

Mining and Resources School of Excellence

PROPOSAL FOR QUEENSLAND RESOURCES COUNCIL (QRC)



Foreword

Foreword from the CQU Vice-Chancellor and President

The global mining industry is evolving at an unprecedented pace. As demand for critical minerals surges, sustainability expectations intensify and technological advancements redefine traditional practices, the need for a new generation of highly skilled mining engineers has never been greater.

In response, CQUniversity proudly presents the Mining School of Excellence Strategy - a bold vision designed to position our institution at the forefront of mine engineering education, research and industry collaboration.

Our strategy is built upon three core pillars: academic excellence, industry engagement and innovation in mining practices. By integrating cutting-edge research, world-class teaching and strong partnerships with leading mining organisations, we are committed to equipping mine engineering students with the expertise and hands-on experience needed to excel in the field.

Through this strategy, we aim to:

- Provide mine engineering students with specialised technical knowledge, problem-solving abilities, and leadership skills to drive safe and efficient mining operations.
- Foster interdisciplinary research and innovation that addresses key engineering challenges in modern mining.

- Strengthen our relationships with industry partners to offer students placement, holiday employment and mentorship opportunities that enhance their practical learning.
- Champion responsible and sustainable mining engineering practices, ensuring that our graduates are prepared to meet global environmental and social expectations.

Our Mining School of Excellence is a hub for aspiring mining engineers to develop their skills, collaborate with industry leaders and contribute to the advancement of the mining sector. With this strategy as our guiding framework, we are committed to shaping a future where mining engineering remains a critical and innovative discipline driving the responsible extraction of resources.

I invite our students, faculty, industry partners and stakeholders to join us in realising this vision. Together, we will build a world-leading centre of excellence that will define the future of mining engineering.

Professor Nick Klomp
Vice-Chancellor and President, CQUniversity

Executive Summary

Building an industry recognised Mining and Resources School of Excellence will bring together the critical mass of resource industry in Queensland with CQUniversity's unique educational approach tailored to Queensland communities.

This collaboration will build training tailored to the industries needs and priorities whilst building a brand that helps attract and retain the best and brightest of the State's talent to help address the regionally based challenges of the sector.

Attempting to address statutory role shortages along with core technical skills demand can leverage existing CQUniversity programs and platforms as articulated throughout this report.

CQUniversity is committed to working in partnership with out industry colleagues to become and maintain Queensland's university of choice for mining and resources training, education, and research. This commitment extends to partnering across our key regional industries to ensure that there is a steady pipeline of talent across major industries, support and ancillary services and regional prosperity generally.

The report outlines various initiatives that could form the basis for a long and prosperous partnership between CQUniversity Australia (CQU) and the Queensland Resources Council (QRC) and its membership.

In summary, the report proposes that CQU and QRC work together to realise the following strategies in the short term:

- Joint strategies to address the skill shortages in Mining Engineering by:
Attracting more prospective students to Engineering degrees at CQU - particularly those from regional communities who value living and working in these areas - to help ensure the best and brightest pursue careers in these critical industries. An example of this strategy already in train includes the Resources Ready program developed in partnership with TerraCom to encourage and assist more school students to aspire to an engineering pathway via studies at School and a pathway from Associate through to full Engineer qualifications (see [Attachment One](#) for details). CQU will also continue to look for innovative ways to help regional high school students access the higher level subjects at school to support their engineering aspirations
- Looking for alignment between CQU and other Qld engineering degrees to facilitate the pipeline of onsite students/cadets into the workplace after the initial year of study (supporting students who opt to begin their studies in the city to transition back to the regions)
- Aligning with existing QRC member campaigns to raise awareness of the mining and resources sector's role in everyday life, while promoting the innovative and diverse career opportunities it offers.
- Developing and constantly refining innovative entry pathways such as the cadetship program (for full details, see Appendix 1) currently offered

by CQU where students are employed and completing their degrees consecutively and the more recent Resources Ready program with TerraCom – supporting retention strategies.

- Joint development of targeted and specific microcredential and short format training (both online and in person) that meet immediate and emerging development needs for industry.
- CQUniversity to lead strategies that ensure its engineering degrees provide the best possible preparation for careers in the mining and resources industries. This includes leveraging the QRC network's expertise through guest lectures, curriculum input and review, industry-informed assessment tasks, project work based on real-world scenarios and standards and delivery which supports production priorities alongside training and education activities
- QRC to lead staff retention strategies, with CQUniversity supporting workforce development through access to education and training programs. This includes trade-to-engineering pathways with credit, industry-based postgraduate and specialist skills training and tailored workshops addressing areas such as safety, fatigue management and cultural literacy.
- Strengthen industry partnerships to jointly pursue research relevant to regional communities and the mining and resources sector. CQUniversity's current research strengths that may be of interest include artificial intelligence and machine learning, human factors and safety science, environmental management and monitoring, workplace health behaviours and sleep and biological rhythms. (A full list of focus areas is provided in the body of the document.)

Partnership benefits

- **Attraction** of new talent to the industry
 - **Retention** and progression for existing talent
 - Introduction to **current students** through guest lectures
 - **Influence into current teaching** - input into curriculum design review and delivery; and real industry challenges and projects built into CQU degrees
 - **Resources Ready** the new pathways and new and existing courses that support this strategy
 - **Industry voice in the research** being led locally and access to research partners nationally and globally
-

Aim and background to the strategy

The Queensland mining industry is experiencing significant demand for skilled labour, driven by rapid sector growth and the increasing complexity of mining and resources operations, including the introduction of automation and digitisation.

According to the QRC, the sector which covers coal, gas, metals and critical minerals generated almost \$117 billion for the Queensland economy and supported more than half a million workers during the 2022-2023 financial year¹.

This proposal brings together the QRC, its education arm, the Queensland Minerals and Energy Academy (QMEA), QRC's member organisations and CQU to develop, implement, measure and continuously improve a range of programs to address skilled worker shortages within CQU's and QRC's Queensland heartland.

The approach will include strategies to attract more people to study Mining Engineering at a tertiary level in the region, but will also consider broader attraction, education and training strategies generally to drive more technical skills into the industry.

Potential strategies to be explored:

- Approaches to retain prospective students in regional areas and inspire them to apply for an engineering degree.
- Engage current school students by highlighting local opportunities in the mining industry, the benefits of tertiary study, work experience and cadetships.
- Support school leavers and recent graduates by keeping mining, mining engineering, and tertiary study front of mind at key decision points.
- Pathways from apprenticeships – identify talented individuals and support them to pursue further study. (The Bachelor of Technology course may offer another option to the 4-year Engineering degree for some students).
- Support the existing workforce by identifying current talent and providing opportunities for further study.
- Attract mature-age students and career changers by raising awareness of mining careers and promoting the benefits of living and working in regional areas.
- Educate prospective students and their influencers – including families, teachers, and career advisors – outside regional Queensland about the training, education, and career opportunities in engineering and the mining industry.
- Explore the potential and feasibility of importing both students and qualified engineers from overseas:
 - CQU currently offers a Master of Engineering program in Rockhampton and Melbourne that enables internationally qualified engineers to gain Australian registration.
 - The feasibility of supporting cohorts of international undergraduate students to qualify and work locally may also be worth exploring.

WHY CQU?

Engineering Expertise in the regions for the regions

CQU has built its engineering expertise and reputation on the strength of its association with the mining and resources industries. Founded in Rockhampton in 1967, the University has grown to have campuses adjacent to most Queensland mining and resources centres and personnel bases including Bundaberg, Gladstone, Emerald, Mackay, Townsville and Cairns.

CQU ranks among the top in the nation², for graduate employment outcomes and starting salaries, driven largely by our engineering graduates who are highly sought after by QRC partners for their industry experience gained during vacation work and placements, regional familiarity, and project-based problem-solving skills developed during their studies.

Qualifications and training across university and TAFE

CQU is Queensland's only dual sector university, delivering qualifications from Certificate I to PhD under a single operation (See Appendix 2 for courses).

The new Engineering Trade Practices provides qualified tradespeople with the potential to transition into an Engineering Degree (or Associate Degree pathway) with credit for their trades study and skills – shortening the time required to become qualified, but also working as a retention tool for existing trades qualified staff who show aptitude and potential. Students accessing the Engineering Trades Practice pathway can also study online while still working providing less disruption both to their income stream and the employers' business.

Expertise in professional development

CQU provides significant expertise across our academic and vocational portfolios. Professional development activities are underpinned by a dedicated Corporate Training Solutions team and significant infrastructure investment and expertise to develop and/or provide access to bespoke professional development solutions for industry.

Social Impact and Community Investment

CQU is proud to already partner with 9 QRC Full Members and 7 QRC Service Members to help them realise their desired social impact. Through the provision of students' scholarships or academic prizes, support to local entrepreneurs, engagement with First Nations communities, research projects and other innovation programs delivered in communities, we jointly deliver social impact in our communities of shared interest. This initiative would facilitate further reach with QRC and your Members, to deliver additional community benefits programs or evaluate the social impact of existing initiatives.

¹ QRC welcomes new Minister for Natural Resources and Mines - Queensland Resources Council

² CQUniversity Australia | Good Universities Guide

Research with Impact

CQUniversity researchers³ are working on industrial and regional issues which affect not only the mining and resources industries, but all of regional Queensland, including:

- Regional economies and supply chains
- STEM education
- Railway engineering, Pavement engineering
- Artificial intelligence and machine learning
- Clean energy, Hydrogen, Biofuels

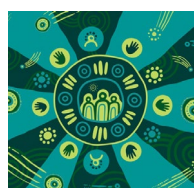
- Health behaviours at work, human factors and safety science
- Sleep and biological rhythms (including shift work)
- Emergency and disaster resilience
- Environmental systems, monitoring and management
- Individuals, families and communities

The majority of CQUniversity's research is conducted delivered through collaborations with industry and university partners – all aimed at generating impact.

³ [Research - CQUniversity](#)

Contents

Aim and background to the strategy.....	4
Why CQU?	4
The Need	7
Attracting and retaining talent in the regions	9
Key target audiences	9
Audience: Current school students, school leavers and recent school leavers	10
Secondary audience: influencers of current students, parents, teachers, guidance officers, heads of year level teachers ...	10
Engineering Teachers resource hub	10
Scholarships for SUN participation	10
current school student experiences, through testimonials	10
Audience: Schools – teachers of General Engineering and Maths.....	10
School resources packs	10
Audience: Current University Students.....	11
Guest speakers	11
Industry mentors	11
Alumni webinar series	11
Multi-directional pathways	11
On the job experience	12
Summary of strategies.....	13
Appendix One	16
CQU Engineering Cadetship information –	16
Appendix Two	18
CQU current mining and resources courses.....	18
Appendix Three.....	22
Credit pathways for school leavers pursuing an Engineering degree	22
Appendix Four	23
ATAR Engineering enrolments in Queensland Schools	23
Appendix Five.....	24
Engineering student numbers by age group	24
Appendix Six	25
Engineering Trade Practices pathway	25
Attachment One – Terracom Coal Mining Engineering Pathways.....	26



Acknowledgement of Country.

CQUniversity acknowledges Traditional Owners and Custodians on the lands on which we move. We pay respect to the Elders of all First Nations peoples of Australia.

Chasing Dreams

CQU's Indigenous Artwork by Coolamon Creative

The Need

“There has been around a 63% drop in mining engineering enrolment in Australia since 2014, and a 39% drop in mining graduations in the United States since 2016. We expect this trend to continue. Mining is not currently an aspirational industry for young technical talent to join.”⁴

According to a February 2023 report issued by Engineers Australia⁵, Queensland represents the buoyant employment market for engineers nationally, seeing a 36% growth in employment vacancies for the profession in 2022. The vacancy rate is attributed to solid economic growth, an extremely strong pipeline of infrastructure projects (including the Brisbane Olympics in 2032) and strong coal and resources exports.

Also, according to Engineers Australia, demand for mining engineers has increased by 24%, making them second only to civil engineers in terms of demand. It's also important to note that the mining and resources sector employs not just mining specialised engineers, but also civil, mechanical, mechatronic and electrical engineers.

As this strategy evolves, it must promote the breadth and diversity of opportunities available across the industry and in the regions where we operate. Ensuring this message is tailored to the diverse range of audiences, including schools, parents, influencers, mature-age prospects, career changers, apprentice pathways participants and current employees will be critical to the success of the strategy.

CQU – a strong track record of regional engagement success

Partnership and collaboration to build future health workforces

The Regional Medical Pathway is a jointly developed and delivered program between CQUniversity, University of Queensland (UQ), Central Queensland Hospital and Health Service (CQHHS) and Wide Bay Hospital and Health Service (WBHHS) which commenced in 2022. The Regional Medical Pathway aims to improve long-term community health outcomes by training more doctors locally and will deliver its first locally trained medical graduates to the Rockhampton and Bundaberg regions by 2029.



“The Regional Medical Pathway demonstrates the profound impact of workforce nurturing in optimising the workplace experience of medical professionals in our local Hospital Health Services.

“The calibre of the students entering the Pathway is exceptional, and communities in Central Queensland and the Wide Bay can be confident that future health workforces will be better equipped to deal with community growth and changing healthcare needs.

“It is a shining example of how universities and healthcare providers can work together to build and secure the future workforce and it is a model that is now being applied in other regions,” Professor Alan Sandford, Director of Medical Academic Development, CQHHS and WBHHS said.

An opportunity to follow career dreams without leaving loved ones

Georgia Herbener, a former student at Bundaberg State High School, has just commenced her medical studies through the RMP in Bundaberg.

She said that it was a dream come true to study medicine in her hometown. “I am the first person in my family to attend university, and the Regional Medical Pathway allows me to study for my dream career while staying in my hometown and benefiting from the support of my family and friends,” she said.

Commitment to giving back to the community that feels like home

Niharika Peteti, who completed her schooling in Biloela and has now relocated to Rockhampton to study in the RMP, said the pathway would allow her to follow her dreams of becoming a regional medical practitioner.

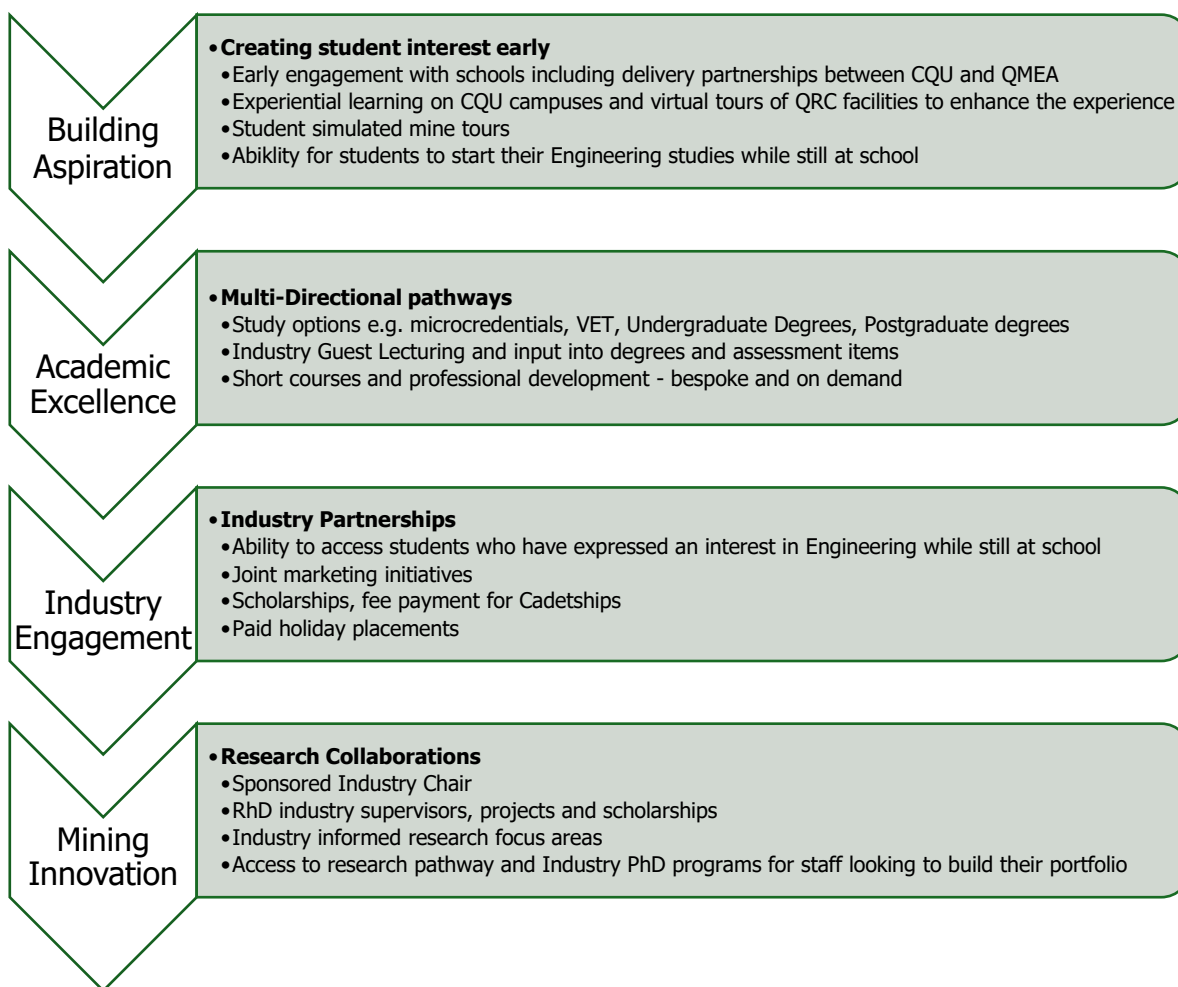
“I have been interested in the human body and medicine from a young age and was influenced to study through the RMP by realising the impact I could make as a health practitioner in a small community”, she said.

⁴ https://www.mpirecruitment.au/news/whats-causing-minings-skills-shortage-and-why-itll-get-worse?utm_source=chatgpt.com

⁵ [Australian Engineering Employment Vacancies Report](#)

A multifaceted partnership model

By investing in the education and training of future mine engineers, universities not only shape individual careers but also contribute to the resilience and advancement of the mining industry and the communities it supports.



Attracting and retaining talent in the regions

Complementing broader industry efforts to elevate the perception of mining and drive regional investment (for example, the current efforts of [Glencore](#) and [BHP](#)), this strategy focuses on building awareness, affinity and action across a range of key target audiences.

The ultimate aim is to create a more sustainable pipeline of students - from all backgrounds - who choose to study Engineering at CQU and go on to live, work and thrive in the regions where mining and resources drive the state's economy.

KEY TARGET AUDIENCES

This initiative supports strategies targeting a diverse range of audiences, with the goal of increasing awareness, building engagement and building pathways into engineering careers in the resources sector.

Primary audiences will include:

- Current school students
- Influencers of current school students – parents, school guidance officers, head of year level teachers
- School leavers and recent school leavers
- Schools – teachers of General Engineering and Maths
- Current university students (to consider a career in resources upon graduation)
- Current and recent apprentices
- Existing workforce
- Mature age prospects and career changers

Target regions will include:

- Primary – Central, Western and Northern Queensland (regions aligned to both industry and CQU campuses: Bundaberg, Gladstone, Rockhampton, Emerald, Mackay, Townsville and Cairns)

CQU, through this partnership with QRC, seeks to support regional Queensland across its vast resources, including the traditional industries, emerging industries and renewables and continued performance as an export powerhouse.

This commitment aligns with CQU's overall strategic plan and values.

- Secondary region coverage will be whole of Queensland, including metropolitan areas, particularly for school-leaver awareness and consideration activities (not in-person activities).



Audience: Current school students, school leavers and recent school leavers

SECONDARY AUDIENCE: INFLUENCERS OF CURRENT STUDENTS, PARENTS, TEACHERS, GUIDANCE OFFICERS, HEADS OF YEAR LEVEL TEACHERS

Tactic: awareness, exposure and experience

This audience is currently covered by CQU's extensive Future Students engagement programs:

- School visits by staff and ambassadors
- Campus visits where students are exposed to a range of career and trade opportunities (For example, University Experience events)
- Trade show/careers market type activities state-wide but focussed on regions
- TAFE and University studies while still at school - Start TAFE now (STN), Start Uni Now (SUN) and TAFE taster programs
- Credit for students who have completed Mathematics General at school for Engineering degree at CQU (See Appendix 3 for details).

To complement and expand upon these activities, it is proposed that CQU will, in partnership with QRC, implement further initiatives, such as:

ENGINEERING TEACHERS RESOURCE HUB

Online resources, potentially complemented by physical resource packs (depending on the availability of rock samples from QRC members) aimed at helping teachers deliver General Engineering subjects in a practical and engaging way, using mining and resources materials and examples. The primary target audience for this is teachers, with an aim to influence current school students.

Similar to UQ's FEAST program (but focussed on mining rather than Agriculture), implementation (and consolidation of existing STEM type camps and residential activities into a single offering) of an experiential residential camp in Rockhampton, where students are subsidised to attend and be immersed in a range of activities highlighting all aspects of mining and resources careers. The program could be delivered through CQUniversity's School of Mining and titled *Career Opportunities in Resources Engineering* (CORE Camp).

SCHOLARSHIPS FOR SUN PARTICIPATION

The CQU Start University Now program provides high school students with the ability to start their university studies while in Year 11 and 12. The heavily subsidised units provide guaranteed entry into degrees (for successful students) and also shorten the time it takes to complete a degree once the students start University.

This strategy suggests providing support to remove financial barriers to participation including low course fees, as well as covering the cost of textbooks, laptops and internet access.

Opportunities for paid holiday work could also be offered to SUN students enrolled in Engineering units, in addition to holiday programs already in place for current engineering students.

CURRENT SCHOOL STUDENT EXPERIENCES, THROUGH TESTIMONIALS

Leverage testimonials, published by both CQU and host companies, to raise awareness of the diverse opportunities available in mining and resources, and to spark interest in engineering units at CQU that provide access to on-site industry experiences.



“The course is very interesting. You get to see a wide range of the whole industry as a whole. All the sort of equipment is state of the art, so it's really interesting and easy to work with.”

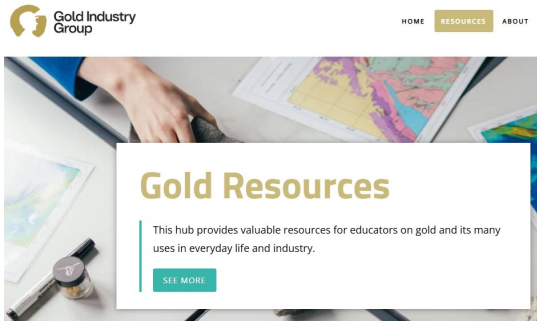
Rhett Lamperd
Bachelor of Engineering (Honours) (Electrical)

Audience: Schools – teachers of General Engineering and Maths

SCHOOL RESOURCES PACKS

Support teachers delivering General Engineering subjects by providing practical and engaging classroom resources that use mining and resources materials and examples. Packs will include both an online component - with teaching materials and classroom ideas developed by CQU in consultation with QRC members - and a hands-on component, which may include guest lectures, live industry tours or physical materials for inspection and measurement. An example of this approach is the resources pack developed by the Gold Industry Group for

primary schools..



UNIVERSITY (SUN) SUBJECTS

The Start University Now program currently available to high school students at CQU in addition to providing a head start for aspiring engineers, can also help bridge the gap where regional schools may find it difficult to recruit and retain suitable high level mathematics teachers to meet prerequisite subjects. CQU has also incorporated mathematics into the first year of studies for those students who enter the program without completing Maths Methods at School.

Audience: Current University Students

A range of activities are currently in place to engage university students, including holiday placements and co-SUN subjects operative programs. However, expanding these engagement efforts will further strengthen the mining and resources sector's recruitment pipeline.

GUEST SPEAKERS

The QRC and its member organisations represent a valuable source of guest and expert speakers for current engineering units, offering real-world insights and practical applications that enhance students' understanding of classroom theory.



INDUSTRY MENTORS

QRC members can provide industry and career guidance to aspiring entrants into the mining and resources sector, either through direct engagement during placements and holiday programs, or virtually via CQU's mentoring platform. The level of commitment may range from a one-off conversation to an ongoing mentoring relationship, depending on the interests of both the student and the participating mentor.

ALUMNI WEBINAR SERIES

In addition to guest speakers for current students, the initiative will also leverage the Lifetime Career Partnership program administered by the Alumni and Advancement team at CQU. The program aims to deliver inspirational and topical webinars to alumni and the broader public, fostering connection, affinity and ongoing engagement with alumni and other key stakeholder groups. These materials may be repurposed across QRC member websites, newsletters and other platforms, and could also be incorporated into the Schools Resource Packs referenced earlier in this document.

CASE STUDIES AND INDUSTRY DATA

Incorporate real-world, current case studies and industry problems into course content, along with access to authentic data for use in simulations and assessment tasks. Where possible, students should engage with actual industry challenges as part of their assessments, with guidance from industry experts to inform and enhance their learning.

MULTI-DIRECTIONAL PATHWAYS

Opportunities for current apprentices and qualified tradespeople to pursue an Engineering degree

CQU has also recently introduced credit into the Bachelor of Engineering course for trade-qualified individuals.

The Engineering Trade Practices program provides qualified tradespeople with the potential to transition into an Engineering Degree (or Associate Degree pathway) with credit for their trades study and skills – shortening the time required to become qualified. Students accessing the Engineering Trades Practice pathway can also study online while still working providing less disruption both to their income stream and the employers' business.

Cross skilling opportunities

Integrate cross-sector TAFE/university skilling within the Engineering degree to enhance graduate employability. This approach will expose engineering students to vocational competencies, such as welding, during their studies, improving job readiness and fostering a deeper understanding of practical roles and workflows across work sites.

Vertical degrees to encourage ongoing commitment to professional development

CQU plans to develop new dual qualifications that combine Engineering and Project Management, enabling students to graduate with both degrees within a reduced timeframe.

This initiative responds directly to industry and graduate feedback and reflects the type of educational offering CQU aims to co-develop with QRC.

Involving QRC in the design of such programs will help ensure they align with member organisations' workforce development and capability needs.

ON THE JOB EXPERIENCE

Offering placement opportunities during university and school holidays - including for SUN students - will provide valuable exposure to the mining and resources sector and its diverse career pathways.

These placements also allow industry partners to engage directly with prospective future employees, while contributing to the continuous improvement of CQU's Engineering programs. By providing feedback on how course content aligns with industry practice, participating organisations help ensure graduates are job-ready and equipped with relevant, practical skills.



Summary of strategies

Strategy	Audience	Details	Potential participant numbers reached	Timeframe	Indicative budget
Mining and resources toolkit for Queensland Schools – General Engineering	School teachers – General Engineering Current school students	Schools are anecdotally struggling to recruit qualified teachers for the General Engineering ATAR subject and when they are able to these personnel do not have any mining/resources experience – this toolkit will provide practical and up to date examples and materials to help teachers deliver in the classroom	2,000 + annually – Queensland Assessment Authority numbers show a growing interest and demand for Engineering General subject in Qld schools – see Appendix Four Total schools in Qld: 1,797 (1,145 primary and 279 secondary, 283 combination), QMEA network = 100	Ready for distribution and launch for 2026 school year	Website and resources development would potentially require a project manager for six months to coordinate (\$60k plus oncosts) – in kind support from CQU to provide and adapt the resources for this purpose. Physical resources TBC on availability from QRC members and would require investment for packaging and distribution.
Engineering residential emersion program (camp)	Current school students Secondary: school teachers, school influencers, parents	Residential program run at CQU Rockhampton during school holidays - travel, accommodation and participation costs subsidised by industry with industry participants, technology and machinery available for demonstration during the residential	120 annually	Ready for 2026 launch – Easter School holidays?	Travel subsidies x 120 = \$180,000 4 nights' accommodation @ \$149.00/n (includes meals) = \$71,520 Night sporting and social activities = \$5,000 Student ambassadors to supervise (night and day) casual \$30/hr x 8hs/day x 20 ambassadors = \$4,800 CQU project management and supervision (day work in-kind), overtime x 3 staff \$2,100 Transport – coaches to Mackay Mining Centre return \$6,000 Total: \$269,420
Scholarships for SUN participants studying Engineering units	Current school students	First unit course fee is free but subsequent units are \$375. Other barriers to participation may include access to suitable laptop, internet access, textbooks	2023 = 29 students 2024 = 25 students Target - build to 50+ students/year	Immediate	Aim to grow to 50 students per year x \$375 plus another \$500 for resources \$43,750

Strategy	Audience	Details	Potential participant numbers reached	Timeframe	Indicative budget
Scholarships for current UG Engineering students to support completion and progression	Current University students	Current scholarships range in value from \$2,000 to \$20,000 but could look to package this with a program of holiday work and an industry mentor	Target 50 students supported or involved in some type of enhanced activity for 2026	Immediate	Generally, circa \$20,000 per student supported (paid in instalments based on course progression). Cadetship hosts may elect to pay tuition fees which could replace need for broad scholarship in that situation (may still require support for texts, travel etc). \$1,000,000
Fee relief for current university students	Current University Students	Industry to pay student tuition fees during studies and cadetships, agreement between student and employer could involve a period of engagement following graduation	Target 50 students supported or involved in some type of enhanced activity for 2026	Immediate	Dependent on the number of students/cadets. Investment circa \$10k per student per year (depending on study load) \$500,000
Placements for current university students	Current University students	Industry to provide practical experience and support for studies for current university students, cadetships, placements internships, vocational placements. May need to include some element of residential host, depending on whether students are local	Target 50 students supported or involved in some type of enhanced activity for 2026	Immediate	In-kind, cost of wages if placements are paid, time to manage students from industry, Work Integrated Learning (WIL) team at CQU to assist with placement paperwork etc,
Start University Now engineering related studies	Current school students	Start University Now provides current high school students with the ability to start their engineering studies while still at school –also provides the ability for students to access specific studies where teacher shortages in regional areas may mean they cannot access higher level maths (or for students who elected to study the appropriate maths at a senior level.	Target 50 students accessing Engineering students for SUN	Immediate	In-kind CQU marketing already works with this audience and additional scholarships (see above) to increase uptake.
Holiday work for current University students, including SUN students	Current school (SUN) students Current university students	Holiday work for SUN and current Engineering students, would need to consider extra supervision for sub 18 students if SUN experience is possible	UG = current 750 students PG = current 200 SUN = current circa 25 students per year, aim to build	Immediate	CQU academics to help facilitate QRC hosts to pay wages Administration from CQU – in-kind QRC – wages costs

Strategy	Audience	Details	Potential participant numbers reached	Timeframe	Indicative budget
Industry guest speakers Alumni webinar series	Current university students Also useful for current school students and alumni/engagement series (LCP)	Will need participant permission to record sessions and need digital marketing expertise to top and tail recordings and load to Youtube	Amplification potential is huge 2000+ school students, general CQU Youtube audience if topical, alumni audience is appropriately 100,000 total with 5,500 of these being engineering specific and a further 6,300 being TAFE alumni. Current engineering students UG 750, PG 200. CQU estimates we could accommodate 10-15 guest lectures each year across disciplines.	Immediate and ongoing	Very low cost, internal resources required
Industry mentors	Current university students	Utilises existing CQU platform, will need some industry assistance to identify suitable mentors to participate (probably similar to those who oversee holiday and placement programs)	Initially seeking mentor network of 5 – 10 industry professionals with a discipline and gender balance, building to more as the program builds momentum (CQU has a mentor platform and a microcredential to help mentors prepare)	Immediate and ongoing	Very low cost, internal resources required
<u>Terracom - coal mining engineering pathways</u>	Current Year 12 students with strong Maths/Science background	Introduces aspiring engineers to existing mining employees in a mentoring relationship. Students are also exposed to additional foundational training and hands on training to supplement their understanding of the industry as they make their tertiary choices	TBC– program is currently under discussion between Terracom and CQU	Immediate and ongoing	TBC – program is currently under discussion between Terracom and CQU
Case studies and industry data	Current university students	Real life scenarios and data used for assessment and learning at CQU – QRC membership to identify information that doesn't compromise commercial in confidence	Again, initially seeking to start fairly small and build a library of assessment and case study ideas – target 10 per year in the first year across disciplines	Immediate and ongoing	Very low cost, internal resources required
Multi directional pathways	Current school students Current university students Career changes	Pathways with credit from trades to degree Vocational skills as part of degree Some PG units during degree to facilitate and speed up ongoing professional development post graduation	2,000+ Qld students undertaking engineering general at school, general prospective students Mature age students (24+) are typically just below 50% of CQU's overall intake (see appendix five for further detail)	Ongoing	In progress, no additional investment required Ongoing input from QRC membership for new and future development

Appendix One

CQU ENGINEERING CADETSHIP INFORMATION –

ENGINEERING CADETSHIPS - CQUNIVERSITY



Are you ready to shape the future of engineering and don't want to wait until after you graduate? CQUniversity's Engineering Cadetships are your launchpad to kick-start your career.

As an aspiring engineer, you'll benefit from a structured work-study program that an engineering cadetship provides. CQU proudly partners with a variety of organisations that allow you to enter the workforce early while continuing your studies.

WHY CHOOSE AN ENGINEERING CADETSHIP?

- ▀ **Practical experience:** Cadetships blend theory with invaluable hands-on practice. Work alongside seasoned professionals, applying what you've learned to real-life engineering projects.
- ▀ **Financial support:** Employers often provide financial assistance. This may include a regular salary, payment of university course fees, or a combination of both.
- ▀ **Industry connections:** Build valuable networks that could lead to full- or part-time roles even before you graduate.
- ▀ **Industry engagement:** CQU actively engages with industry partners to offer cadetship opportunities each year, ensuring our graduates are work-ready.

WHY STUDENTS CHOOSE TO STUDY ENGINEERING AT CQU



#1 IN AUSTRALIA FOR FULL-TIME EMPLOYMENT*



#1 IN AUSTRALIA FOR STARTING SALARIES*



#1 IN QUEENSLAND FOR EMPLOYER SATISFACTION IN GRADUATES, TECHNICAL SKILLS†



\$83 000 MEDIAN GRADUATE SALARY†



#4 IN AUSTRALIA FOR STUDENT SUPPORT



#7 IN AUSTRALIA FOR SKILLS DEVELOPMENT*

* The Good Universities Guide 2024
† QILT Graduate Outcomes Survey - Longitudinal 2022

BE WHAT YOU WANT TO BE
cqu.edu.au



WHICH COURSES ARE ELIGIBLE?

We have a range of engineering courses that integrate into cadetships at a variety of locations throughout Queensland including Bundaberg, Cairns, Gladstone, Mackay, Rockhampton and online. Courses include:

- ▶ CC02 Associate Degree of Engineering
- ▶ CG21 Bachelor of Engineering Technology
- ▶ CC31 Bachelor of Engineering (Honours)
- ▶ CL72 Bachelor of Engineering (Honours) (Civil Construction) and Diploma of Construction Management
- ▶ CL73 Bachelor of Engineering (Honours) (Control and Instrumentation) and Bachelor of Information Technology (Application Development)
- ▶ CL76 Bachelor of Engineering (Civil Design) and Diploma of Building Design
- ▶ CM41 Bachelor of Engineering (Honours) (Major) and Diploma of Project Management
- ▶ CM15 Bachelor of Engineering (Honours) (Major) and Master of Project Management Engineering

You will need to check the course's entry requirements when applying for the cadetship with a particular employer. Plus, your potential employer will have their own selection criteria for the cadetship.

HOW DO I APPLY?

- 1. Explore opportunities:** Visit our partners' websites or job listing platforms like Seek to find CQU Engineering Cadetships.
- 2. Check requirements:** Each cadetship is unique, so carefully review the application requirements listed for each opportunity.
- 3. Attention to detail:** Remember that applying for a cadetship is also applying for employment. Pay particular attention to your resume, cover letter, and any additional requirements.



Keep up to date with available cadetships:
cqu.edu.au/study/engineering/engineering-cadetships

The information in this publication was correct at the time of printing (May 2024), however is subject to change. Check the University website for the latest information.

CRICOS: 00219C | TEQSA: PRV12073 | RTO: 40939

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Appendix Two

CQU CURRENT MINING AND RESOURCES COURSES

Associate Degree of Engineering - CQUniversity

3 years part-time

Online

Bachelor of Engineering Technology - CQUniversity

3 years fulltime

Online, Bundaberg, Cairns, Gladstone, Mackay, Rockhampton

Bachelor of Engineering (Honours) - CQUniversity

4 years fulltime

Online, Bundaberg, Cairns, Gladstone, Mackay, Rockhampton

Master of Management for Engineers - CQUniversity

2 years fulltime

Online, Brisbane, Melbourne, Sydney

Bachelor of Engineering (Honours)(Major) and Master of Project Management in Engineering - CQUniversity

5 years fulltime

Online, Bundaberg, Cairns, Gladstone, Mackay, Rockhampton

Graduate Certificate in Fatigue Risk Management - CQUniversity

1 year part-time

Online

Graduate Certificate in Project Management - CQUniversity

6 months fulltime

Brisbane, Melbourne, Sydney, Online

Graduate Diploma of Project Management - CQUniversity

1 year fulltime (builds upon GC Project Management, so an additional 6 months for GC graduates)

Brisbane, Melbourne, Sydney, Online

Master of Project Management - CQUniversity

2 years fulltime (builds upon the GD, so an additional year for GD graduates)

Brisbane, Melbourne, Sydney, Online

Master of Asset and Maintenance Management - CQUniversity

3 years parttime

Online

Master of Engineering - CQUniversity

2 years fulltime

Melbourne, Rockhampton, Online

APPRENTICESHIPS

AUR31220 - Certificate III in Mobile Plant Technology. RTO 40939 - CQUniversity

4 years fulltime

Rockhampton, Mackay and Emerald

MEM31419 - Certificate III Engineering - Fixed and Mobile Plant Mechanic. RTO 40939 - CQUniversity

4 years fulltime

Rockhampton and Mackay

UEE31220 - Certificate III in Instrumentation and Control. RTO 40939 - CQUniversity

4 years fulltime (also available as a dual trade Cert III in Electrotechnology Electrician (Open electrical Queensland licence and Cert III in Instrumentation and Control – 5 years fulltime)

Gladstone

START TAFE NOW (VET IN SCHOOLS)

10935NAT - Certificate II in Autonomous Technologies. RTO 40939 - CQUniversity

18 months (6 school terms)

Mackay and Rockhampton

OTHER RELATED COURSES

BSB41419 - Certificate IV in Work Health and Safety. RTO 40939 - CQUniversity

1 year fulltime

Online

BSB51319 - Diploma of Work Health and Safety. RTO 40939 - CQUniversity

1 year fulltime

Online

PUA50120 - Diploma of Public Safety (Emergency Management) - CQUniversity

18 months fulltime

Online

Bachelor of Science and Environment - CQUniversity

3 years fulltime

Online, Rockhampton

Associate Degree of Occupational Health and Safety - CQUniversity

2 years fulltime

Online

Bachelor of Occupational Health and Safety - CQUniversity

3 years fulltime

Online

Graduate Certificate in Occupational Health and Safety - CQUniversity

1 year parttime

Online

Graduate Diploma of Occupational Health and Safety - CQUniversity

1 year fulltime

Online

Graduate Certificate in Emergency and Disaster Management - CQUniversity

1 year part time

Online

Graduate Diploma of Emergency and Disaster Management - CQUniversity

2 years part-time

Online

Master of Emergency and Disaster Management - CQUniversity

3 years part time

Online

Graduate Certificate in Workplace Wellbeing - CQUniversity

6 months fulltime

Online

Graduate Diploma of Workplace Wellbeing - CQUniversity

1 year fulltime

Online

Master of Workplace Wellbeing - CQUniversity

2 years full-time

Online

Professional Certificate in Workplace Resilience - CQUniversity

1 year part-time

Online

Professional Certificate in Workplace Communication Skills - CQUniversity

6 months part-time

Online

Professional Certificate in Workplace Wellbeing Management - CQUniversity

1 year part-time

Online

Professional Certificate in Positive Workplace Interventions - CQUniversity

1 year part-time

Online

SHORT COURSES AND MICROCREDENTIALIAL AREAS

Asset and Maintenance Management
Safety and Quality Health Service Standards
Chemical Hazard Awareness
Risk Management for Managers and Supervisors
Decarbonisation and Gas Emissions Scopes
Disaster Management
Corporate health and Workplace Wellness Programs
First nations cultural competence (in development)
Fatigue management (in early development)

Appendix Three

CREDIT PATHWAYS FOR SCHOOL LEAVERS PURSUING AN ENGINEERING DEGREE

CQU has three credit pathways from high school in addition to SUN. In all cases, students must pass all four QCAA units across years 11 and 12, plus complete an additional activity:

- 1) Completing Mathematical Methods plus achieving at least 70% on our free online Mathematics Skills Analysis will award credit for MATH11247 Foundation Mathematics.
- 2) Completing Design General plus participating in an extra-curricular design challenge such as the Science and Engineering Challenge or Engineering Link will award credit for ENEG12007 Creative Engineering.
- 3) Completing Engineering General plus participating in an engineering excursion to CQU will award credit for a discipline elective unit.

While MATH11247 is core in all course, ENEG12007 and discipline electives are not in the Resource Systems major due to the breadth of curriculum coverage needed. They are included in the Civil, Mechanical and Electrical Majors.

Appendix Four

ATAR ENGINEERING ENROLMENTS IN QUEENSLAND SCHOOLS

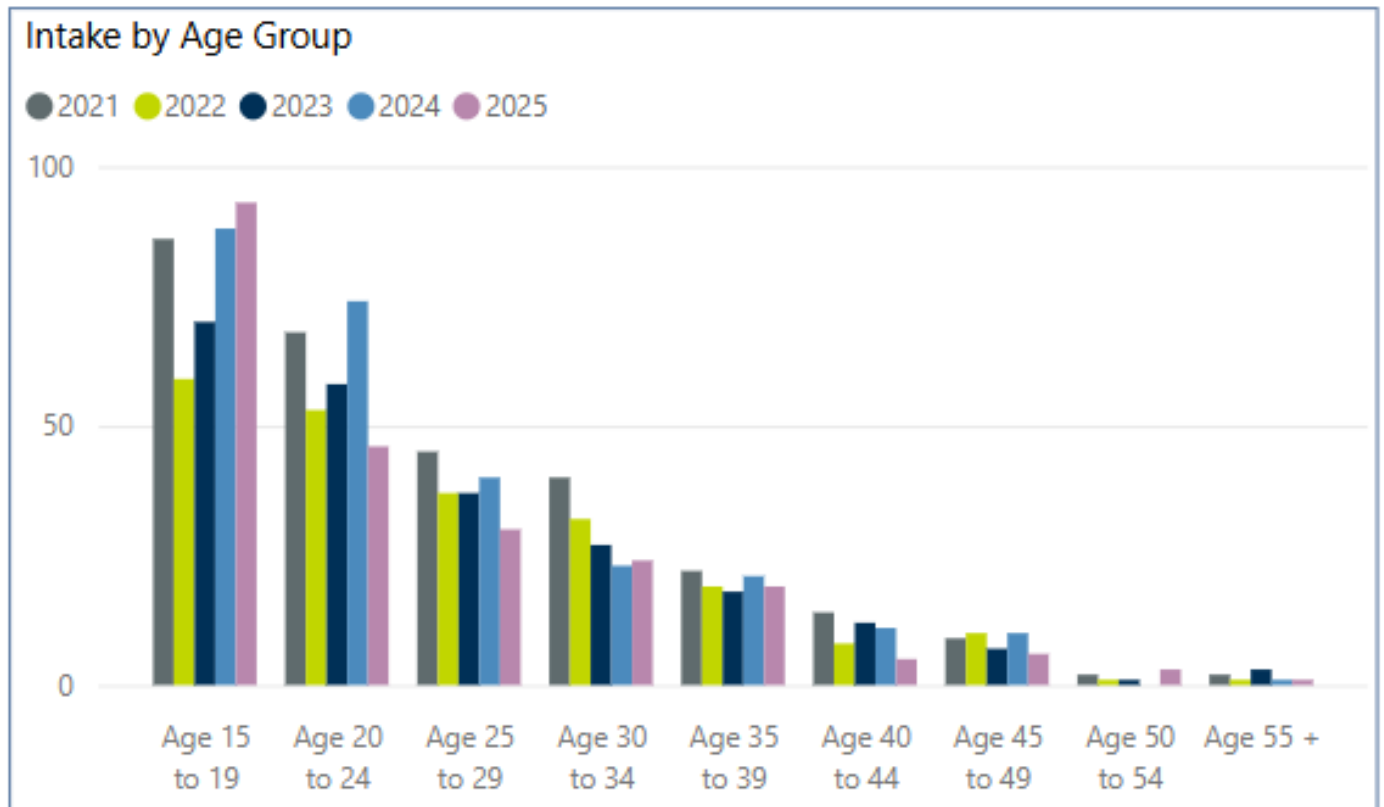
*indicative numbers only, counting only year 12 last semester enrolment for each year

ATAR Subject	2020	2021	2022	2023	2024	2025
Engineering Applied	1,898 Students 100 Schools	2,059 109	1,341 91	1,873 105	2,145 108	2,647 102
Engineering General	1,250 91	1,376 90	1,925 108	1,606 102	1,845 106	2,360 107

Source: [Statistics from 2020](#) | [Queensland Curriculum and Assessment Authority](#)

Appendix Five

ENGINEERING STUDENT NUMBERS BY AGE GROUP



Source: CQU dashboards

Appendix Six

ENGINEERING TRADE PRACTICES PATHWAY

[Home](#) > [Study](#) >

Engineering Trade Practice



[CONTACT TRADE PRACTICE COORDINATOR](#) 

Tradespeople bring invaluable hands-on experience to engineering. CQU's new Engineering Trade Practice majors respond to industry demand for engineers who combine technical expertise with practical project delivery, by integrating accredited TAFE training into undergraduate engineering courses.

If you're a **qualified Tradesperson** ready to expand your career into engineering, or a **new or current student** looking to build trade skills alongside your degree, our flexible options make it possible.

Attachment One – Terracom Coal Mining Engineering Pathways



Pathways Program 

The Consequences of Engineering Shortage

The Cost of Doing Nothing



Reliance on international engineers.



Inexperienced engineers in critical roles.



High turnover rates and rising labour costs.



FIFO challenges and reputational damage.

T



The TerraCom CME Pathways Program Solution

Talent for Today, A Legacy for Tomorrow

Program Overview

- Industry-led, hands-on training.
- Focus on practical skills, safety, and leadership.
- Mentorship from industry experts.
- Development of Soft Skills – Communications, presenting, leading meetings.
- Complements university education.



How the Program Works – The TerraCom Pilot Program

A Unique Opportunity for Aspiring Engineers

Who Can Apply?



Grade 12 students with strong maths/science backgrounds.

and



Existing mining employees seeking career advancement.

Training Components – Foundational Knowledge

Classroom & On-Site Learning

Mining Fundamentals

.....
1 week

Geology Basics

.....
3 weeks

Processing & Maintenance

.....
3 weeks

Finance & Cost Control

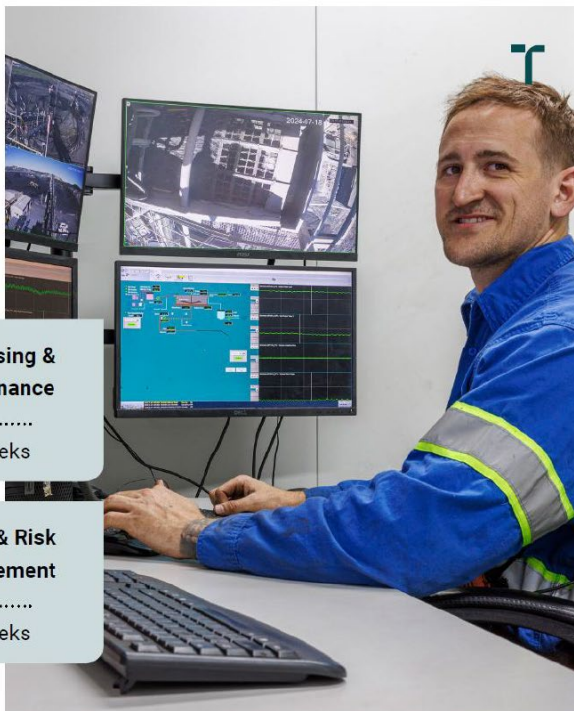
.....
2 weeks

Environmental & Sustainability

.....
2 weeks

Safety & Risk Management

.....
2 weeks



Training Components – Core Competency Development

Hands-On Training

Truck Operations

.....
2 months

Drill & Blast

.....
3 months

Bulk Dozing

.....
3 months

Excavator & Trucking

.....
3 months

Dragline Operations

.....
4 months

Short & Long Term Mine Planning

.....
6 months total



Complementary Role of the Program

A Collaborative Approach

Not a Replacement

- Supplements university-based degrees.
- Degree-based engineers remain essential for tasks such as JORC Reserves.
- Introducing more students to the engineering field through the Pathways Program may encourage greater participation in University Engineering Degrees.

