

# ANNUAL REPORT

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Queensland  
MINERALS & ENERGY  
ACADEMY

# 2014



# QMEA ANNUAL REPORT 2014

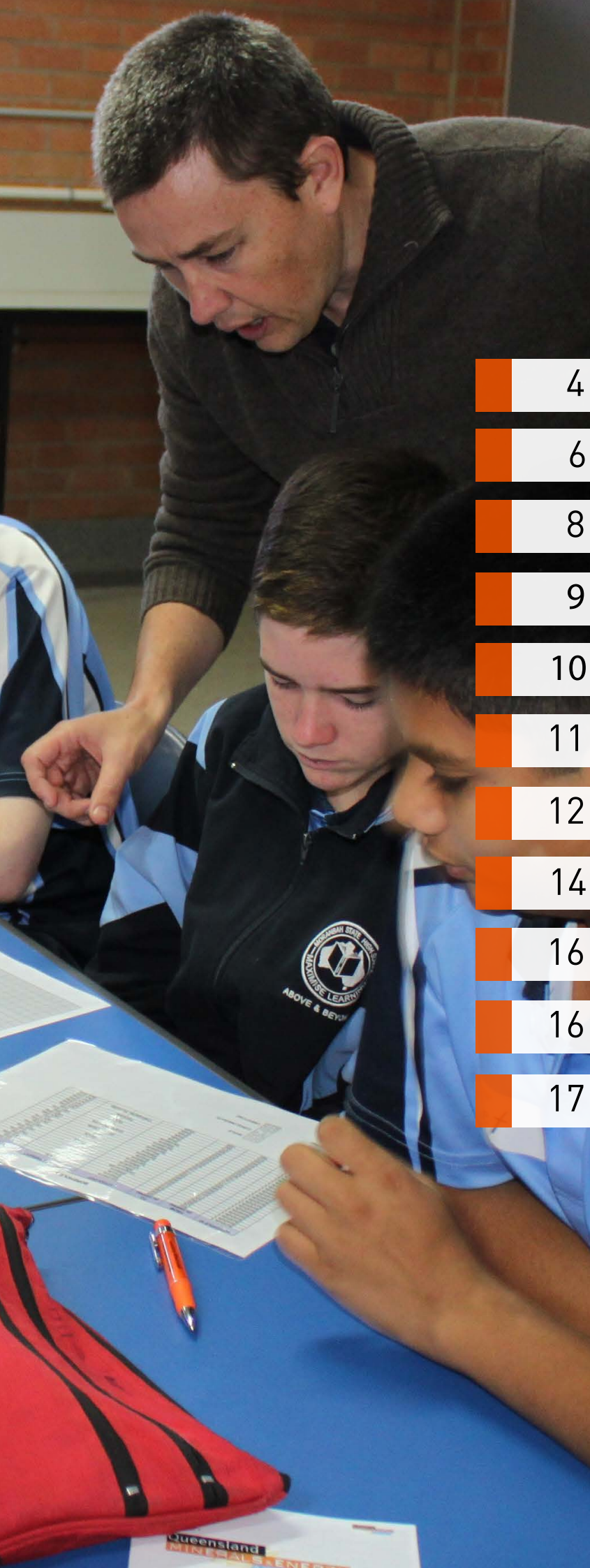
## TALENT PIPELINE INTO THE RESOURCES SECTOR

The Queensland Minerals and Energy Academy (QMEA) is Australia's largest and most successful industry and education schools partnership between the resources sector, represented by the Queensland Resources Council and the Queensland Government.

Through its industry and schools partnership, the QMEA offers a range of programs and experiences to:

- provide pathways for young people in years 7 to 12 into resource sector related careers, and
  - broaden knowledge of the sector for both teachers and students.
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# 2014 HIGHLIGHTS

- More than 2,400 students engaged directly in QMEA activities and participated in 77 events across the state.
- 150 teachers and pre-service teachers have been involved in teacher professional development activities including workshops, seminars and online webinars.
- 190 QMEA/vocational education and training (VET) pathway students have successfully completed Certificate II in Resources Infrastructure and Workplace Preparation which is an entry level qualification favoured by industry.
- More than 200 industry representatives have directly participated in activities to support student pathways into industry and increase their knowledge of the sector.
- 20 high-achieving trade & professional pathway students were selected as QMEA Student Ambassadors for 2015.



QGC delivering a Career Café at Toolooa SHS



BMA MINT Camp in Dysart



Alexandra Hills SHS student's at the Science Olympiad at QUT





IN 2014:

OF STUDENTS ENTERING A BACHELOR DEGREE <sup>1</sup>:

**13.8%** QMEA STUDENTS ENTERED ENGINEERING OR RELATED FIELD OF STUDY  
COMPARED TO **9.6%** STUDENTS FROM NON-QMEA SCHOOLS

OF STUDENTS EMPLOYED AS APPRENTICES <sup>3</sup>:

**12.6%** QMEA STUDENTS WERE EMPLOYED IN MINING SECTOR  
COMPARED TO **3.2%** STUDENTS FROM NON-QMEA SCHOOLS

OF STUDENTS UNDERTAKING AN APPRENTICESHIP <sup>2</sup>:

**56.4%** QMEA STUDENTS ENROLLED IN ENGINEERING OR RELATED FIELD OF STUDY  
COMPARED TO **46%** STUDENTS FROM NON-QMEA SCHOOLS

OF STUDENTS EMPLOYED AS TRAINEES <sup>4</sup>:

**6.7%** QMEA STUDENTS WERE EMPLOYED IN MINING SECTOR  
COMPARED TO **1.4%** STUDENTS FROM NON-QMEA SCHOOLS

*'The uni course I chose is an environmental engineering degree that will hopefully land me a job working for one of the mining companies...'*

2013 QMEA graduate/camp attendee

<sup>1</sup> 'Next Step' Destination Survey: Main Destination and Field of Study for Year 12 Graduates in Education and Training by Type of School, Queensland 2014

<sup>2</sup> Ibid

<sup>3</sup> Ibid

<sup>4</sup> Ibid









# ABOUT US

## 34 SCHOOLS

Alexandra Hills State High School  
Anglican Church Grammar School  
Biloela State High School  
Blackwater State High School  
Bundamba State Secondary College  
Chanel College Gladstone  
Chinchilla State High School  
Cloncurry State School  
Dalby State High School  
Downlands College, Toowoomba  
Dysart State High School  
Emerald State High School  
Gladstone State High School  
Kirwan State High School, Townsville  
Middlemount Community School  
Miles State High School  
Moranbah State High School  
Moura State High School

Nanango State High School  
North Rockhampton State High School  
Oakey State High School  
Pioneer State High School, Mackay  
Pittsworth State High School  
Roma State College  
Spinifex State College, Mount Isa  
St John's School, Roma  
Tannum Sands State High School  
Tara Shire State College  
Taroom State School  
Toolooa State High School,  
Gladstone  
Toowoomba State High School  
Wadja Wadja High School  
Wandoan State School  
Wavell State High School, Brisbane

## QMEA BOARD MEMBERS

### **Michael Roche (Chair)**

Chief Executive,  
Queensland Resources Council

### **Jason Callaghan**

Superintendent Training &  
Development, BMA

### **Patrea Walton**

Deputy Director-General,  
Dept Education Training and  
Employment

### **Matt O'Neil**

Chief Mining Officer Copper Assets  
North Queensland,  
Glencore Mount Isa Mines

### **Jane Roberts**

Social Investment Manager  
Sustainability, QGC

### **Nik Babovic**

Deputy Vice-Chancellor (Industry &  
VET)

Industry, Vocational Training and  
Access Education Division,  
Central Queensland University

### **Steve McDonald**

Chief Executive Officer,  
SkillsDMC

### **Debbie Butler**

Talent Manager Australia and Canada,  
Anglo American Metallurgical Coal

### **Karen Whelan**

Assistant Dean (Learning & Teaching)  
Science & Engineering Faculty, QUT  
Queensland University of Technology



# FROM THE QMEA BOARD CHAIR

In reflecting on the QMEA for 2014, I noted a survey by Mission Australia that indicated 87 percent students believe a good career is important, but 40 percent think they will not be able to achieve their career goals.

The fact that such a high percentage of young people think they will not achieve their dream job is disappointing, but it is also an opportunity for our industry to further promote the great career opportunities in our sector and the pathways into it.

The strength of the QMEA lies in attracting the best and the brightest within the QMEA schools to the myriad of skilled occupations we need now and into the future. It is about positioning students for incredible opportunities in our global resources sector.

The QMEA, with its strong partnership between industry, education providers and the Queensland Government, will inspire the next generation of employees to take up science, technology, engineering and maths careers, which can lead to productive occupations in the resources sector. A skilled and talented workforce underwrote the \$77.6 billion contribution by the resources sector to the Queensland economy in the past financial year.

That's one in four dollars of the state's economy and one in five jobs and providing \$2.5 billion in royalties to the Queensland Government for roads, hospitals, teachers, nurses and police.

I would like to take this opportunity to acknowledge the QMEA Board, our loyal ongoing sponsors and also new sponsors of the QMEA partnership who have been instrumental in ensuring the delivery of such a successful program.

I would also like to thank the government for its continuing support, and the Premier's very welcome announcement at the QRC's annual lunch in November of the new QMEA Brisbane flagship school, as part of the government's ResourcesQ initiative.

We look forward to working with the Department on the implementation of this initiative, which I believe will contribute enormously to the QMEA's ongoing success.

Michael Roche,  
Chief Executive, Queensland Resources Council



**'The strength of the QMEA lies in attracting the best and the brightest within the QMEA schools to the myriad of skilled occupations we need now and into the future. It is about positioning students for incredible opportunities in our global resources sector.'**

**Michael Roche**



# FROM THE QMEA ACTING DIRECTOR

Throughout 2014, the QMEA has delivered 77 events across Queensland to students and teachers within its schools.

But, QMEA is more than a series of events. It is a structured program from year 7 through to year 12, providing information in the early secondary years, a series of challenges in the middle years and from there working up to our signature camps for students in the senior years. All this is within the context of increasing student and teacher knowledge of the resources sector and its pathways into rewarding careers.

The detailed evaluations that have been conducted on these experiences tell us that 90 percent of students and industry participants thought these events were worthwhile, 70 percent of students indicated the event had influenced their career goals, while others had a reality check on the necessity of attaining good results in maths and science if they were to realise their career objectives.

Some teachers have advised us that numbers in their senior maths and science classes have increased and although QMEA does not take sole credit for this, the schools tell us that QMEA interaction has been a strong influencer in subject choice.

Indeed the results from the Queensland Government's 'Next Step Destination Survey' highlighted in this report do indicate that overall a higher percentage of students is seeking engineering and related pathways compared to students from non-QMEA schools. So the investment and support we receive from government, industry and other stakeholders is paying off.

QMEA has become a truly effective talent pipeline into the resources sector.

In closing I wish to acknowledge the support received from the QMEA Board, our industry sponsors, the Queensland Government and the efforts of our small but highly professional team, Tammy Grady, Bob Baker and Dan Rea. The QMEA also appreciates the ongoing day-to-day support from the Queensland Resources Council in hosting us in their premises and in providing essential communications, marketing, finance and administrative support.

I trust you will enjoy reading our year in review and in 2015 we look forward to the evolution of QMEA encompassing the QMEA Flagship School under the Queensland Government's ResourcesQ Partnership.

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Katrina-Lee Jones  
Acting Director, QMEA







# WHAT WE DID IN 2014

QMEA hosts a number of professional and trade pathway events for students and professional development sessions for teachers related to minerals and energy careers and education.

The QMEA has delivered a program of 77 activities in 2014 to **influence, engage and inform** students of the pathways into and careers in the resources sector.

As part of this, QMEA has continued to deliver a region-specific program based in Gladstone through the QMEA and LNG Secondary Schools Partnership.

In addition the QMEA assisted teachers and pre-service teachers in a range of activities across the year.



# INFLUENTIAL

In the **Influential phase**, Years 7 and 8 students engage in activities to increase their awareness of the resources sector and the range of careers that exist in the minerals and energy industry.



BMA and QUT reps work with students from Emerald, Blackwater and North Rockhampton SHS



Students from Alexandra Hills SHS and Wavell SHS participate in Energy for the Future

**‘Energy for the Future allowed students to appreciate the challenges within the energy industry and to think about the energy choices we make.’**

**Alfie Little, Engineering Supervisor, NRG**

## ENERGY FOR THE FUTURE

High achieving year 8 students are invited to attend a full-day event corresponding to the delivery of the energy topic in the curriculum. The event focuses on energy types, production, generation and use.

*Energy for the Future* was once again very well supported by QMEA partners, with 32 industry representatives from various disciplines working with 250 high achieving students alongside 43 university ambassadors from Queensland University of Technology (QUT) and Central Queensland University (CQU).

Nanango Senior High School hosted *Energy for the Future* for the first time this year which was an overwhelming success. Both QMEA and non QMEA schools participated in the day bringing together over 40 students from the South Burnett region.

In 2015 Gladstone will work towards making *Energy for the Future* an assessment piece for extension science students. This idea is supported by schools in the region and steps for further development will be taken in the new year.

Another development of the popular event is to utilise our newly formed MoU with Education Queensland’s ‘The Learning Place’ and host live webinars during *Energy for the Future*. This development could see students in Wandoan talking to a nuclear scientist in Houston USA. 2015 will see steps taken to facilitate this development.

## CAREER CAFES

Career cafes are delivered throughout the year by industry representatives including professionals and tradespeople. Again the context of the session corresponds to what is being taught in the curriculum at that time. In 2014, the various Career Cafes ranged from chemical engineering, laboratory techniques, and environmental practices to marine research skills.

The Career Cafes allow teachers to draw upon experts in their fields and communicate this enhanced knowledge to their classes.

One parent commented to QMEA that the delivery of a Career Café with a Laboratory Manager with QGC triggered her high-achieving son to finally choose a career direction.

The mother commented that being a gifted student, her son had various options, however no single career came to mind. Upon leaving the Career Café with the QGC representative, her son said, ‘that’s exactly what I want to do,’ and started to research his options.

Career Cafes ensure each unit delivered in school is supported via clear messages that in turn reflect the real world.

Well over 1,500 students engaged with QMEA Career Café activities this year.



Kieran of QGC inspired students to move into a STEM related career at a Career Cafe



# INFORMATIONAL

Extended periods of engagement within the **informational phase** lead to greater depth of understanding of the resources sector.

## EXPAND YOUR MIND

Expand Your Mind promotes career opportunities in the resources sector and is customised for a high-achieving year 9 audience who have an interest in science and engineering related professions.

More than 10 schools participated in the events, which were hosted at Moura State High School, Gladstone State High School, Wavell State High School and Wandoan State High School with 160 students in attendance.

Each event was supported by QMEA partners and it is the exposure of industry experts to students that sets this program apart from others.

Industry mentors have the opportunity to show students how their current learning can be applied to real jobs. Students are exposed to activities ranging from robotics, design and engineering, chemistry to environmental sciences

The QUT and CQU partnered with QMEA this year to deliver *Expand Your Mind* to more than 200 year 8 students.

Ambassadors from CQU and QUT worked with students throughout the program, guiding them in a day of discussion and debate of global energy needs.



Students from Wavell and Alexandra Hills SHS expand their minds with Alan of Society of Petroleum Engineers

**‘A great opportunity to interact with future science, engineering, technology and maths champions with an interest in a sustainable future.’**

**Michael Duggar, Sustainability Specialist,  
Ports Corporation**

## KIDS ROCK

As part of the QMEA science technology engineering and maths (STEM) outreach program, more than 45 students from the state's north participated in the QMEA 'Kids Rock' workshops to coincide with International Earth Science Week.

Working with geologists from Glencore MIM, CSIRO and James Cook University's Geology Department, the year 10 students gained a greater knowledge of common geological principles and the importance of understanding earth science in relation to predicting future geological events.

The students from Mount Isa and Townsville gained an appreciation for the path of study and the possible working environments for earth science professionals and now have a greater appreciation for the stories rocks can tell.



Spinifex State College students at the Kids Rock workshop in Mount Isa





Emerald SHS students at the Science Olympiad held in Emerald

## SCIENCE OLYMPIAD

A full day of STEM related challenges and activities was undertaken by over 130 year 10 students as part of the QMEA Science Olympiad program.

The day consists of students who are intent on pursuing an academic pathway in years 11 and 12, working with industry mentors on a number of hands-on, problem-based challenges.

The students heard from industry professionals about what their role entails and the journey they took from high school to where they are today. The students worked on activities which followed the mining process from exploration through to extraction and processing before finishing with a rehabilitation activity.

Students participated in Science Olympiads in Brisbane, Rockhampton, Moranbah, Emerald, Taroom, Mackay and Mount Isa. The students were from a range of schools in each region and heard from a variety of resource industry professionals including geologists, mining engineers, geotechnical engineers, metallurgists, process engineers, environmental scientists, human resources and many more.



Moranbah SHS Students at the Science Olympiad held in Moranbah

**‘Toolkit for School Kids was the culmination of a great partnership between industry, education, community and government.’**

**Debbie Butler, Talent Manager, Anglo American**



Toolkit for School Kids workshop in Emerald

## TOOLKIT FOR SCHOOL KIDS

QMEA's Toolkit for School Kids workshops provide students with an insight into the role of a tradesperson in the resources sector. The activities are designed to expose participants to a number of trade experiences and encourage a more informed career choice. In 2014 students completed welding, electrical, mechanical and a variety of basic resources sector tasks.

Offered to year 10 students, they incorporate basic health and safety inductions, training, hands-on activities and a chance to develop networks with industry.

As students begin to consider traineeships and apprenticeships, these activities provide the perfect opportunity for industry to get to know the students in schools within their local footprint.

In 2014, 150 students participated in the day-long programs in Biloela, Brisbane, Mount Isa, Mackay (girls only), Emerald, Wandoan, Moranbah (girls only), Rockhampton and Townsville.

In addition, at many of the program locations, students also participated in industry tours at venues such as Lennon's Training Centres in Brisbane, Emerald and Moranbah, Sibelco's Magnesium Plant in Rockhampton, Queensland Nickel's processing plant in Townsville and many of the state's schools trade training centres.

‘The Toolkit 4 School Kids workshop was the culmination of a great partnership between industry, education, community and government,’ said Debbie Butler, Talent Manager from major sponsor Anglo American.



Toolkit for School Girls workshop in Moranbah



## VET PATHWAY

QMEA VET students are generally completing a combination of academic and VET subjects as part of their studies, which may incorporate the completion of courses such as Certificate II Resources and Infrastructure Work Preparation (RIWP) and/or our own approved subject QMEA Science Maths and Related Technologies (QSMART) particularly developed for students seeking a trade.

All QMEA VET students complete the QMEA Apprentice Aptitude Test and Training Package (AATTP), and are invited to participate in 'Make it now in trades' (MINT) Challenges.

The 2014 BMA, Anglo American, Glencore Coal, Charters Towers and Brisbane MINT Challenge provided 70 participants a chance to work with resources industry trainers across Queensland, in mining and engineering trade training centres.

Skills centres and workshop tours familiarised the students with the industry standards and the breadth of site operations. The students were challenged to design and build a motorised bike, utilising skills developed over a four-day period and also work as a miner in the Brisbane MINT Camp trialled in Brisbane.

QMEA VET students are encouraged to start studying towards trade qualifications. In 2014, 190 students completed Certificate II in RIWP through courses of study supported by the QMEA.

'I thought this was a wonderful experience and I am very grateful. I learnt a lot and would recommend this camp to anyone,' said Kyle Potheary from Dysart SHS who was involved in the BMA MINT camp.



Students at the MINT Camp held in Dysart

**'This was a wonderful experience and I am very grateful. I learnt a lot and would recommend this camp to anyone.'**

**Kyle Potheary, Dysart SHS student**

## PROFESSIONAL PATHWAY

QMEA Professional Pathway students are completing an academic program of work across years 11 and 12 with the aim of receiving an Overall Position (OP) to gain entry into tertiary education. These students are considering a range of careers in areas such as engineering, geology and environmental science.

These students are invited to take part in a number of STEM related opportunities including taking part in one of the QMEA 'Make It Now in Engineering' (MINE) Challenges.

MINE Challenges provide an amazing opportunity for high achieving senior students to work alongside industry professionals to solve genuine problems while experiencing the life of a resources sector worker. In 2014, 30 students and six teachers attended a MINE Challenge.

During the July school holidays, 12 students participated in the inaugural QUT/QMEA process engineering MINE Challenge held at QUT's Renewable Biocommodities Pilot Plant. Students from around the state travelled to Mackay for the week-long challenge where they presented a case for a new research project to some of QUT's top academics as well as the head of Mackay Sugar.

'The challenge is the ultimate work experience and it's something special to say you have conducted research in an industrial laboratory on real plant projects before beginning a university course,' said QUT STEM teacher-in-residence Anne Brant.

The BMA MINE Challenge involved 18 students who travelled to Moranbah for a week to experience the life of an industry professional at a coal mine and living in Civeo's MAC village accommodation.

Split into two teams based at BMA's Saraji and Goonyella Riverside mines respectively, the teams met with key staff, toured facilities and undertook a challenge to design, cost and propose a new box-cut coal mine. The week concluded with the team presenting their cases to a panel of BMA's mine planners and site managers who agreed everyone had done a brilliant job before awarding the 2014 BMA Mine Challenge trophy to the Saraji Team.



Students experiencing BMA training simulators



MINE Challenge participants at BMA's Goonyella Riverside mine



# ENGAGEMENT

The **engagement phase** targets year 11 and 12 students who have demonstrated a genuine interest in a resources sector career.

Students participating in this phase have generally completed activities in the influential and informative phases.



QMEA Student Ambassadors with chair of the QMEA Board Michael Roche and member for Brisbane Central, Robert Cavallucci MP

## AMBASSADOR PROGRAM

The QMEA Ambassador Program attracts Queensland's most talented students who are considering professional and VET pathways into the resources sector. The selected students participate in a number of activities across a twelve month period that increases their understanding of the resources sector, provides unparalleled opportunities for networking with other students and industry representatives and develops leadership skills.

The chair of the QMEA Board Michael Roche and member for Brisbane Central, Robert Cavallucci MP presented the 20 year 11 students with their awards at a gala QMEA breakfast held in Brisbane for students, schools and industry supporters.

The students participated in a three day camp which saw them engage with the cutting edge of mining and resources innovation through a tour of the CSIRO's Queensland Centre for Advanced Technology (QCAT), the Hastings Deering CAT Institute of Technology and SIMTARS, the Queensland Governments safety in mining research station. The camp provided a perfect opportunity for the students to increase their knowledge of the sector in order to inform their own pathways and to encourage other students to consider resources sector subjects and careers.

### Congratulations to our 2015 QMEA Student Ambassadors:

Luke Atkins, Alexandra Hills SHS  
Aden Smith, Biloela SHS  
Michael McLure, Biloela SHS  
Shania Buckingham, Blackwater SHS  
Tayla Ludlow-Tobane, Blackwater SHS  
Duta Adyatma, Emerald SHS  
Parker Hayes, Emerald SHS  
Justen Lyons, Kirwan SHS  
Jayden Thompson, Kirwan SHS  
Marti vanMilt, Kirwan SHS  
Jemma Everett, Kirwan SHS  
Litanare Tonny, Moranbah SHS  
Craig Dunn, Moranbah SHS  
Alice Edgecombe, Moura SHS  
Samantha McCullough, Moura SHS  
Ema Nunn, Nanango SHS  
Jared Matthews, Nanango SHS  
Alison Wakefield, Spinifex SC  
Brock Staunton, Spinifex SC  
Kaitlyn Read, Toolooa SHS



Ambassador students at CSIRO QCAT facility



The QMEA ambassadors at Hastings Deerings Institute of Technology



## QMEA AND LNG SECONDARY SCHOOLS PARTNERSHIP

The QMEA and LNG Secondary Schools Partnership involves four schools from Gladstone who engaged with LNG companies APLNG, GLNG and QGC

In 2014, hundreds of students from Gladstone participated in the various programs and events, which are designed by local industry and schools.

As in previous years, activities such as Energy for the future, Expand your Mind, Biodiversity Field Days and It's all about M.E - Minerals and Energy and Career Cafes have been well attended.

Building upon the successful Maths and Science Challenges run in Gladstone for over 20 years, QMEA developed an intensive three-day mathematical activity to form a part of the challenge aimed at years 10 and 11.

This activity challenges students to research the liquefaction process of natural gas and design high-efficiency cooling circuits and heat exchange unit, which will reduce operating costs.

Students design a prototype and present their research and findings to an audience on the last day.

The activity was successful, thanks to the generous support shown by QMEA partners both during the challenge days as well as in the lead up and the design and development of the program. Authenticity is vital to enable the students to have the best experience possible.

The implemented data tracking system, used to review the effectiveness of the event offerings, has shown QMEA and our LNG partners that we are providing students the right tools and experiences required to move into STEM related fields or to continue that interest from junior to a senior level.



Students at the All Girls Career Event – It's all about M.E



Ben of APLNG works with students at Energy for the Future

**‘Through my association with the QMEA, I have been able to determine the career pathway I wish to take within the minerals and energy sector.’**

**Bradley Fuller, School Captain of Toolooa SHS  
and QMEA Ambassador**

## TEACHER PROFESSIONAL DEVELOPMENT

QMEA's annual teacher professional development (TPD) program includes a range of activities and support for teachers in QMEA schools.

The plan, informed by QMEA school input and industry innovation, focuses on STEM, QSMART and VET qualifications for teachers as well as engaging with pre-service teachers through QMEA's relationship with the tertiary sector.

In 2014, more than 150 teachers engaged with QMEA events, or were supported to participate in a range of activities to improve their professional knowledge.

The QMEA delivered a number of specific TPD opportunities in 2014 including QSMART, Certificate II Resource Infrastructure Work Preparation training, Apprentice Aptitude Test Training Program and STEM teacher workshops in a number of locations.

QMEA also delivered a lecture on the use of the 'Oresome Resources' website to third-year science education students at QUT.



Gladstone STEM Teacher PD



QSMART Professional Development 2014 held in Mackay





# OUR SPONSORS

The QMEA is founded on significant resources provided by the Queensland Resources Council and the Queensland Government alongside substantial sponsorship support from the minerals and energy sector.











***'The QMEA program is essential in ensuring students make informed career decisions while also encouraging young people to consider careers in the trades. We welcome the opportunity to get involved and offer our support for these talent pipeline programs.'***

**Leanne Ryder, Manager Human Resources North Queensland Copper Assets, Glencore MIM**







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