



## Students learn 'watt' it takes to produce power

An action-packed agenda for Term 3 ensured QMEA students and teachers had numerous opportunities to learn more about the resources sector in Queensland.

Almost 850 Year 8 science students from four Gladstone high schools worked up a sweat as they participated in the GLNG 'Energy Watt Bike' workshop.

Part of the QMEA Career Café program, the students from Chanel College and Gladstone, Tannum Sands and Toolooa state high schools worked with Garry Scanlan GLNG Regional General Manager to investigate different energy types and the conversion of chemical energy to kinetic and on to electrical energy as they pushed themselves to the limit on the 'energy watt bike'.



In addition, over 500 Year 8 students from Chanel College, Tannum Sands and Toolooa state high schools completed the 'Rock to Road' workshop with Queensland Energy Resources (QER) Community Relations Advisor Lyndell Fontaine. A range of hands-on activities related to the formation of oil shale and sedimentary rocks were completed. The students also investigated oil shale as a fuel source, comparing its energy efficiency with other common fuel sources.

Year 8 students statewide drew upon their science knowledge as they participated in the Energy for the Future forums or designed and constructed Rube Goldberg machines during Australian Engineering Week. Year 9 students evaluated the suitability of suggested cycad translocation sites in the LNG right of way as part of their biodiversity studies, while science and engineering-related careers along trade and professional pathways were showcased as almost 160 students participated in extended "Engineering Challenges" or Toolkit for Schoolkids workshops.

Teachers also learned more about science and engineering as they completed teacher professional development workshops in earth science, robotics and basic Arduino processing.

Over 2000 students and teachers were involved in QMEA activities this term. Check out this edition of the newsletter to discover what they got up to!



# BMA MINE Challenge

## Budding engineers undertake mine challenge



Fourteen students from across Queensland swapped their school uniforms for hi vis workwear and steel capped boots as they converged at Moranbah for the annual BHP Billiton Mitsubishi Alliance (BMA) Mine Challenge during the last week of term three.

The Year 11 and 12 students from Queensland Minerals and Energy Academy (QMEA) schools worked alongside engineers, geologists, operators and health and safety advisors at Goonyella Riverside and Saraji mines as part of the experience.

The budding engineers were tasked with designing a 'box cut' for a new pit, and sourcing a fleet to complete the works.



Students had to justify their decisions and planning and then present to senior management at the end of the week.

QMEA Project Officer Robyn Flexman said, 'the hands-on nature of the tasks and interaction with BMA staff provided an invaluable learning platform for students wishing to pursue a career in engineering.'

'The challenge is the ultimate work experience and it's something special to say you've worked on real mine projects before beginning a university course,' Mrs Flexman said.





# BMA MINE Challenge

For students from Alexandra Hills State High School and Churchie, this was an opportunity to learn more about site operations, while also being immersed in a mining community.

‘This experience has provided me with a genuine understanding of the intensity of working on site and living in regional Queensland’, said Churchie student Max Heaton.

Jaun-Paul Jacobs from North Rockhampton agrees, ‘The MAC Village in Moranbah certainly provided an opportunity to appreciate the life of a FIFO mine worker.’

BMA Goonyella Riverside Mine General Manager Steve Johnston, said BMA was proud to partner with the QMEA to host the annual Mine Challenge.

‘By showcasing the rewarding careers available in the resources sector, we hope to inspire a whole new generation of mining professionals.’

‘Programs like the Mine Challenge are a great opportunity for students to experience firsthand what it’s like to work in a mining operation and live in a mining community,’ said Mr Johnston.

Students from Blackwater, Dysart, Emerald, Middelmount, Moura, North Rockhampton, Pioneer and Tannum Sands state high schools were also involved in the MINE Challenge.



‘The experience was great. We were able to work closely with industry mentors, and the experience has reinforced my aspirations to be an electrical engineer’

Thalia Jones  
Moranbah State High School





# Energy for the Future

## Energy debate sparks students' interest

Almost 220 students from Queensland Minerals and Energy Academy (QMEA) schools in the Gladstone, Brisbane and Surat regions have entered the debate into the future global energy mix.

Participating in the Energy for the Future Forum, the Year 8 students from 13 schools statewide spent time learning about electricity generation from a range of experts.

Each assigned a country, the student groups were tasked with determining the best mix of available energy resources to power that country for the next 50 years.

Drawing on their science curriculum studies, and having considered a range of other factors including geography, weather and economy, the students proposed the best energy mix for their assigned country, justifying their decisions to industry representatives.

Industry representatives from the following companies provided invaluable assistance to the students:

- APLNG
- Arrow Energy
- BMA
- CQUniversity
- CSEnergy
- Geological Survey Queensland
- GLNG
- Gladstone Ports Corporation
- Gladstone Leaders in Industry Group
- NRG Power Station
- Origin
- Queensland Energy Resources
- QGC
- Queensland University of Technology
- Stanwell

We thank them for their involvement in this activity.





## Unique opportunity for students

Year 9 students from Chanel College, Gladstone, Tannum Sands and Toolooa state high schools were provided a unique opportunity when they participated in the QMEA Biodiversity Day on August 14.

The 20 students worked alongside staff from Ecologica Consulting and the Department of Transport and Main Roads as they investigated local cycad populations situated on gas transmission pipeline (GTP) right of way (ROW) in the Calliope Range.

Working with ecologists and environmental engineers, students collected data on individual plant condition and compared it with plants at different stages of translocation.

‘Students were challenged to evaluate the suitability of suggested translocation sites based on their knowledge of plant physiology and the criteria for translocation success,’ said Alicia Wain, an ecologist with Ecologica Consulting.

‘The program gives students the chance to reflect on their current attitudes and beliefs about sustainability.

Students then worked with their teachers to analyse data and report on the progress of the cycad relocation program and make personal recommendations for future success.

‘Our students respond well when their learning includes genuine contextualization of curriculum concepts,’ said Nadia Shahgholi, a teacher of Science and Biology at Chanel College.

‘This work lays the foundations for year 11 Biology studies, and working with LNG partners through the programs has encouraged students to consider the range of roles that exist for environmental scientists in industry,’ Nadia added.

Senior Biology students from Chanel College and Toolooa state high school have conducted field work with staff from Ecologica, Department of Transport and Main Roads, APLNG and QGC as part of an extended experimental investigation looking at the effect of abiotic factors on plant growth.

The field trips are part of a broader program of engagement between the QMEA, local schools and APLNG, Arrow Energy, GLNG and QGC that includes lesson plans adapted for the Australian Curriculum and senior work units in biology and engineering technology.



# Toolkit for school kids

## Careers in the toolbag

A career in trades is one step closer for over 140 Queensland students following their participation in the successful QMEA Toolkit for Schoolkids program.

Students from Queensland Minerals and Energy Academy (QMEA) schools and invited Education Queensland schools took part in the program that was presented in a number of regional centres throughout July.

The day-long event saw participants engaging with industry mentors to complete a number of hands-on activities designed to build students awareness of the range of career options available in the electrical, fabrication, mechanical and operator trade areas.

Supported by mentors from Anglo American, BHP Billiton Mitsubishi Alliance (BMA), Rio Tinto, Leighton Contractors, Downer EDI, GAGAL, Glencore, Lennon Training, Mynestart, SkillTech, Mackay Engineering College, Miles Trade Training Centre and Central Queensland Institute of TAFE, the students completed a range of tasks and engaged with professionals and tradespeople who shared their knowledge and experience.

Students also learned more about the minerals and energy industry and underground mine environment as they toured the Lennon Training facilities in Emerald and Moranbah and Mynestart training centres in Mackay and Brisbane.

Students from Nanango State High School and surrounds will complete the activity in term four.

For more information, or to be involved in 2014 Toolkit for Schoolkids



## Schools involved in the 2013 QMEA Toolkit for Schoolkids

Alexandra Hills State High School  
Anglican Church Grammar School  
Biloela State High School  
Blackwater State High School  
Bundamba State Secondary College  
Dysart State High School  
Emerald State High School  
Mackay State High School  
Mackay North State High School  
Middlemount Community College  
Miles State High School

Mirani State High School  
Monto State High School  
Moranbah State High School  
Mount Morgan State High School  
Moura State High School  
Pioneer State High School  
Sarina State High School  
Taroom State School  
Wandoan State School  
Wavell State High School



# Teacher professional development



## Bridging the gap

Teachers are now better equipped to assist their students bridge the gap between school and a career in the resources sector following recent teacher professional development (TPD) activities.

As part of Australian Engineering Week celebrations hosted by the QMEA in the north-west, Project Officer Robyn Flexman, a recipient of the Peter Doherty Outstanding Teacher of Science Award, mentored teachers from Cloncurry and Spinifex State College in a range of discipline areas, workshopping hands-on engineering activities provided by the IEEE for implementation with students.

‘This is a great opportunity for our students to apply science and engineering concepts’, said Cloncurry State School Principal Christine Norton. ‘The range of careers available to young people within the resources sector is immense.

Our brightest science and maths students will need to develop special skills sets to contribute to the mines of the future’, Ms Norton added.

In addition, eleven teachers from Central Queensland investigated capabilities and applications of Arduino, an open-source electronics prototyping platform that can sense the environment and can affect its surroundings by controlling lights, motors, and other actuators.

The activities developed as part of the workshop will be included in engineering technology units at Gladstone and Tanum Sands state high schools and workshopped with other QMEA schools at future workshops.

Details about upcoming teacher professional development workshops can be found on the QMEA website.



# QSMART & AATTP

## A wealth of opportunity for trade students

The QMEA Apprentice Aptitude Testing and Training Package, trialled in select schools in 2012, has been rolled out across the academy in 2013. Almost 1000 students have participated in the training, designed to prepare them for the type of testing they are likely to encounter as part of selection for an apprenticeship within the resources sector. Developed in collaboration with industry, students are provided with background materials and activities, before completing the on-line test.

## Apprenticeship opportunities

For students demonstrating an aptitude for a career in the trades, apprenticeships are the first stepping stone. Our sponsors include information about their apprenticeship schemes on their websites.

Students registered as ME (Minerals and Energy) crew will receive updates regarding these opportunities as we become aware of them. To register with the QMEA, complete the student registration form available on our website [www.qmea.org.au](http://www.qmea.org.au).

## QSMART

QSMART continues to be offered in QMEA schools with an additional three schools offering the course in 2014. To support schools with the implementation, a TPD workshop will be offered.

If you would like to attend this workshop, please complete the registration form located on the website.

## What's coming up?

### Expand Your MINeD

Expand your MINeD is a full day activity that provides students with an opportunity to learn more about industry applications of simple science concepts, as they complete a number of hands-on challenges.

In 2013 Expand Your MINeD will occur in Blackwater, Brisbane, Moranbah, Moura and Wandoan.

For further information do not hesitate to contact Tammy Grady ([tammyg@qmea.org.au](mailto:tammyg@qmea.org.au))

### 2014 Student Ambassador Program

Students selected as 2014 QMEA Student Ambassadors will be invited to engage in a number of activities across a 12 month period designed to increase their understanding of the resources sector, provide opportunities for networking with other students and industry representatives, and develop leadership skills.

The initial activity will see students participate in an intensive four day program of activities, including an ambassador breakfast, that will be held in Brisbane in December 2013.

### OCTOBER 2013

- 10 Kids Rock(Moranbah)
- 10 TESEP Webinar Series-Climate Change
- 14 Rock Cycle TPD Workshop (Mt Isa)
- 15 Kids Rock (Mt Isa)
- 17 TESEP Webinar Series-Climate Change
- 18 Kids Rock (Townsville)
- 18-20 Science & Engineering Challenge
- 21 QSMART Verification &TPD (Dysart)
- 22 TESEP Webinar Series-Climate Change
- 22-23 Standard 11 Training (Gladstone)
- 28 TESEP Webinar Series-Climate Change

### NOVEMBER 2013

- 4-8 Science in the Australian Curriculum (Miles, Taroom, Wandoan)
- 12 Engineering Technology TPD
- 21 Expand your MINeD (Blackwater)

### DECEMBER 2013

- 1-4 QMEA Awards Event (TBC)