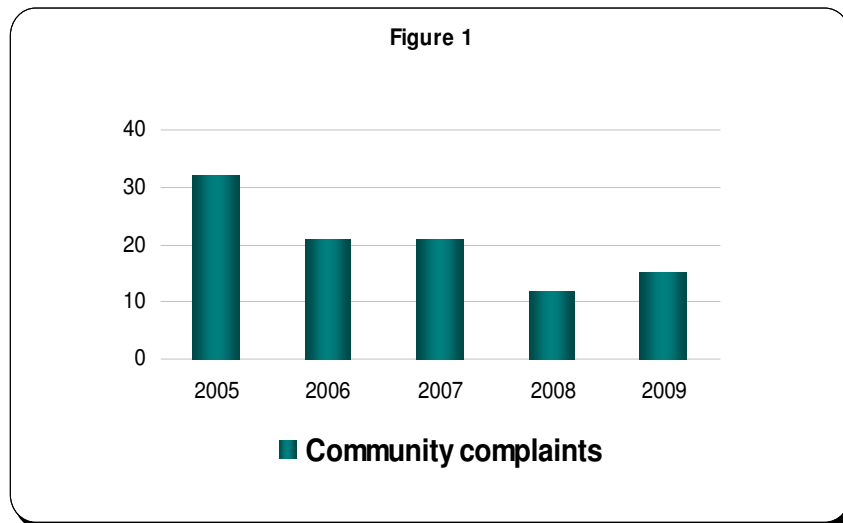
Verbal feedback to the complainant.

A copy of the written investigation was forwarded to EPA and City of Hobson’s Bay. Presentation to the Environment Monitoring Team (EMT) meeting covering the cause and preventive actions.

The Altona Consultative Chronicle newsletter, delivered to the community, included a summary of all complaints.

Five of the complaints were associated with the operation of the Plastics flare, nine with operation of the Olefins flare and one for background odour from Olefins.

**Figure 1 Community complaints trend**

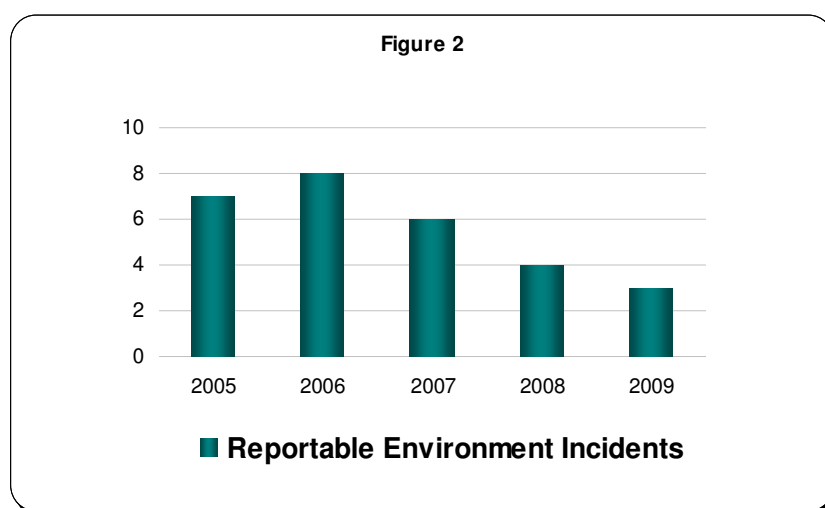


## Reportable environmental incidents

Three events were reported to EPA during 2009. For each a report was raised and the incident was investigated.

Reports from the investigations of each of these were submitted to EPA with a copy provided to EMT members during the year and discussed at the EMT meetings

**Figure 2 History of reportable incidents over the last five years**



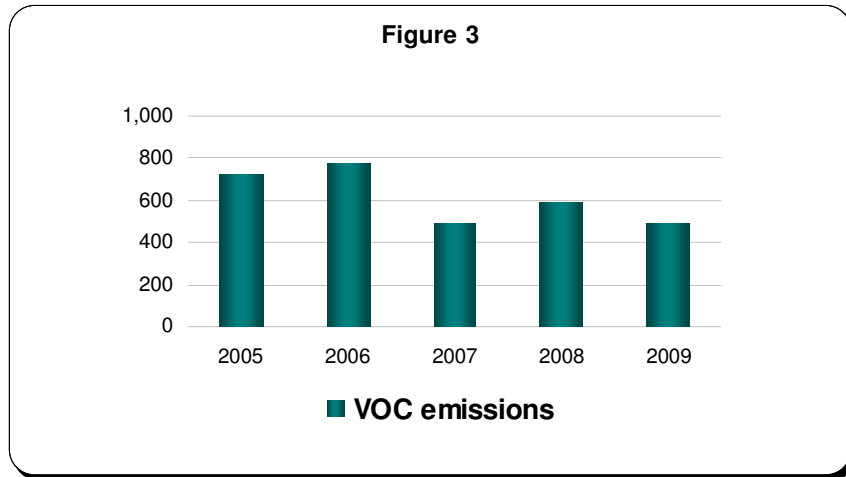
## EPA waste discharge licence

The calculated emissions for 2009 were all within EPA licence limits and are similar to 2008 emissions.

**Table 2 EPA Licence Limits 2009**

Compound	Licence	2006	2007	2008	2009
	tpa	tpa	tpa	tpa	tpa
Particulates	92	23.2	30.7	27.1	26.1
Benzene	10	4.1	2.6	1.7	2.1
Total organic compounds	1000	764	446	525	492
Nitrogen oxides ( NOX)	770	628	629	594	555
Sulphur dioxide	200	37	24.9	62.4	58
Carbon monoxide	426	118	166	136	147
Hydrogen chloride	2.3	0.094	0.095	0.051	.051

**Figure 3 VOC emissions, annual 2005–2009**

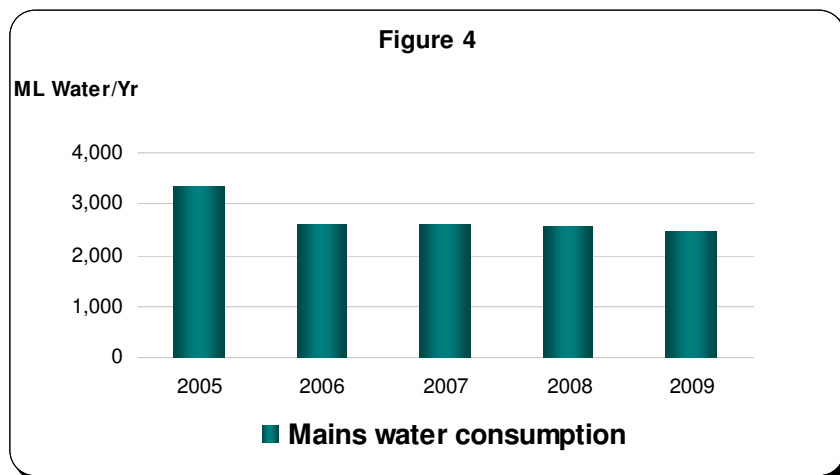


## Water and wastewater – efficiency and re-use

### Mains water use

In 2009, Qenos maintained its considerable achievements in water efficiency and re-use. Conservation of mains water has continued to improve since water restrictions were first introduced in 2002.

**Figure 4 Mains water consumption, annual 2005–2009**



Total mains water use in 2009 was 127 ML less than the 2006 to 2008 average. Two major water reduction projects commenced in 2009: the direct re-use project at Resins and the sour water re-use at Olefins and Plastics. These projects, along with the Altona Industrial Project (Recycled Water from CWW), will provide the majority of the non-potable water demand at Qenos.

## Water reduction projects

The sour water re-use project aims to recover 400 ML/year of low-salt stripped sour water from Olefins that was previously sent to sewer, for re-use as cooling tower make-up after treatment by Waste Water Treatment Plant (WWTP) at the Plastics site.

The current test stage of the project should recover between 150-170 ML/year of water. The expansion to 400 ML/year is dependent on the performance of the first stage, and is currently progressing in 2010.

CWW has started construction of the delivery pipeline from the Altona treatment plant and the waste water treatment plant with a scheduled completion date for late in 2010. Qenos are constructing the facilities required to receive the treated water.

Qenos participates in the WaterMAP program. Through this program water saving initiatives are identified and implemented, with action plans lodged with CWW for each site, and reviewed each year

## Reducing industrial waste

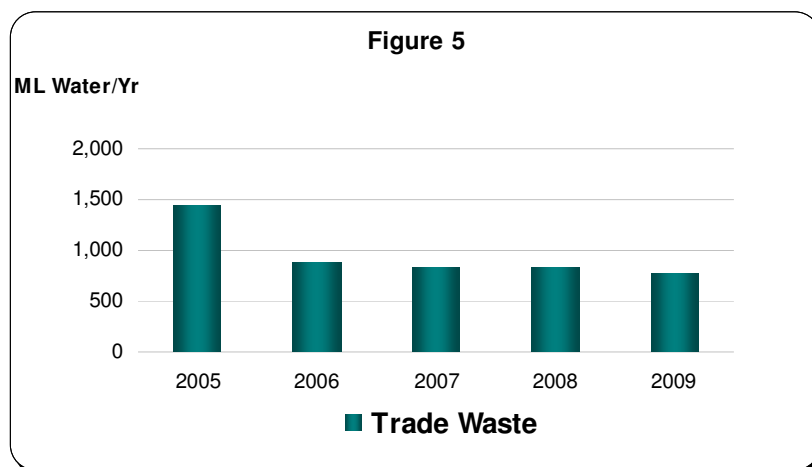
### City West Water Trade Waste agreement

In 2009, the total volume of trade waste discharged to CWW's sewer dropped by six per cent to a record low of 782 ML, maintaining effluent discharge levels below 6 ML per kT of polyethylene production.

During 2009, some new projects contributed to minimising trade waste disposal to sewer including:

- the resins re-use project, which involves treating the major process waste water stream and reusing it as cooling water
- the sour water re-use project, which treats up to 10KL/hour of the Olefins waste water (sour water) stream being directed to Plastics site and subsequently re-uses it as cooling water.

**Figure 5 Trade waste discharge, annual 2005–2009**

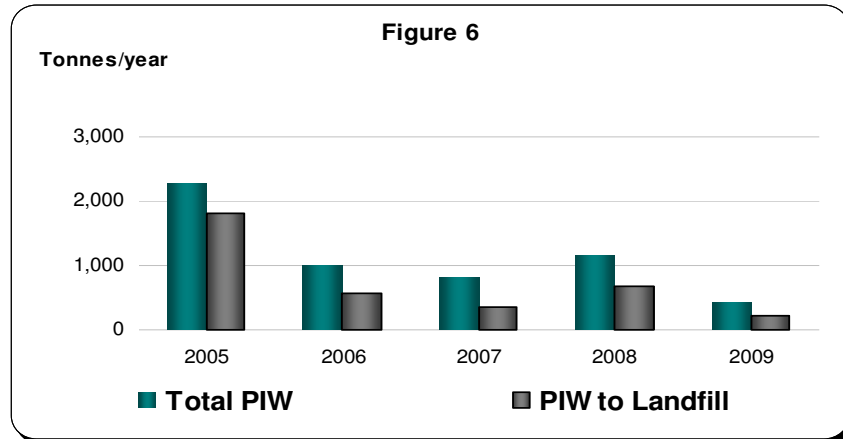


## Solid and prescribed waste

The amount of prescribed waste from Qenos was at the lowest level ever in 2009. There were no significant maintenance activities that generate larger masses of prescribed waste scheduled or completed during the year.

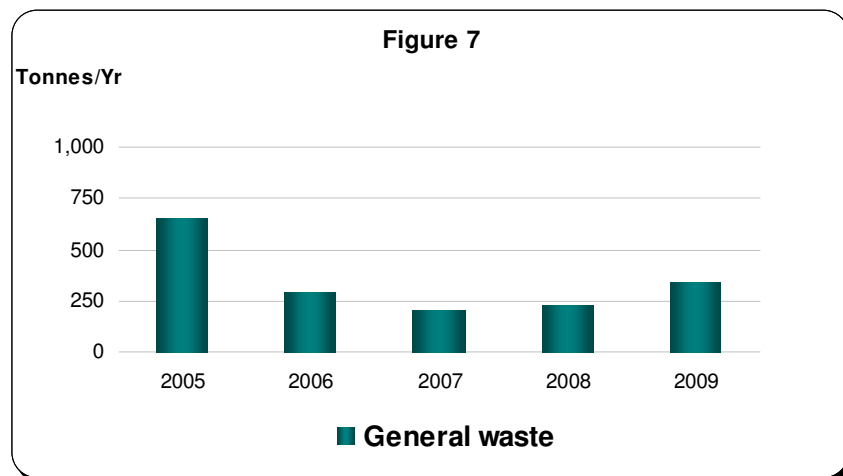
A review of the prescribed waste streams has identified that coke and tar waste is the only waste stream that has the potential to be sent for energy recovery in cement kilns via Geocycle's new process. This is planned to be trialled in 2010

**Figure 6: Prescribed industrial waste, 2005–2009**



General waste to landfill was higher in 2009 compared to the previous two years. A long term storage area at the Olefins site where surplus maintenance and construction materials had accumulated was cleaned up. During this activity 1630 tonnes of rocks and concrete rubble was sent off site for use as road base, 120 tonnes of scrap metal was sent for recycling, 21 tonnes of high value metals was recovered, and 30 tonnes was sent to general waste. Through thoughtful resource recovery, Qenos made a gain of around \$90,000, sent 1780 tonnes of material for reuse/recycling and limited landfill to 30 tonnes.

**Figure 7: General waste, 2005–2009**



## Focus on energy

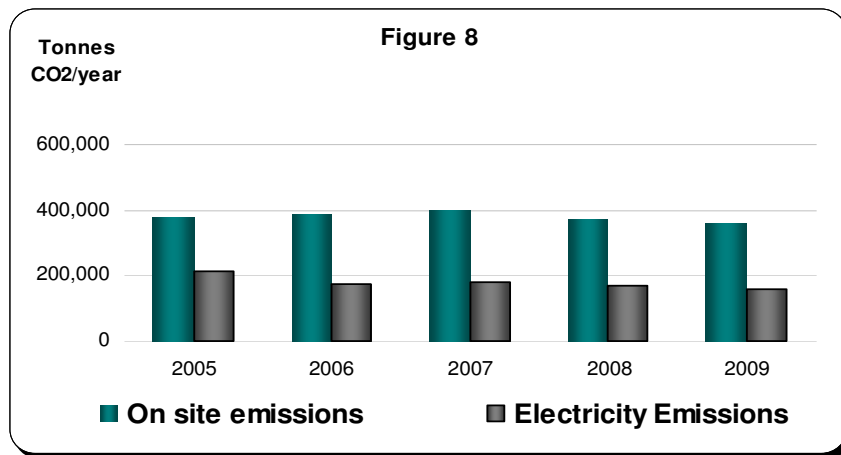
Energy consumption and greenhouse gas emissions have been stable since the Altona facilities rationalisation in 2005. Optimisation of existing assets through efficient operation and a number of small energy reduction projects has been the focus during this period.

In 2009 these projects included:

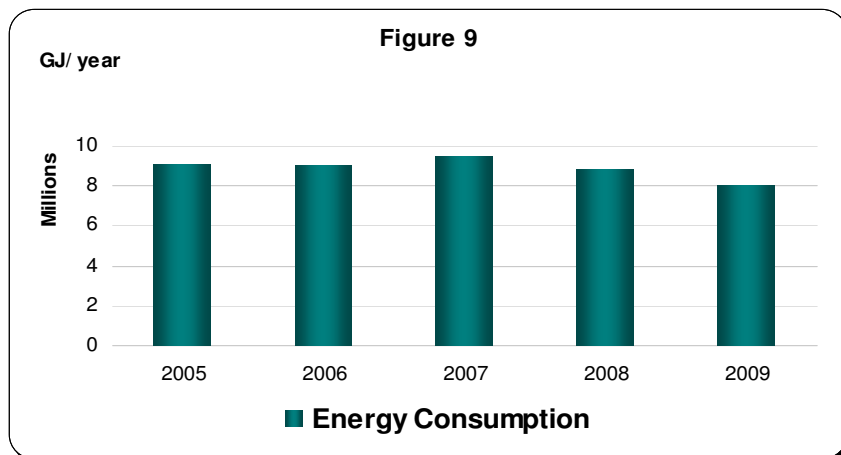
- Slowing down a recycle compressor by regearing saving 17,600 kw of electricity and 1,800 tonnes of CO<sub>2</sub>
- Optimising combustion in the steam cracking furnaces and boilers 13,300 GJ of natural gas and 540 tonnes of CO<sub>2</sub>
- Replacing an ethylene rundown pipe line with a new line, saving 40,000 GJ of energy and reducing CO<sub>2</sub> emissions by 2,300 tonnes

Genos has progressed the Energy Efficiency Opportunities audits at all three sites in 2009 and these will be completed in 2010.

**Figure 8: Greenhouse emissions, tonnes CO<sub>2</sub>, 2005–2009**



**Figure 9: Energy consumption, GJ/year, 2005–2009**



## Managing groundwater

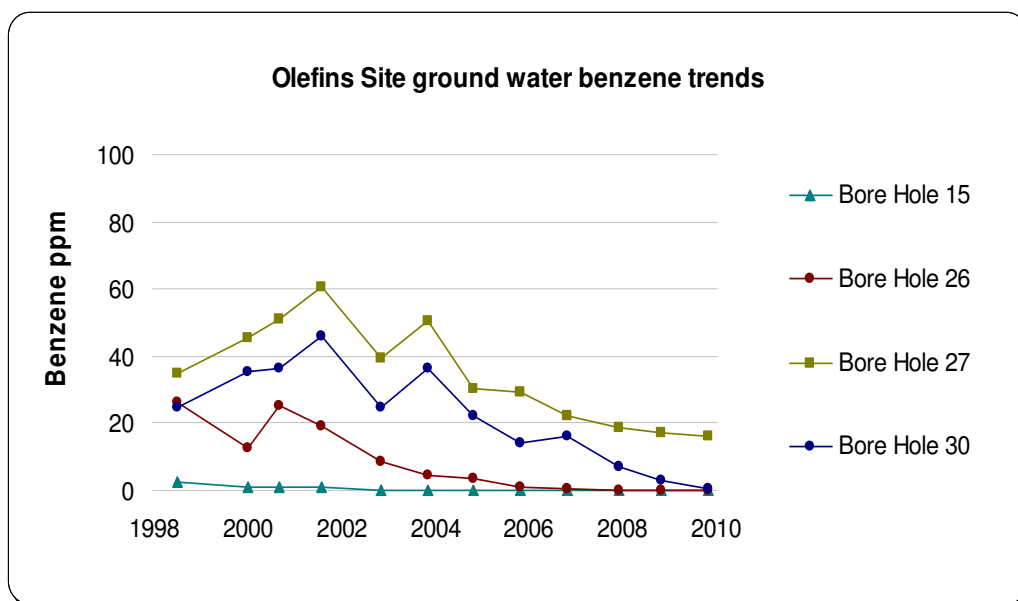
The annual Groundwater Monitoring Event (GME) for onsite wells across the Qenos sites and the three offsite wells south of the Olefins plant was completed in November 2009.

The GME monitored the water levels from 38 wells and collected groundwater samples for analysis from 22 wells from the three operating sites (Olefins, Plastics and Resins) and the three offsite wells south of Olefins. The samples were collected using a low flow sampling technique. The groundwater analysis identified did not identify any changes of concern in groundwater quality since the 2008 GME other than the detection of some Phase Separated Hydrocarbon (PSH) in BH33QO at the West side of the SCAL-1 plant. In the Olefins tank farm around BH15QO, BH26QO, BH27QO and BH30QO the benzene levels continue to trend downwards, as shown in Figure 10. The results from the offsite monitoring wells BH34QO, BH35QO and BH36QO did not exceed the offsite trigger levels in the groundwater management plan.

The bore skimmer installed in BH27QO in December 2004 has not collected any hydrocarbon from the well since June 2005. Based on this and the decreasing benzene trend, the monitoring of BH27QO will revert back to the annual GME.

The 2008 and 2009 annual reports noted that PSH had been identified in some recently installed groundwater monitoring wells on the Olefins site. These wells were installed as a result of the purchase of Qenos by Chemchina. The Qenos groundwater management plan will be updated in 2010 to manage the PSH in these new wells and BH33QO and upon completion will be forwarded to EPAV.

**Figure 10 Olefins ground water benzene trends, 1998–2010**



## Supporting the community

Qenos is a member of the Altona Complex Neighbourhood Consultative Group (ACNCG) and in 2009, Qenos attended three ACNCG meetings and conducted four Environment Monitoring Team meetings.

Qenos acknowledges and appreciates the time and commitment of our community members and regulatory representatives who have continued to support the consultative process by attending and participating in these gatherings. The consultative process adds value to Qenos' environmental and social performance through the contributions made via these forums.

Community investment is an integral part of Qenos' commitment to social corporate responsibility and we appreciate the opportunity to connect with, assist and benefit from our involvement with local communities.

In line with our Community Right to Know affiliation, Qenos provided numerous community engagement opportunities via informative site tours for industry groups, school and university students, local, state and overseas visitors. We welcome such opportunities to showcase our people, plants and products.

Consistent with our vision and values, Qenos encouraged employees to volunteer their time to assist disadvantaged and marginalised members of the community and local organisations. The Qenos Graduate Network contributed to the Sacred Heart Mission in St Kilda by volunteering at The Meals Program and working in the Mission's vegetable garden. An employee drive to donate food provided nearly 80 Melbourne families with a heartier Christmas table.

Qenos employees also participated in community and charity events such as Run for the Kids, Movember, Footy Colours Day and Ride to Work Day. Other employees contributed to local schools via the Scientists in Schools program or by providing vocational guidance or literacy assistance to young students. One of our young chemists appeared on 'Scope', a television program aimed at demystifying the science of polymers.

Qenos has been able to provide financial assistance to a wide variety of worthy organisations including Western Chances, BreastWest, MAD Foundation, Hobsons Bay Community Fund, Peter MacCallum Cancer Clinic, Hobsons Bay Arts Society Inc, Whitelion and the Amy Gillett Foundation.

Local fellowship organisations, kindergartens, schools, sporting and other clubs were the recipients of various sponsorships or in kind donations during 2009, as well as charities raising funds for health research and assistance.

# Health and safety

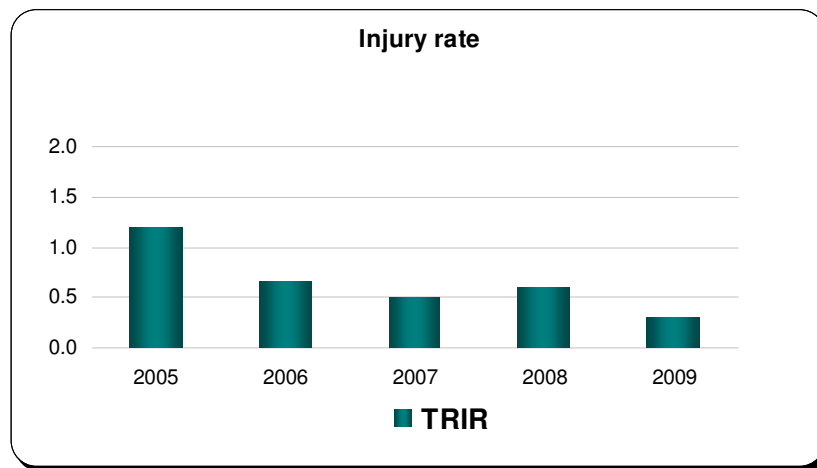
## Altona personnel safety performance

Qenos uses Occupational Safety and Health Administration guidelines for injury classification and records the number of recordable injuries per 200,000 work hours (known as Total recordable Injury Rate TRIR).

In 2009 Qenos registered a Total Recordable Injury Rate (TRIR) for Employees and Contractors of 0.29. (The target was 0.5 or less). There were no Contractor Reportable injuries (The Contractor TRIR = 0). There was one Lost Time Injury, two Restricted Work Case injuries.

Qenos was the top performing company in PACIA annual injury performance benchmark survey for 2008. (For companies with 200 + employees).

**Figure 11: Injury rate, TRIR, 2005–2009**



## Employee health

Qenos conducts internal assessments for compliance with occupational health and safety legislation. Continuous improvement projects are initiated as a result of monitoring programs and internal assessments.

The following programs aim to understand and minimise risks to employee health and safety:

- Workplace exposure monitoring programs are carried out at each of the operating sites and results indicate that exposures to chemical and physical hazards are below current occupational exposure limits.
- Training and resources – personnel receive training in the nature, exposure and control of the hazards in the workplace. Material Safety Data Sheets (MSDS) are available to all personnel on site via hard copies and an electronic system.
- Policies and procedures – Qenos maintains management manuals, policies and procedures for hazards encountered in the workplace.

- Asbestos handling – asbestos pipe insulation at Qenos sites is safely sealed by metal and other types of cladding to prevent exposure. Surveys of the condition of asbestos containing material are regularly carried out and all are clearly labelled. During 2009, a quantity of asbestos containing material was removed from Qenos sites by WorkSafe approved removalists.
- Legionella control – Qenos cooling tower systems have automated online disinfection facilities to control risks from Legionella and other bacteria. During 2009 all Qenos industrial cooling tower systems had registrations renewed with the Department of Health (DOH).
- Noise exposure – during 2009 further noise control projects were implemented to reduce plant noise. All Qenos plants have clearly marked areas where hearing protection is required. Suitable hearing protection is made available to employees.

## **Major Hazard Facilities (MHF) regulations**

The Qenos manufacturing facilities are registered as major hazard facilities (MHF). Qenos has a five-year MHF Licence to Operate which was granted in November 2007 for the second round licence verification.

To confirm Major Hazard Facilities maintain an ongoing satisfactory level of safety management to meet their licence obligations, WorkSafe implements an 'Oversight' assessment activity. This activity includes a detailed audit of key safety management system elements and selected major hazard critical controls.

Qenos has seen a progressive improvement in the compliance results with this WorkSafe assessment.