

Environmental Improvement Project Summary



Queensland Alumina Limited's (QAL) goal is to be the best corporate citizen in Gladstone and to continue to reduce its impact on the environment.

We recognise the responsibility we have to manage our resources and refining activities in a sustainable way. We aim to minimise the environmental impacts of our operations and where we can, make a positive difference to the environment and community in which we operate.



QAL has recently completed a five year \$245 million capital program to deliver improved environmental performance and reduce the impact of our operations on the community.

This brochure provides an outline of the major work completed, and whilst the five year plan is essentially complete, work is still continuing on projects to further address odour and alkali emissions.

Fast Facts

In the last five years 57 per cent of total capital expenditure was dedicated to environmental improvements.

Operations at QAL are conducted under an Integrated Environmental Management System which ensures continuous improvement.

QAL has been certified to the international environmental standard ISO 14001 since 1999.

QAL is an active member of the Port Curtis Integrated Monitoring Program which supports research into healthy waterways.

Since 1990, QAL has reduced Greenhouse gas emissions by 11 per cent.

QAL has been a signatory to the Federal Government's Greenhouse Challenge Plus Program since 1991.

QAL's water recycling partnership with Gladstone Regional Council is the largest in the state.

Calcination units

\$175 000 000

Rotary kilns in the Calcination section were replaced with three gas suspension calciner units. The installation of baghouses on these units have given a 95% reduction in particulate emissions with alumina dust reducing from 600 mg/Nm³ to less than 20 mg/Nm³.

The more energy efficient units have also resulted in a saving of around 250 000 tonnes of carbon dioxide (CO₂) emissions per year - the equivalent of taking around 60 000 cars of the road per annum.



Alumina loading systems

\$2 900 000



The telescopic chute for loading of alumina at the wharf facility was replaced with a Cleveland cascade chute. Monitoring has demonstrated that dust emissions have been significantly reduced.

In addition, horizontal bag filters were installed on the alumina transfer points resulting in a 50 per cent reduction of both visible and measured dust emissions.

Boilerhouse

\$48 000 000

The electrostatic precipitators on all seven boilers were replaced with newer technology of baghouses which essentially act like a vacuum cleaner bag, filtering fly ash from the boiler flue gases before they are released into the atmosphere.

Emissions have been reduced from an estimated 80 milligrams per normal cubic metre (mg/Nm³) to less than 10 mg/Nm³. At these levels, stack emissions are not visible.





Lime Outsourcing

\$2 500 000

QAL's two lime kilns were demolished in an ongoing effort to reduce dust and noise levels. Burnt lime is now outsourced and a new load receipt system was installed to allow for the transfer of lime into the storage facility.

Coal Loading Facility

\$950 000



Fogging sprays were installed on the train unloader, reducing coal dust generation by 80 to 90%. Other controls include the installation of fixed and mobile sprays on the coal stockpile and dust suppression systems at transfer points.

The ground was also sealed under silos for improved housekeeping. Of the 1.5 million tonnes of coal per year received by QAL, 5 per cent is stockpiled, with the other 95 per cent transferred directly to coal silos in the plant from the train unloading station. An emergency stockpile of 120 000 tonnes of coal is sealed to minimise dusting.

Destratification Units

\$250 000

Two solar powered destratification units were installed at the Residual Disposal Area to mix water layers and eliminate temperature inversions in the water body. The installation of this equipment has proved to be very successful with no odour 'events' recorded since.



Thermal Oxidiser

\$3 500 000



Odour in the plant is generated from the Digestion section where decayed organic matter in the bauxite is broken down during the refining process. Since the installation of a Thermal Oxidiser to burn non condensable gases, odour emissions have reduced by 40 per cent.

The piping of Evaporation vents into the Thermal Oxidiser has seen further odour reductions. A comprehensive study to identify other significant sources of odour site wide has been conducted and work is continuing to implement further controls.

Alkali Reduction

\$2 000 000

A number of projects have been implemented under an Alkali Emissions Environmental Management Program to reduce airborne alkali emissions including modifications to existing tankage and development of new technology for tank cleaning.

Initial monitoring demonstrates that the projects have been successful in varying degrees with emission reduction and work is continuing as further technological solutions are developed.

Treated Effluent

\$7 300 000

In partnership with the former Gladstone City Council, QAL undertook the state's largest water recycling plan by incorporating Gladstone City's treated effluent water into the final wash of the refining process.

The project has reduced QAL's freshwater consumption by an estimated 2.5 gegalitres per year, the equivalent of 2 500 Olympic sized swimming pools. Other environmental benefits include the cessation of treated effluent being discharged into Gladstone's waterways.

Waste Transfer Facility

\$2 250 000

It is believed that QAL was the first major industry in Australia to invest in a purpose built dedicated waste management facility on site. In 2006, the facility handled 2 634 tonnes of waste and recycled 3 119 tonnes including some inventory carried over from 2005.

Revegetation and Land Management

Since commencing the revegetation program, over 18 000 trees have been planted on the buffer zone between QAL and the Barney Point community to increase habitat values for native fauna, improve visual aesthetics and manage erosion and dust.

As a result of flora and fauna surveys areas of habitat have been protected and weed management strategies established.