

Health, Safety, Environment  
and Communities  
*Report*

2008






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## Target system:

Throughout the QAL HSEC report, a target system has been used to identify whether goals for the year have been met. These targets are set so that we can gauge our progress and implement plans for continuous improvement:

### Target system legend:

-  A green target means the goal has been met or exceeded.
-  A yellow target means that work is continuing to meet the desired target.
-  A red target means the goal was not met.



# Managing Director's *Welcome*

On behalf of Queensland Alumina Limited (QAL) I am pleased to present our 2008 Health, Safety, Environment and Communities Report which details our performance over the past twelve months.

At QAL, we recognise that the journey towards becoming a sustainable business is ongoing and 2008 has been a year of successes and challenges for us. We set demanding targets for improvement in all areas of our business and each year appropriate management systems and tools are implemented to help us achieve our goals.

The completion of the environmental improvement capital program has laid a solid foundation for QAL to head for a greener future. Taking five years to complete, the program has greatly reduced the environmental impact of our operations, however we recognise the need to continue our work and identify more areas for improvement.

QAL did not repeat its excellent safety performance of 2007 in 2008 which is disappointing. Many significant initiatives were completed and our QSafe program was supported by the vast majority of employees and contractors. QAL does not believe that any injury is acceptable in our business and we require greater commitment from all employees and contractors before we can reach our goal of zero injuries and incidents.

Meeting our projected budget for production also proved to be a challenge due to unscheduled maintenance outages. While QAL was just under the target of 3.95 million tonnes, we were successful in achieving the third best year for production in the refinery's history. In 2009, we will be striving for an increased production of 4.012 million tonnes. To help us do this we are relying on an improved operating and maintenance focus as well as the completion of a key capital project in the whiteside of the plant.

QAL continued to work closely with the community to develop and strengthen relationships within the neighbouring communities. Our community forum continues to provide a valuable opportunity for open communication and engagement with our neighbours and we look forward to another successful year.

QAL has also been actively involved in the Clean and Healthy Air Study which is working towards addressing community concerns in relation to air quality. QAL was represented on the Industry Reference Group and provided input into the study scope to ensure maximum community involvement and robust processes.

Looking forward, 2009 will bring new opportunities and challenges, particularly in light of the current economic downturn. QAL will continue to focus on the basics of uncompromising attention to health, safety and environment, sharper cost control, maintaining our good relationship with the community and operating and maintaining our refinery well.

Finally, we welcome your comments either on the content or presentation of this report so that we can shape future issues even more closely to your needs. I encourage you to use the feedback form inside this report for any comments you may have.

At QAL we will strive to constantly improve our results and do our business in line with our motto; Safer. Cleaner. Better.

Regards



**Phil Campbell**  
Managing Director



## Performance Highlights:

- QAL celebrated its third best year for production in the refinery's history.
- QAL completed the five year Environmental Improvement Plan. Valued at over \$240 million, the projects have greatly reduced the refinery's impact on the community in the areas of dust, odour, noise and alkali emissions.
- QAL continued to contribute significantly to the local economy with approximately \$200 million paid in salaries and wages to employees working at QAL as well as local suppliers and contractors. This is a testament to QAL's commitment to using local suppliers and people where possible so the region may directly benefit from the operation.
- QAL was recognised as one of the nation's top training providers with the Best Training Processes and Practices of The Year: Large Company Award in the 2008 Mining Industry Skills Centre Training Awards and regional finalist in the Queensland Training Awards.
- The QAL 50 year plan for Residue Disposal Management reached a significant milestone with the commissioning of a neutralising facility and the recommissioning of part of the number one dam.
- The QSafe program achieved a record 32 137 observations undertaken in 2008 – the highest level in the program's nine year history.
- In 2008, QAL contributed almost \$400 000 in financial and in kind support to the local community through sponsorships and donations.

# Our HSEC Policy

QAL is committed to managing our workplace in a safe manner, free from incidents, injuries and illnesses. We will ensure that environmental impacts directly or indirectly related to QAL are minimised. We acknowledge the importance of effective communication both internally and to our stakeholders.

Excellence in managing Health, Safety, Environment and Communities (HSE&C) is essential to our sustainability and is a primary responsibility for all QAL employees and contractors.

## Policy

- Ensure HSE&C principles are an essential part of QAL's management and decision-making process. QAL's objective is to demonstrate leadership through performance that contributes to maximisation of value. The foundation of our leadership program is that all work is planned using risk assessment
- Create an atmosphere that motivates and supports all employees in their efforts to achieve a zero injury / incident working environment
- Provide systems to ensure "fitness for work", identifying and addressing occupational health risks, creating a healthier work environment
- Minimise emissions, giving priority to those that may present the highest risk to health and the environment
- Audit the operation and business processes at regular intervals to assess HSE&C performance and compliance
- Prepare, test and maintain emergency procedures

- Eliminate substandard behaviour and conditions (hazards) in the workplace
- Address HSE&C implications of development, operations, maintenance and closure
- Continually evaluate and improve our business practices, processes and services to reduce risk
- Engage in open and transparent communication with stakeholders to achieve greater HSE&C understanding to ensure the long-term sustainability of QAL as a business in Gladstone
- Consider and establish appropriate HSE&C requirements when selecting business partners and contractors.
- Participate in voluntary and community programs such as the Greenhouse Challenge Plus Program and Alumina Learning Partnership with local schools
- Comply, as a minimum, with legal requirements and adopted international standards aiming to perform beyond regulatory requirements
- Report on performance to our workforce, our owners, and the greater community.

## MD Personal Commitments

- I will ensure there are effective systems and processes in place to give effect to this Policy
- I will hold leaders accountable for annual action plans to deliver Health, Safety, Environmental and Community improvements
- I will authorise the allocation of resources, including appropriate training, sufficient for those plans to be implemented
- Legal compliance is the absolute minimum performance standard expected, best practice is encouraged
- Compliance with this Policy is a condition of employment for employees and contractors
- Individual Health, Safety, Environment and Communities performance will be assessed each year
- I expect the following principles to be applied at all times to all tasks, by people in our business: Safer. Cleaner. Better.

Phil Campbell  
Managing Director  
November 2008





*Fast fact*  
**Production of alumina is the necessary intermediate stage between mining the ore (bauxite) and producing the metal (aluminium).**

## Our Operation

QAL commenced in March 1967 with an annual production rate of 600 000 tons of alumina. Today, QAL remains one of the world's largest alumina refineries, producing some 3.95 million tonnes of the world's best smelter grade alumina per year. Estimated replacement value is approximately US\$5 billion.

The refinery covers 80 hectares of a 3 050 hectare site on the south-east outskirts of the city of Gladstone. Adjacent to the plant is a wharf and storage facility on South Trees Island, which is connected to the mainland by a causeway bridge.

## The Process

QAL's bauxite supplies are mined at Weipa in far north Queensland. The bauxite is loaded onto specially designed and QAL chartered, coal-fired ships that transport the bauxite around Cape York and 2 000 kilometres down to Gladstone.

Alumina is produced at QAL through the continuous four stage "Bayer Process" involving:

### 1. Digestion – Dissolving bauxite's alumina content

Bauxite is finely ground in mills, then mixed with a recycled caustic soda solution and steam in digester vessels operating at high temperature and pressure. This dissolves the alumina content of the bauxite and the solution is then cooled in a series of flash tanks.

### 2. Clarification – Settling out undissolved impurities

The impurities, which remain undissolved, are allowed to settle as a fine mud in thickening tanks. After several washing stages to recover caustic soda, this residue is neutralised with sea water and pumped to storage dams. The solution of alumina in caustic soda is further clarified by filtration.

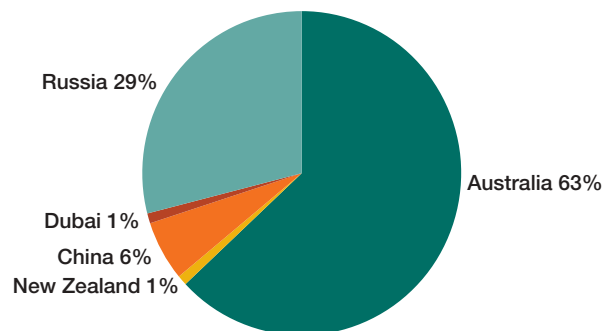
### 3. Precipitation – Forming alumina crystals

The next step involves the recovery of alumina crystals from the caustic solution. In open-top tanks, the solution is stirred by mechanical agitation and seeded with previously precipitated alumina to assist crystal growth.

### 4. Calcination – High-temperature drying of alumina

The precipitated material (called hydrate) is washed and calcined at temperatures exceeding 1 000 degrees Celsius. This forms the dry white anhydrous aluminium oxide powder, alumina, which is cooled and conveyed to storage.

Alumina Shipped During 2008



## Ownership

QAL produces alumina on behalf of a consortium of two aluminium companies. As of December 2008 the shareholdings in QAL were:

- Rio Tinto Alcan 80 per cent
- Rusal 20 per cent

Owners are supplied with alumina in proportion to their equity. A tolling charge per tonne of alumina is applied to recover the costs of processing, including operating, maintenance, raw materials, energy and administration. The above graph illustrates where alumina was shipped during 2008.

## Economic Contribution

QAL recognises the importance of supporting our local community and as such, annually contributes approximately \$200 million directly to the local economy in wages, salaries and maintenance and capital work carried out by local contracting companies. Local goods and services are also used where possible.

## QAL Vision

*QAL will be recognised as the best producer of alumina in the world*

- *The best to work for*
- *The best corporate citizen*
- *The supplier of choice*
- *The best to own*
- *The best to supply*

## Our People

Our basic strengths will be the initiative, innovation and teamwork of our workforce, together with our ability to anticipate and effectively respond to change and our commitment to continuous improvement across all facets of our business activity.

## Employment

The refinery operates on a 24 hour, 365 days a year continuous basis, requiring approximately 400 shift workers on a rotating four crew, 12-hour shift roster, as well as 250 day maintenance workers and 400 staff.

The refinery is organised into operations and service or support departments. The Operations Department consists of five operating sections each consisting of a section superintendent, shift operating teams and day maintenance teams. Remaining departments are: Health, Safety, Environment and Communities, Maintenance Services, Technical Services, Commercial and Engineering.

In 2008, QAL operated with an average workforce of 1 160 employees, and some 400 plus contractors whose numbers varied with workload. At the end of 2008, 112 employees (excluding contractors) were female, representing 10.3 per cent of the total workforce (a 0.95 per cent increase from 2007). The average workforce turnover rate in 2008 was 11.4 per cent, up from 7.4 in 2007.



*Keith Greatrix, Human Resources Superintendent accepts QAL's Award at the 2008 Mining Industry Skills Centre Training Awards*

*QAL 2008 Apprentices of the Year Linden Stiller and Michael Simpson*





*Fast fact*  
**QAL is one  
of the State's largest  
apprentice employers.**

## Training

QAL has a strong commitment to being the employer of choice and is continuously investing both time and money into projects that improve its training and development processes.

QAL has many professional development opportunities including a tertiary education assistance scheme, as well as an extensive listing of internal and external training courses, many with national accreditation.

### *Excellence in Training*

QAL was recognised as one of the nation's top training providers when it was awarded Best Training Processes and Practices of The Year: Large Company Award in the 2008 Mining Industry Skills Centre Training Awards. Metalliferous Processing Trainee Genine Pritchard was also a finalist in the Processing Trainee of the Year category at the Awards.

QAL's excellence in training was also recognised at the Central Queensland Training Awards Regional Final as the recipient of Large Employer Award. This accolade follows on from previous success in the awards in 2005 where QAL was shortlisted as one of four finalists for Employer of the Year at the Australian Training Awards after being awarded the regional and state title in the same category.

## Vocational Development

### *Work Experience*

During 2008, QAL again offered a school based work experience program to familiarise high school students with industry. A total of 65 students from local schools and the Central Queensland Institute of TAFE were hosted for one week periods each, compared to 30 in 2007.

The experience was coordinated locally through the Schools and Industry Network (SAIN) and is aimed at providing students with a valuable insight into possible future careers.

### *Vacation Employment*

QAL again offered a paid employment program for tertiary university students on their Summer vacation. The annual program offers a unique opportunity for students willing to give up their three months of holiday for practical work experience. Vacation students are usually in their penultimate year and employed to carry out specific project work for a 12-week period.

QAL employed 20 vacation students over the 2008/09 Summer in the areas of process, electrical and mechanical engineering, technical services (including research and development and laboratory), maintenance, commercial, as well as occupational health and safety.

### *Trainees*

A 12 month traineeship program in Refinery Support was offered in 2008 and QAL employed 16 trainees to gain a broad range of non-trade related skills. All trainees completed the program and most secured permanent positions within QAL as operators and non-trades personnel in our Maintenance and Operations sections of the plant. Four trainees also commenced a two year Boiler Operations traineeship.

### *Apprentices*

January 2008 saw another yearly intake of QAL apprenticeships with 17 new apprentices welcomed to site. As

one of the State's largest apprentice employers, QAL is committed to providing appropriate apprentice training to ensure a skilled workforce for the future. QAL recognises the achievements of apprentices with an annual Apprentice of the Year Awards ceremony. In 2008, the recipient was fourth year Mechanical Apprentice Linden Stiller. QAL also awarded fourth year Electrical and Instrumentation apprentice Michael Simpson as Shell Apprentice of the Year.

### *Engineering Co-operative Program*

QAL has a long-standing relationship with CQ University (CQU) and the Engineering Co-op program demonstrates one of the many positive outcomes from this mutually beneficial relationship. Since 1996 QAL has hosted second and third year Engineering Co-operative students, where two six-month blocks of practical project training is undertaken as part of their CQU Co-op degree.

### *Graduate Program*

In 2008, QAL employed another eight graduates as part of the refinery's formalised Graduate Program. Introduced some years ago, the Program is designed to assist graduates to move from university into a dynamic working environment and is part of a long term strategy to bolster skilled workforce numbers. In 2008, graduates were employed in the refinery within process, electrical, mechanical, and materials engineering as well as human resources and business/accounting disciplines.

## CASE Study

Alicia Fahey, Graduate  
Human Resources Officer



### Employment Diversity

The total number of women working for QAL has doubled over the past seven years. In 2002, the workforce was represented by 55 women, which has increased significantly to 112 in 2008.

The main areas of achievement in regard to employment diversity at QAL included:

- Number of females at QAL doubled over the past seven years
- Implementation of part time day work policy
- Increased opportunities providing work from home arrangements for employees
- Continued success of paid parental leave policy
- More women returning to work from maternity leave on part-time or work from home arrangements
- Higher number of women recruited into "non-traditional" roles in operations and maintenance teams
- Increasing culturally diverse workforce.

### Training for Life

QAL has always considered apprentices a great asset to its operations and is committed to providing exceptional training to produce highly experienced and qualified tradespeople.

Since 1968 over 700 apprentices have attained their trade at QAL in the areas of fitting and turning, boilermaking, electrical and instrumentation, refrigeration and from 2009, electrical and high voltage systems.

While QAL's intake of apprentices has ranged from one to approximately 40 per annum over the plant's 41 years of operation, there have been dramatic improvements in the facilities available to enable QAL to deliver more tailored training.

QAL's four full-time apprentice trainers now deliver all first-year TAFE training modules on site to all apprentice trades (except refrigeration which requires specialised training). This not only frees up places at TAFE for other local apprentices, it also allows QAL to cover requisite theory in addition to industry-specific training, benefiting both the apprentices and QAL.

There are many past apprentices still working on site, ranging from tradespeople through to supervisory roles. Three of the current apprentice trainers started off their careers with an apprenticeship at QAL, one of which is Workshop Discipline Leader, Brad Richardson.

When Brad finished high school in 1986 he knew he wanted to obtain an apprenticeship in Gladstone and was offered several, however he accepted a QAL mechanical apprenticeship because of its superior reputation for quality training.

Prior to his current role in Apprentice Training, Brad used the past 21 years to progress through his career by covering roles as Tradesman, Leading hand and Maintenance supervisor.

Brad remembers that throughout his apprentice years he and fellow apprentices learned by working on redundant material from the plant.

"Our training now involves apprentices working on real equipment that contributes to the plant's operation, in addition to state-of-the art plant simulators which allow us to test equipment the apprentices have been working on and give them an understanding of how it will work in the real plant environment."

QAL currently has 76 apprentices on site, making it one of the largest employers of apprentices in the state.

Glen Nerboni and Glenn Baldwin, Apprentices and Brad Richardson, Workshop Discipline Leader





## Fast fact

In demonstrating progress towards our vision of an incident free workplace, in 2008 QAL had 99 perfect days where no incidents or community complaints were recorded.

## Our Health Performance

A team of health professionals are employed at QAL to monitor workplace conditions, provide medical services and health assessments, assist with rehabilitation programs and deliver preventative programs that promote good health practices.

### 2008 Performance at a glance

Primary Targets	2008 Target	2008 Actual	Target Met	2009 Target
QAL employee ergonomic incident rate	2.0	5.2	⊘	3.8
Occupational Illnesses	-	17	-	15
Secondary Targets				
Cases of hearing loss shift from baseline >10dB	25	44	⊘	24
Noise induced hearing loss cases	20	15	⊙	19
Musculoskeletal disorder compensation cases	35	44	⊘	33
Cases of 25 dB hearing loss	-	3	-	2

Improvement Programs	Target Met
Continuation of Noise Management Program	⊙
Continuation of ergonomic risk assessments for managing musculoskeletal injuries	⊙
Continuation of program to remove all sources of friable asbestos on site	⊙
Health and safety promotion through incentives such as the Healthy Lifestyle package and immunisation programs	⊙
Encouraging greater participation in regular voluntary health monitoring	⊙
Review Drug and Alcohol testing procedure	⊙

### Illness Cases

2008 is the first year that the reporting of occupational illness cases has occurred in alignment with requirements of the International Aluminium Institute (IAI). Manual handling issues and the prolonged use of vibratory hand tools has resulted in a similar number of joint related problems to those reported in 2006 and 2007. A number of carpal tunnel and similar joint related problems resulted in surgery for the affected employees. Noise Induced Hearing Loss (NIHL) continues to be an issue with 44 new cases being reported against the IAI criteria and three cases of 25 dB hearing loss. Both of these issues are again target items in the 2009 Health and Safety annual improvement plan.

### Exposure Monitoring

In 2008, QAL's Occupational Hygiene Team continued to undertake comprehensive monitoring to reduce or eliminate exposure to noise, heat stress, hazardous substances and airborne dusts. Noise exposure monitoring surveys were conducted for Calcination and Precipitation workgroups as well as surveys of noise emission levels in the Clarification, Precipitation and Digestion sections and updated noise maps generated for these areas. An assessment of the effectiveness of the level of protection provided by personal hearing protection using the FitCheck system continued. Dust exposure monitoring surveys were conducted for Raw Materials and Calcination workgroups. Radiation

badge monitoring continued for all radiation workers.

#### Asbestos Removal

2008 continued to be a further significant year for asbestos removal ensuring QAL is on target to have a friable asbestos-free site. Following a National Association of Testing Authority (NATA) surveillance audit visit in September, QAL's Asbestos Monitoring Facility received accreditation for asbestos fibre and synthetic mineral fibre (SMF) counting, volume measurement and asbestos identification. Satisfactory results were also achieved by all counters and identifiers in the various proficiency testing rounds for asbestos fibre counting and identification during the year. In addition to routine air and personal monitoring during asbestos removal, the Occupational Hygiene Team carried out comprehensive Health, Safety and Environment Audits on personnel and companies contracted for asbestos removal.

#### Health Monitoring

QAL offers a voluntary health monitoring service designed to encourage employees to be proactive about their health. It is available to all employees and is proving to be a beneficial initiative.

In 2008, a total of 533 routine and pre-employment medicals and 3 010 random Drug and Alcohol tests were conducted as part of QAL's Fitness for Work policy.

Other health related programs carried out in 2008 included:

- Continuation of the 'Healthy Lifestyle Package' whereby all employees were provided with free gym membership, golf club membership and movie tickets for a 12 month period
- Continuation of free Skin Cancer checks provided to all QAL employees, contractors and their families

- Provision of influenza vaccinations to both QAL employees and contractors
- Continued accreditation to AS/NZS 4801:2001 and OHSAS 18001:1999 Occupational Health and Safety Management Systems
- Rehabilitation of work and non-work related injuries and illnesses
- Implementation of a medical software program installed to improve service and monitoring of health issues
- Completion of a internal and external gap analysis against the Rio Tinto Health Standards
- Review of nine internal health related training packages.

## Improvement targets for 2009

Health program improvement targets for 2009 include:

- Continuation of Noise Management Program
- Continuation of ergonomic risk assessments for managing musculoskeletal injuries
- Continuation of program to remove all sources of friable asbestos on site
- Health and safety promotion through incentives such as quit smoking campaigns, healthy lifestyle and stress management programs
- Implementation of the gap closure program to ensure compliance with the Rio Tinto HSEQ standards.

## CASE Study

### Fit Check Program

*With noise being the most prevalent occupational work hazard of working in an industrial environment, prevention of hearing loss has been a high priority for QAL's Occupational Hygiene Team.*

*The noise attenuation provided by hearing protection varies widely across the general population due to a number of individual factors such as ear canal shape and size, noise level exposures and work environment. For hearing protection to be effective, it also needs to be comfortable, convenient and still allow for critical communication and warning signals.*

*With nineteen different types of hearing protection devices available for employees to choose from at QAL, a FitCheck program was implemented in 2008 to personally tailor hearing protection to all employees on site.*

*The FitCheck measurement system utilises software to determine the most suitable kind of hearing protection for each individual person. As part of the program, employees are also trained on how to correctly fit their hearing protection to ensure maximum noise attenuation.*

*The effectiveness of the program was demonstrated within the first week of testing, with one individual test on an employee determining that by wearing their hearing protection in the usual way, it was providing 15 decibels of noise reduction. When fitted correctly and retested, the same earplugs provided 31 decibels of noise reduction.*

*To date, just on 500 employees have been tested and work will continue throughout 2009 to ensure the whole workforce is fitted with the most appropriate hearing protection to suit their needs. Protecting employees' hearing is a high priority at QAL and this study is the first of a number of initiatives planned to prevent hearing loss of employees.*

Emily Graham, Vacation student and  
Paul Marsh, Contract Coordinator



## Our Safety Performance

Safety is QAL's highest priority and there is a range of systems and management tools in place to identify and reduce or eliminate hazards, report and investigate incidents and monitor and improve individual safety behaviour in order to achieve a zero incident working environment.

We believe that all injuries and occupational illnesses are preventable and run our business with the goal of achieving zero injuries or incidents.

Employees and contractors on site work under standards for Health and Safety which are certified to the Australian and New Zealand Standard AS/NZS 4801:2001 and OHSAS 18001:1999 Occupational Health and Safety Management Systems. Safety statistics are a combination of QAL employees and contractor personnel.

### 2008 Performance at a glance

Primary Targets	2008 Target	2008 Actual	Target Met	2009 Target
Total Case Incident Rate (TCIR)	< 0.9	1.41	⊘	2.3*
Number of Active QSafe Observers	> 900	1 767	⊙	>1 100

\* In 2009, QAL will be changing the method of injury reporting in alignment with Rio Tinto's standards of All Injury Frequency Rate.

Improvement Programs	Target Met
Increased Safety Leadership Training	⊙
Further implementation of behavioural safety program, QSafe	⊙
Implementation of Housekeeping improvements through the 5S (sort, set in order, shine, standardise, sustain) program	⊙
Greater awareness of working at height safety	⊙
Revision of Induction processes and delivery methods	⊙

*Fast fact*  
**QSafe observations on site increased by 7 754 in comparison to 2007.**



#### Injuries

QAL continues to drive for improved safety performance. With a goal of zero incidents, there are a number of tools available to employees and contractors to reduce or eliminate the risk of injury in everyday tasks.

Total Case Incident Rate (TCIR) for the year was 1.41 (the number of lost time cases, medical treatment cases and restricted work cases per 200 000 hours worked), against a target of <0.9.

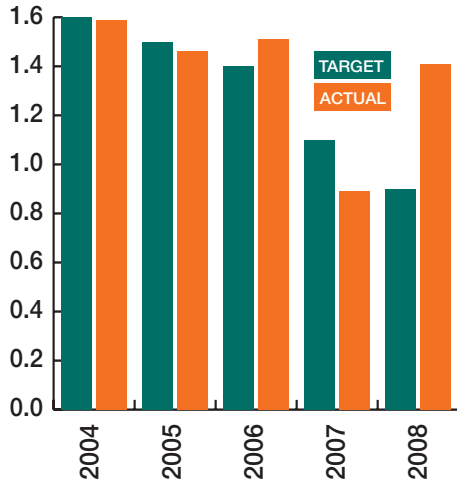
The Lost Time Injury Frequency Rate (LTIR) for 2008 was 0.62 (the number of lost time cases per 200 000 hours worked) compared with 0.39 in 2007.

While the results are disappointing, there was increased support of the QSafe program with an additional 303 active observers on site identifying at risk behaviours. QAL will continue to strive for increased safety performance and has a number of improvement strategies in place for 2009.

#### Safety Inductions

During 2008, 2 438 employees and contractors were provided with three day and/or half day inductions to site or refresher courses. In addition, approximately 2 500 visitors completed an on-the-spot safety awareness induction prior to entrance on site.

QAL Total Case Incident Rate  
(in years)



Safety programs implemented during 2008 included:

- Development and implementation of standardised Blue Card induction systems
- Implementation of a new user friendly JSEA pre task risk assessment format
- Introduction of the Rio Tinto Red Banner safety awareness system for reporting high and significant incidents
- Development of a safety leadership training program for front line supervisors
- Continuing on-site housekeeping initiatives including scheduled Clean Up QAL Days
- Increased participation in QAL's behavioural safety system, QSafe

and strengthening of the problem solving process at team level

- Continuation of the 'Tenderheart' poster campaign to increase personal safety awareness
- Introduction of a 'What is Wrong in this Picture' poster and screensaver campaign to highlight the value of good safety behaviour
- Purchase of a new Fire appliance for emergency response on site.

Contractor management remained a major focus in 2008 with a complete revision of the contractor management system.

## QSafe

QSafe is a behavioural safety program unique to QAL. Its underlying principle is that all injuries can be prevented by eliminating less safe acts through the adoption of positive reinforcement and feedback, interpersonal recognition as well as rewards to motivate and support safe behaviour.

QSafe is a structured process that involves employees conducting job observations on workmates to identify 'at risk behaviours' and recognise and improve upon 'safe behaviours'. At the heart of the process is the motto 'Mates Looking After Mates'.

QSafe continued to record an increased level of participation with a total of 1 767 active observers and 32 137 observations in 2008 – the highest level in the program's nine year history.

## First Response Team

The QAL First Response Team consists of up to 45 employees from across all sections of the refinery and as well as carrying out their normal duties on a daily basis, the team are the first to respond in the event of an incident or emergency situation. In 2008, the First Response Team organised and participated in 28 mock emergency and training exercises.

## Improvement targets for 2009

The coming year will see continuation of safety programs that worked well in 2008 plus improvement activities including:

- Increased profile on high quality and effective QSafe observations
- Integration of safety performance measurements into Lean Boards
- Deliver Safety Leadership Development Program to all in supervisory roles
- Review effectiveness of start of shift tool box meetings
- Development of an online visitor induction package.
- Implementation of the gap closure program to ensure compliance with the Rio Tinto HSEQ Standards.

Johno Fowler, Alumina Producer





*Fast fact*  
**QAL is a drug and alcohol free site with random tests conducted daily.**

**CASE**  
*Study*

**Mates Looking After Mates**

QAL's QSafe program continues to grow from strength to strength, improving the safety culture of employees and assisting in eliminating hazards on site.

Introduced in 2000, QSafe is a behavioural based safety program which aims to change the culture of how employees work and identify hazards. The program encourages employees to conduct QSafe observations on their workmates and provide positive feedback to reinforce safe work practices. The observation process not only heightens the employee's awareness of unsafe behaviours, but it also helps to identify risks associated with a task or work area and to apply this mentality to every job.

Once the momentum of safety awareness began flowing two years following QSafe's implementation, the program continues to set new records for participation. In 2008 the program achieved a total of 1 767 active observers and 32 137 observations, the highest number ever in the program's nine year history.

Calcination Process Alumina Producer and first Plant QSafe Coordinator, Greg Bray, said that introducing the program to employees and having them realise the benefits of conducting observations was initially very difficult.

*"I think the turning point came when employees began applying the observation process unconsciously at home and then eliminating the risks posed to their families, for example, paints and poisons being easily accessible by children. Once people were thinking about associated hazards and not just doing the task we knew the program was working effectively," Mr Bray said.*

*The program's success cannot be attributed to one factor; it is a combination of the support and encouragement from the plant QSafe Coordinator, section QSafe Facilitators, supervision and management, in addition to the employees actively wanting to increase their personal safety and that of their workmates.*

*Current Plant QSafe Coordinator and previous section Facilitator, Brett Harris, said the program's success also comes down to employees seeing the benefit of doing regular, quality observations.*

*"Employees are realising that every person may do a job slightly different to another because of their physical abilities and limitations. This means that one observation on a person conducting a task could identify a hazard, while another person doing the same task may not be at risk," Mr Harris said.*

*A new QSafe Coordinator is appointed every 12 to 18 months to instil fresh ideas and methods in the program, further enhancing its ability to eliminate hazards and reduce injuries on site.*

*Michael Hogg, Digestion Field Training Officer with Greg Meyer, Alumina Producer and Phil Melville, Alumina Producer*



# Our Environmental Performance

Operations at QAL are conducted under an Integrated Environmental Management System, which is a system of checks and balances ensuring continual improvement. QAL is certified to the international standard for environment ISO 14001:2004

QAL is committed to reducing the environmental impact of its operations and 2008 marked the completion of a five year capital program valued at over \$240 million to improve environmental performance.

## 2008 Performance at a glance

Primary Targets	2008 Target	2008 Actual	Target Met	2009 Target
Reportable Incidents	0	0	🟢	0
Community Complaints	87	87	🟢	77

Improvement Programs	Target Met
Commissioning of the odour control project on the Evaporation Heater vents	🟢
Evaluation of technical options to further reduce odour emissions from the Relief Tanks in Digestion	🟡
Commissioning of neutralisation facilities at the Residue Disposal Area	🟢
Further improvements to waste segregation at source as part of the waste collection system introduced in 2007	🟢
Planting of 2 100 trees in the buffer zone between QAL and the community	🟢
Evaluation of the recycling of treated effluent back to the plant from the Boyne/Tannum sewerage treatment plants	🟡
Active participation in the Gladstone Clean and Healthy Air Project	🟢

Clayton Chadwick, Alumina Producer



## Reportable Incidents

In 2008, QAL recorded zero reportable environmental incidents.

## Community Complaints

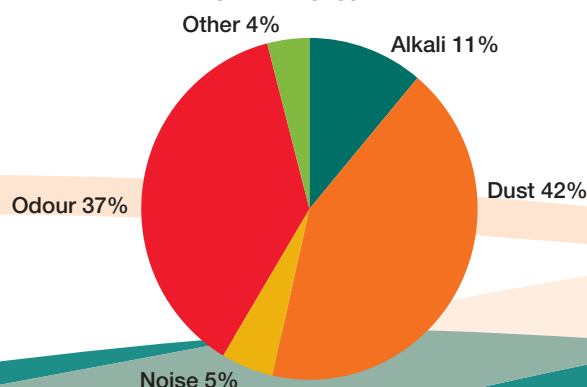
QAL has a comprehensive community feedback handling system, which includes thorough investigation followed by the development of mitigation measures where possible, and ongoing review of the effectiveness of those measures. QAL actively encourages the community to report feedback on the impact of its operations.

A total of 87 community complaints were received during 2008 relating to dust, alkali, odour and noise. Whilst

complaints declined by 15 from 2007, where 102 complaints were received, QAL recognises the importance of reducing environmental impact on the neighbouring community and work is continuing to address issues of concern.

As demonstrated in the Community Complaints distribution graph below, there continued to be a significant reduction in dust complaints, however odour remains an ongoing concern and both remain a focus of improvement projects in 2009.

Complaints by type for 2008





*Fast fact*  
**QAL recycles 95% of the city's wastewater for use in the refining process, saving valuable megalitres of fresh water from Awoonga Dam.**

## Dust

Although dust complaints have dramatically decreased over the past few years from 187 in 2003 and 180 in 2004 to seven in 2007, 2008 saw an increase to 26 dust complaints. QAL has implemented a number of dust controls under earlier Environmental Management Plans including installation of bag houses, upgraded dust collectors on conveyor transfer stations and installation of the cascade chute at the alumina loader. In 2008, further improvements included wear plates and other dust system upgrades, completed during Calciner turnarounds and the ongoing development and implementation of controls outlined in dust mitigation plans for Calcination and Raw Materials. Work will continue to further address dust issues in 2009.

## Alkali

In comparison to 2007, the number of alkali complaints received more than halved. Alkali emissions are being addressed through new projects identified in an Environmental Management Plan.

## Odour

Odour from the plant is generated from the Digestion section where decayed organic matter in the bauxite is broken down during the refining process.

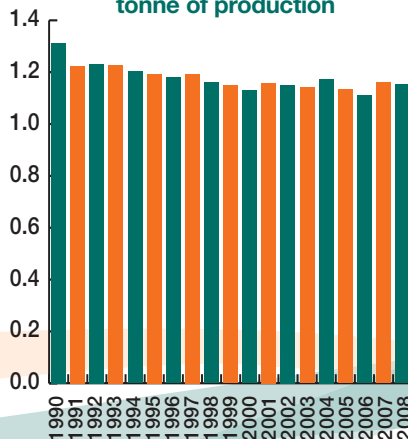
Odour complaints decreased from last year although plant odour was still the main source of complaints in 2008. An odour mitigation program was developed following the odour survey of 2006 which identified the next set of odour sources requiring

improvement. This program progressed in 2008 with numerous projects including (but not limited to) completion of Evaporation tie-in to the thermal oxidiser, the installation of vent lids on the causticiser and repairs to glands and gaskets in heat exchangers to minimise potential for odour leaks. A number of development and design activities completed in 2008 will lead to implementation of further controls in early 2009.

## Greenhouse

Total greenhouse gas emissions in 2008 were 4 047 500 carbon dioxide (CO<sub>2</sub>) equivalent tonnes, a decrease of 11 900 tonnes or 0.27 per cent on emissions in 2007. Emissions in 2008 were 1.05 on a tonne CO<sub>2</sub> per tonne production basis or 12.3 per cent below 1990 levels.

**Greenhouse Gas Emissions  
 1990 – 2008 in tonnes of CO<sub>2</sub> per  
 tonne of production**



QAL continued to be an active member of the Federal Government's Greenhouse Challenge Plus Program and participated in trialling measures that were introduced as part of Federal Energy Efficiencies Opportunities legislation.

## Monitoring

### On site

QAL conducts continuous online and routine monitoring for collection of air and water emissions data both on site and within the neighbouring community. A real time weather station situated at the QAL Lookout also measures and tracks environmental conditions on a 24 hour basis.

### Off site

QAL is committed to contributing to a sustainable aquatic environment as an active member of the Port Curtis Integrated Monitoring Program (PCIMP). The program supports research into a variety of healthy waterways initiatives including intertidal monitoring of mangroves, macro-invertebrate assemblages and bio-monitoring of transplanted oysters. The Port Curtis Eco-Health Report Card detailing findings from research was launched in March 2008.

## Land and Revegetation

Land revegetation of the plant's process residue areas continued in 2008 on the former residual disposal area and buffer zone between QAL and the Barney Point community.

Three major planting and mulching sessions were undertaken by the QAL Tree Planting Committee during 2008 in order to reach its goal of 2 100 trees for the year.

Long-term revegetation work on the former residual disposal area has been extremely successful with a large supply of grass for dust control and shelter for native animals.

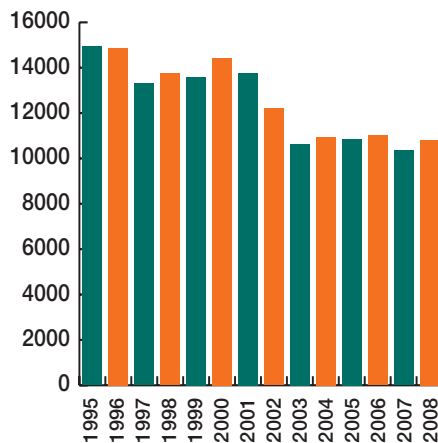
## Water Use

Water is essential to refinery operations. Since commissioning of the State's largest water recycling project in 2002, where QAL recycles the majority of Gladstone City's wastewater, QAL has maintained freshwater savings.

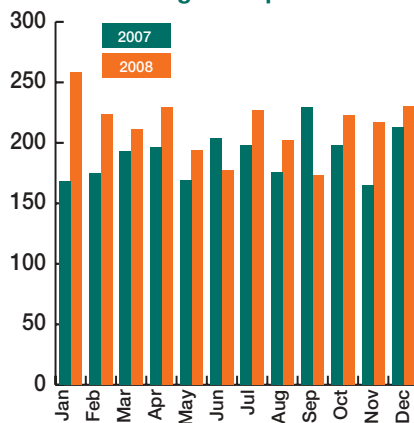
## Waste Management

QAL's Waste Transfer Facility allows for the segregation of on site waste and recycling of materials including metal, cardboard and wood. In 2008, the facility recycled 57 per cent of materials brought to the facility.

**Fresh water usage from Awoonga Dam in megalitres per year**



**Recycled treated effluent usage from Gladstone City Treatment Plant in megalitres per month**



## Improvement Programs for 2009

2009 will be a year of further environmental improvement with additional initiatives that include:

- Evaluation of additional controls to reduce dust emissions during alumina ship loadout
- Modifications to the thermal oxidiser to improve reliability
- Review of Fire Management Plan
- Planting of 2 100 trees in the buffer zone between QAL and the community
- Development of scope to recycle treated effluent from the Boyne/Tannum sewerage treatment plants
- Active participation in the Gladstone Clean and Healthy Air Project
- Commence development of Residual Disposal Area rehabilitation strategy
- Develop Air Quality Management Plan
- Evaluation of technical options to reduce odour, dust and noise sources.

*A resident Black Swan and her young family traverse across the bauxite stockpile on their way to the QAL wetlands*





*Fast fact*  
The QAL wetlands and marine plain are home to a diverse range of birdlife.

## CASE Study

### Reducing Environmental Impact

*With a vision to be the best corporate citizen in Gladstone, QAL is committed to reducing its impact on the environment and the local community.*

*In 2008, QAL completed a five year capital program valued at over \$240 million to deliver an improved environmental performance with regard to offsite emissions.*

*Health, Safety, Environment and Communities Manager, Ross Greenhalgh said the installation of the \$175m gas suspension Calcination units to replace the 40 year old rotary kilns had significant environmental benefits.*

*“The new Calcination unit has seen our particulate emissions from this area of the plant reduce by 95 per cent and we have also increased our energy efficiency with a reduction of around 250 000 tonnes of carbon dioxide (CO<sub>2</sub>) emissions – the equivalent of taking 60 000 cars off the road per annum.”*

*Another key area for improvement has been odour, generated from the Digestion section where decayed organic matter in the bauxite is broken down during the refining process.*

*At a cost of \$3.5m, a thermal oxidiser was installed to combust non condensable gases to reduce odour from the section by around 40 per cent. Work recently completed includes the capturing of gases from the Evaporation heaters and piping them to the thermal oxidiser for destruction as well as the installation of flapper valves to contain emissions from the Causticiser tank.*

*View of the Gladstone community from the top deck of the Calciners*

*Other areas targeted include dust, odour, noise and alkali and work has included;*

- *Installation of baghouses on the seven coal fired boilers (\$48m) to reduce fly ash emissions from boiler stacks*
- *Upgrading of alumina loading systems (\$2.9m) to reduce dust during the loading of ships*
- *Outsourcing of lime and demolition of lime plant (\$2.5m) to reduce noise and dust*
- *Upgrades to the coal loading and handling facilities (\$0.95m) for dust reduction.*

*Mr Greenhalgh said that QAL recognises its responsibility to manage resources and refining activities in a sustainable way.*

*“We aim to minimise the environmental impacts of our operations and where we can, to make a positive difference to the environment and community in which we operate.”*

*Whilst the five year improvement plan is complete, work is still progressing on a number of projects to further reduce emissions throughout the refinery. A detailed summary of the projects can be viewed at the environment page on the QAL website [www.qal.com.au](http://www.qal.com.au)*

# Our Community

As the largest corporate citizen in Gladstone, QAL forms an integral part of the region's social and economic fabric. For the past 41 years, QAL has worked to establish and maintain a reputation of providing infrastructure and supporting the community to enhance the quality of life for residents.

## 2008 Performance at a glance

Primary Targets	2008 Target	2008 Actual	Target Met	2009 Target
Community Contributions budget expenditure	100%	100%	🎯	100%
Accessibility to Community Relations hotlines	100%	100%	🎯	100%
Provision of tours to site	>1000	1056	🎯	>1000
Provision of Community Forums	>5	5	🎯	>5

Former Managing Director Johann van Zyl accepts an Australia Day Award on behalf of QAL from Liz Cunningham MLA



Improvement Programs	Target Met
Further development of ALP Education kits	🎯
Internal Communications Audit	🟡
Further upgrades to visitors lookout	🟡
Community and Corporate Issues Survey	🎯
Reduction of community complaints (see page 9)	🎯

## Community Relations Highlights

### Drought Assistance

QAL and Toll Transport again joined forces in a unique partnership to provide much needed stock feed for drought affected farmers in the region. Around 1 000 round bales of Rhodes grass were harvested from QAL buffer zone land and with the assistance of AGFORCE Calliope and local transport provider Greg Bruce, delivered to the farmers in need.

### Gladstone Harbour Festival

QAL continued its five year partnership agreement to support the Gladstone Harbour Festival's annual Jazz 'n Shiraz. Providing world class entertainment, the high profile event is greatly anticipated on the region's cultural calendar and is a major

attraction of the festival program.

The QAL Raft Race Team "Are We There Yet?" secured line honours at the annual Harbour Festival event, with their Stay Safe in '08 – Look After a Mate themed raft.

### Reef Guardian Fund

In partnership with the Great Barrier Reef Marine Park Authority, QAL continued the Reef Guardian Fund for local schools in the Gladstone region. Supporting the development and implementation of innovative and sustainable environmental projects, the fund provides \$10 000 annually to Reef Guardian Schools. In 2008, four projects were supported including education kits promoting alternative energy use, recycling initiatives and revegetation programs. The fund will continue in 2009.

### Australia Day Award

QAL's 40th anniversary celebrations were awarded Event of the Year at the 2008 Gladstone Regional Council Australia Day Awards.

### Mates Looking After Mates

QAL employees banded together to support former employee Wally Bird to make his home wheelchair accessible. Wally was an Alumina Producer in the Calcination section of QAL for over 19 years and was grateful to have his mates help him out, even after retirement.

### Green Scenes

QAL provided support to the Gladstone Arts Council to initiate Green Scenes, an environmental Short Film Festival held in conjunction with Gladstone Regional Council's annual Ecofest. The initial film festival proved to be a great success and the partnership will continue in 2009.



## Fast fact

**In 2008, QAL contributed almost \$400 000 in financial and in kind support to the local community.**

### Relay for Life

QAL employees continued their support of the Cancer Council Queensland's Relay for life event and raised \$11 000 through on site events and gate collections. This is the fourth year QAL has been awarded the highest fundraiser at the event and brings the total amount raised by employees for the Cancer Council Queensland to over \$110 000 in the last four years.

### Smart Train

QAL was the only industry invited to participate in the Queensland University of Technology (QUT) Smart Train visit to Gladstone. The Environment and Community Relations Teams provided hands on opportunities for thousands of students to explore pH testing and gather information about our operations.

### Interindustry Golf Day

For the first time in 2008, QAL, Rio Tinto Alcan Yarwun and Boyne Smelters Limited employees enjoyed time out to network and forge friendships with a sociable game of golf. Over 160 players from the three sites took part and QAL was awarded overall winner of the coveted Interindustry Cup. The event will continue in 2009.

## Stakeholder Engagement

### QAL Community Forum

QAL's Community Forum continued to provide a constructive medium for the community to openly discuss the refinery's operations in 2008.

By actively engaging community members, the forum encourages open discussion to gain a greater mutual understanding of topical issues within the wider Gladstone community and

QAL operations. Established in 2001, the forum comprises of 25 members and has grown to become a valuable and constructive asset within the community relations program.

The forum meets every two months and has the following principles and objectives:

- To work together to achieve results to the satisfaction of the broader community
- To continuously reduce the impact on the community while maintaining the operations of the plant
- To achieve a mutual understanding of technical environmental matters through education and sharing of information via an agreed and shared database.

During 2008, QAL held five Community Forums with an average of 10 participants at each meeting.

Forum input, activities and outcomes for the year were numerous covering mainly environmental improvement projects. Other highlights included:

- The annual meeting between the QAL Board of Directors and Forum representatives
- Involving the community in monitoring environmental impacts outside the QAL boundary
- The provision of guest speakers at meetings to ensure technical and complex material is effectively communicated
- Specific site tours of new environmental initiatives.

Meetings will continue to be held throughout 2009. Minutes from all Forum meetings, as well as progress reports, are published on QAL's website at [www.qal.com.au](http://www.qal.com.au)

### Community Relations Hotline

QAL continued to provide an opportunity for the local community to openly communicate with the organisation 24 hours a day via the toll free Community Relations Hotline.

## Community Participation

### Committees

QAL continued to be an integral part of numerous stakeholder groups ensuring industry representation, sustainability of operations and input into decision making in the local area. Involvement includes Gladstone Industry Leadership Group, Clean and Healthy Air Industry Committee, CQ University Gladstone Campus Advisory committee, Gladstone Area Industry Network (and associated subcommittees), Gladstone Area Mathematics and Science Education Teachers (GAMSET), Port Curtis Integrated Monitoring Program (PCIMP), Gladstone Region Sustainability Group, Land for Wildlife and Gladstone City Council Environmental Group, Gladstone Arts Council, Gladstone Area and Promotion Development Limited (GAPDL), Gladstone and Calliope Regional Arts Development Fund, Rotary Clubs, Rural Fire Brigades and the State Emergency Services.

### Events

QAL continued to promote and provide information sessions of on site activities at a variety of community events during 2008 including Ecofest, Reef Guardian Schools Future Leaders Eco Challenge, Queensland on Show and the Gladstone Careers and Training Expo.

## Community Support

### Sponsorships and Donations

QAL's sponsorship and donations program continued to provide support in the areas of environment, community development, youth, art, music and culture, health and welfare and sport and recreation. During 2008, 127 applications for sponsorships and donations were received. QAL supported 75 applications with direct financial assistance totalling approximately \$100 000 to local events and community organisations including Gladstone South State School, Sunfest, Coconet Classic, 1770 Festival, Gladstone Sports Fishing Club and the ANZAC Day dawn service breakfast.

In addition, QAL also supported a further 32 groups via in-kind donations of QAL merchandise or redundant material and equipment valued at approximately \$118 000. Not for profit and community organisations supported include Gladstone TAFE, Conservation Volunteers, Gladstone Maritime History Society, Boyne Tannum Swim Club and the Gladstone Junior Mud Crabs. The QAL marquees provided shelter at 46 community events during the year.

### QAL Retirees Club

The QAL Retirees Club has an active membership base of 250 members and with the support of QAL provides a social outlet for former employees. The Club operates from the QAL Community House and in 2008, celebrated 17 years of operation.

### QAL Community House

The House is available as a free meeting place for not-for-profit community groups. Suitable for groups of up to ten Community House is fitted with a board room table and chairs, TV

and video, white board, kitchen and bathroom facilities. The provision of in kind services provided through this facility equates to approximately \$180 000 annually.

During 2008, QAL continued to work in partnership with Queensland Health to provide access to Gladstone Men's Resource Centre, which operates from the QAL Community House. The service, which encourages men to adopt healthier lifestyle choices and be proactive in maintaining their health, was well utilised during the year.

## Education Support

### Study Assistance

QAL has a long history of supporting local students with the provision of school bursaries, tertiary academic prizes and university scholarships.

Awarded to students excelling in Science, Engineering, Environmental Science, Business or Informatics disciplines, the scholarship provides \$5 000 per annum for four years of

*Left to right: Former QAL Alumina Producer Wally Bird with the people who helped him regain some mobility - Gail Scanlan (Gladstone Surgical Equipment), Veronica Laverick (Gladstone Regional Council) and the QAL Calcination employees Brian Welch, Nick Ahrens, Dean Welch, Daryl Gilham, Dale Fallon, Gavin Woodmass and Paul Taylor.*





study. CQ University student Jacinta Larney was awarded the 2008 CQU/QAL scholarship and two \$700 runner-up prizes were also awarded to promising students, Sophie Eastaway and Callum Duncan Kemp.

In 2008, school bursaries were provided to eight secondary schools in the Gladstone region. Awarded to the most outstanding male and female student on an aggregate of maths and science, the bursaries recognise and reward hardworking students for their successes.

QAL also awarded five CQ University students with Academic Prizes for high achievements in the areas of Chemistry, Business, Informatics, Physics and Engineering.

#### *ALP Education Program*

QAL's commitment to local education continued in 2008 with a total of 700 students from thirteen schools within the Gladstone region taking advantage of the Alumina Learning Partnership (ALP) Education Program.

Utilising the expertise of QAL employees, the program works within Education Queensland's curriculum to provide unique learning experiences in the classroom for primary school students. Established in 2001, the program focuses on environmental and science modules to provide students with access to specialist knowledge and sophisticated science equipment.

In addition to the ALP, QAL invested significant employee resources to present laboratory tours, careers presentations, specialist tours and classroom visits for senior and tertiary students.

#### *GAMSET*

QAL built further on their partnership with Gladstone schools through the Gladstone Area Mathematics, Science and Engineering Teachers (GAMSET) group. The professional development initiative works with a range of organisations to:

- Provide teachers with enhanced skills, tools and efficient systems to further their capacity to teach mathematics, sciences and engineering
- Identify, implement and manage initiatives that enthuse and excite teachers and students in mathematics, science and engineering
- Influence students to excel in learning mathematics, science and engineering at school level and to pursue further education and careers in related fields.

#### *Science Challenge*

QAL continued to support local students involved in the Gladstone School and Science Industry Group's Science Challenge. The annual program brings together high school students for a three day journey of innovation, discovery and opportunity using team based problem solving and the specialist skills of QAL employees for scientific research and development.

*Left to right: Sunfest participants and supporters Ryan McLucas, Kerry Whittaker (GAGAL) Mark Jefferson (Sims Metal) Mellissa Case (QAL) Kirsty Robinson and Brock Johnson*



## CASE Study

### Tours

For many years QAL has opened its doors to the public and conducted tours of our operations. During 2008, visitor numbers continued to be strong with over 1 000 people taking advantage of guided tours as part of a community group, school or university. 2008 also proved another successful year of engaging QAL Retirees Club members as tour guides for the weekly Gladstone Area Promotion and Development Limited Industry Tours Program.

The lookout is open to the public from 7am – 9pm and continues to be a popular attraction for thousands of visitors each year. In 2008 a feasibility study was progressed to upgrade the QAL lookout facilities with an Interpretive Centre, picnic shelter and wheelchair accessible ramp. Further planning for the facility upgrade will continue in 2009.

### Improvement Programs for 2009

In addition to the regular Community Relations program as outlined in this section, focus areas and improvement targets for 2009 include:

- Development of a comprehensive strategic community relations plan
- Development of a structured management and training program for tour guides
- Further enhancement to the Alumina Learning Partnership packages for teachers and students
- Integration of QAL Community feedback systems in alignment with Rio Tinto standards
- Active involvement in the Gladstone Industry Leadership Group.

### Reef Guardian Fund

*Many local schools became greener and cleaner last year following the second year of QAL's Reef Guardian Fund.*

*Providing \$10 000 of support to Reef Guardian Schools, the Fund was established by QAL in partnership with the Great Barrier Reef Marine Park Authority (GBRMPA) to encourage the development of significant environmental projects that benefit both schools and the greater community.*

*Students ranging from middle primary to senior high school were involved in determining what kind of projects their school could undertake to improve their local environment and ultimately the Great Barrier Reef.*

*Gladstone Central School received funding for worm farms and composting kits, Toolooa State High School conducted a school wide energy audit and participated in harbour water monitoring, Clinton State School can now learn about meteorological conditions with its weather station and the Boyne Island Environmental Education Centre received funding for 'Energywise' education kits, which helped students explore alternative sources of energy.*

*QAL Health, Safety, Environment and Communities Manager, Ross Greenhalgh said in 2008 the fund received a number of applications with quite innovative projects, including some exciting short term and ambitious long term projects proposed.*

*"It was pleasing to see that schools embraced innovation and partnership with the support of the Fund and the projects have gone towards making a real difference to the environmental awareness and education of our future leaders."*

*The Fund will continue in 2009.*

**Ross Greenhalgh, Health, Safety, Environment and Communities Manager is shown Clinton State School's new weather station by a student and Teacher Ron Barron**



## glossary



**A Perfect Day** is a day where there are no injuries, no environmental or health incidents, no near misses, no property damage and no community complaints.

**Alkali** is any class of substance which has a pH higher than seven. In the QAL context, alkali emissions can refer to fugitive lime dust, alumina dust or aerosol generated from plant process liquor.

**Alumina** is aluminium oxide. It is extracted from bauxite in the Bayer Process and is subsequently the principal raw material in the electrochemical process by which aluminium is produced.

**AS/NZS 4801** is the Australasian Standard for an occupational health and safety management system.

**Baghouse** is a device that is used to trap fine dust particles from an air stream, similar in principle to a vacuum cleaner.

**Bauxite** is mainly hydrated aluminium oxides and is the principal ore from which alumina is made.

**CO<sub>2</sub> Equivalent Tonnes** refers to carbon dioxide equivalent. The different greenhouse gases have different global warming potencies. Therefore, to compare the relative effect of the different gases they are compared to the effect of an equivalent amount of carbon dioxide. For example, one tonne of N<sub>2</sub>O is equivalent to 210 tonnes of CO<sub>2</sub>, expressed as 210 CO<sub>2</sub> equivalent tonnes.

**Community Complaint** is an issue raised by a member of the community relating to the operation, whether resolved or not.

**Environmental Protection Agency (EPA)** is Queensland's governing body for environmental matters.

**Ergonomic Incident Rate** is the number of ergonomic related injuries per 200 000 work hours.

**Fly Ash** is residual dust as a result of the combustion of coal.

**Greenhouse Challenge Plus Program** is an Australian Greenhouse Office initiative for companies to voluntarily report and abate greenhouse gas emissions.

**HSEC** is the abbreviation for Health, Safety, Environment and Communities.

**ISO 14001** is an international standard for environmental management systems.

**Lost Time Injury (LTI)** is recorded when an incident results in a person losing one whole shift due to an injury.

**Lost Time Injury Frequency Rate (LTIR)** is the number of LTI's per 200 000 work hours.

**Medical Treatment Case** is an injury or illness requiring treatment by a medical doctor.

**Reportable Environmental Incident** is any incident resulting in a breach of an environmental legal requirement.

**Restricted Work Case (RWC)** is recorded when an incident results in an employee returning to work, but who cannot perform the full duties of the permanently assigned job due to the injury.

**Total Case Incident Rate (TCIR)** is the total number of lost time cases, medical treatment cases and restricted work cases per 200 000 work hours.

**Treated Effluent** is secondary treated water from the Gladstone City Council Sewage Treatment Plant.



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