

# ENGINEERING QUEENSLAND NEWS

Edition 1, 2010



ENGINEERS  
AUSTRALIA  
Queensland Division

# 2010 YEAR OF ENGINEERING LEADERSHIP

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Content of this newsletter was correct at the time of printing. Please check the website for the most up-to-date listings of events and programs.

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# PRESIDENT'S

## message



I welcome you all to 2010, the Year of Engineering Leadership!

I am honoured to be the new Queensland Division President and to be given the opportunity to lead our profession across the state. On behalf of the new Division Committee, we are looking forward to an exciting year ahead supporting the engineering profession and Engineers Australia members throughout Queensland.

I offer my employer, Brisbane City Council, gratitude for their support of me undertaking this role. I also give a big thank you to immediate Past President, Andrew Chapman, for giving us the wonderful legacy of the *Engineering Wonders of Queensland* publication, which I encourage you to read and actively share the stories with your local communities.

The names of our 2010 Division Committee and National Congress members have been noted on page 3 in this newsletter. In particular, I wish to offer a warm welcome to the new faces on our Division Committee: Kelly Stallman, Bill Capati and Haider Yousif, plus David Hood as our National Congress representative.

I'd like to take this opportunity to present what I hope to achieve as President. It is going to be a huge year for the Queensland Division and it is most welcoming that we also have a Queenslanders in the role of national Engineers Australia President, Doug Hargreaves, from QUT.

From the Engineers Australia National Congress held in November last year, there are a number of major initiatives that will involve us all:

- 2010 is the Year of Engineering Leadership, with the national leadership conference being held in Brisbane in May. Let's ensure a strong turnout of local delegates. To register or find out more, go to [engineeringleadership.org.au](http://engineeringleadership.org.au).
- Engineers Australia's 'Make It So' national public awareness campaign will take off early this year and we all need to be advocates for our profession. For more information, visit [makeitso.org.au](http://makeitso.org.au).
- The implementation of our new 2010-2015 Strategic Business Plan will drive Engineers Australia for the foreseeable future. This will entail a major review of our By-laws, Regulations and Code of Ethics and will underpin the success of our profession over the coming years. Our constitution will become 'contemporary rules for a contemporary organisation' and will encompass the diversity of both our people and professional roles. It will propose equity and inclusiveness of the whole engineering team through allowing voting rights for our Technologists and Associate members.

In Queensland, through my role as the Division President, I hope to undertake the below priorities.

- Enhance our support to regional Queensland with greater inclusiveness of regional perspectives in policy and advocacy issues.
- Develop collaborative engagement and partnerships with other engineering industry associations.
- Aim to influence federal, state

and local government planning and investment through the release of our Infrastructure Report Card mid-2010.

- Establish a Migrant Engineer Support Group in Queensland.
- As a major Queensland Division initiative, I will aim to proactively influence Queensland's energy debate and position our profession as the leaders of future sustainable change in this arena.

I encourage you all to assist in making 2010 another great year for the engineering profession by being leaders in your communities and in your work teams.

**Michael Brady**

**President 2010  
Queensland Division**

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Michael Brady has 27 years of management, construction, engineering and design experience with state and local governments, and the private sector. He is a Registered Professional Engineer of Queensland, holds Fellow status with Engineers Australia, and is a Civil College member.

Michael's qualifications include a Master of Local Government Management (1994), Graduate Diploma in Local Government Engineering (1991), and a Bachelor of Engineering (Civil) (1989).

As A/Manager for the Asphalt Operations Group of Brisbane City Council, Michael is responsible for the management and coordination of three quarries, two asphalt plants, and a major road surfacing operation. With 260 employees, Asphalt Operations has an annual turnover in-excess of \$110 million, supplying products and services in both internal and external markets.

# Volunteers are the backbone of Engineers Australia

Ian McEwan, Executive Director, Engineers Australia Queensland Division



Happy New Year to all members of the engineering team from the Queensland Division staff.

The last 12 months has seen a lot of uncertainty across the engineering profession. Early indications for the year ahead show that the economy may rebound strongly across several sectors. The likely implications from this turnaround in confidence are that engineering and trade skills shortages will continue and, perhaps, become even more acute.

## 'Engineering and trade skill shortages will continue'

This has the potential to provide many positive impacts for the engineering team, including enhanced salaries and conditions, employment stability, and increased recognition for the engineering profession. In this environment it can become easy to neglect ongoing professional development that maintains and enhances skills.

Engineers Australia, through its network of volunteer office bearers, provides a wide range of technical presentations and networking opportunities for the benefit of members. All members should ensure that attendance at these presentations is firmly fixed within your busy diaries.

The presentations are managed through volunteer members who are always eager for input and support from their peers. If you have a special

topic that you would like to suggest, are interested in volunteering to deliver a presentation yourself, or would like to assist the committee in coordinating the technical program, your input would be most welcome.

## 'Our volunteers take a leadership role in ensuring the future development of the engineering profession'

The efforts of our volunteer members are highly valued. These members take a leadership role in ensuring the future development of the engineering profession and are the backbone of Engineers Australia.

I would be happy to discuss what involvement you may like to have in giving back to the engineering profession. I can be contacted directly via email [imcewan@engineersaustralia.org.au](mailto:imcewan@engineersaustralia.org.au).

## Congratulations

Members who have recently gained Honourary or Fellow status

Martin Albrecht HonFIEAust  
Mike Marley HonFIEAust CPEng  
Patrick Charles Anson FIEAust CPEng  
Michael Brady FIEAust CPEng  
Bob Brownley FIEAust CPEng  
Michael Chan FIEAust  
Christos Deaconos FIEAust CPEng  
Des Gallagher FIEAust  
John Gardner FIEAust CPEng  
Anthony Howard FIEAust CPEng  
Brian Neville Jacobs FIEAust  
Robert Jorgensen FIEAust CPEng  
Andrew King FIEAust CPEng

Vernon Lyle Kretschmann FIEAust  
Barry Wilfred Payne FIEAust  
Neil Gordon Paynter FIEAust CPEng  
Mark Porter FIEAust CPEng  
Zvonko Pregelj FIEAust CPEng  
Peter Renton FIEAust CPEng  
Roy Roberts FIEAust CPEng  
Wayne John Roberts FIEAust  
Glen Rowen FIEAust CPEng  
Bill Sivaswamy FIEAust  
Graeme Standfield FIEAust CPEng  
John Anthony Foster OFIEAust

Members who have recently gained Chartered status

Subhashish Bhattacharya MIEAust CPEng  
Garth Bull MIEAust CPEng  
Rod Burchby MIEAust CPEng  
Wayne Cressy MIEAust CPEng  
Werner Fourie MIEAust CPEng  
Duane Hengst MIEAust CPEng  
Mark Adrian Hinton MIEAust CPEng  
Dyrick Ralph Hobbs MIEAust CPEng  
Anbukumar Krishnamurthy MIEAust CPEng  
Teck Lau MIEAust CPEng  
Nigel Maxwell MIEAust CPEng  
Bradley Sawler MIEAust CPEng  
John Thompson TMIEAust CEngT

# 2010 Division Committee

A call for nominations for the 2010 Division Committee resulted in 10 nominations being received for the seven positions available.

As a result, an election was held to determine the incumbents to these positions. The election was primarily conducted electronically, with provisions being made for those members without access to electronic media for casting their vote.

The below candidates were elected to the 2010 Queensland Division Committee and announced at the Annual General Meeting on 11 December 2009:

- Phil Atherton OAM FIEAust CPEng
- Suzanne Burow MIEAust
- Guillermo (Bill) Capati MIEAust
- Stuart Lister Hon FIEAust
- Elizabeth Schofield MIEAust
- Kelly Stallman GradIEAust
- Haider Yousif MIEAust



They will join the following members who have been appointed to the 2010 Division Committee:

- Michael Brady FIEAust CPEng  
2010 Division President
- Andrew Chapman MIEAust  
2010 Immediate Past President
- Dennis Wogan PSM FIEAust CPEng  
2010 Deputy President

Congratulations to all on their election to the Committee, which will lead the strategic planning for Queensland Division throughout the coming year.

In addition to the elected positions on Division Committee, the following

members were elected as Congress representatives and College representatives respectively:

- Sam Fernando, 2010 and 2011  
National Congress Representative
- David Hood, 2010 and 2011  
National Congress Representative
- Andrew Chapman, 2010 and 2011  
Division Committee National  
Congress Representative
- Randeep Agawall  
Mechanical College
- Zvonko Pregelj  
Chemical College
- Mark Blundell  
Electrical College

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Visit [www.smartjobs.qld.gov.au](http://www.smartjobs.qld.gov.au) for current vacancies.



# ENGINEERING YOUR CAREER

Queensland's National Assessors discuss RPEQ and CPEng pathways and processes

Happy New Year to you all. 2009 was an extremely busy year for the National Assessors, Les Louis and Mike Garrett. Louis, who is known to many members as a past Queensland Division President, was joined by a new assessor, Garrett, in April 2009.

As a result of the Board of Queensland appointing Engineers Australia as the assessor for all RPEQ applications in June 2008, the number of chartered and RPEQ applications has steadily grown over the past 18 months.

During the last year, a summary of the activities we have undertaken is below. (Note that applicants can be chartered as engineers, technologists or officers, and that all areas of practice apply to the word 'engineer' when used in this article.)

- Nationally, Queensland Division had the highest activity in workshop presentations, attendance, Professional Interviews and applications for Chartered Status.
- Assessments carried out include 209 Engineering Practice Reports (EPR) and 840 Career Episode Reports (CER).
- 56 presentations were given to graduates.
- Monthly Chartered workshops were held at Engineering House, attended by a total of over 1,400 engineers.
- 132 Professional Interviews, involving over 260 panellists involved. Thank you to these volunteers for their time and input.
- Regional visits included Chartered workshops to Local Groups in Rockhampton, Gladstone, Townsville, Cairns, Mt Isa, Barcaldine, Bundaberg, Gold Coast and Sunshine Coast.
- Mature Pathway and RPEQ enquiries.
- Assistance with Stage 1 and Articulation enquiries.
- In conjunction with the Queensland Industry Manager, Megan Purdy, presentations were given to over 40 PDP companies, involving over 1,000 graduate engineers.

As part of the Stage 2 assessment process, there are three means to obtain Chartered status described as follows:

## **Graduates or engineers with less than 10 years' experience in a company with a PDP agreement**

As part of Professional Development Programs (PDP), these applicants progressively submit CERs for assessment by the National Assessors. Once the required number of elements have been successfully completed and assessed, they submit their collated CERs as a formal EPR for approval to go to Professional Interview. The success rate of this process is very high because of a better understanding of the assessment requirements via CER writing workshops, progressive input by mentors, and improvement to applicants' skills in writing the required documentation.

## **Engineers with three or more years' experience**

These applicants not on a PDP program write a complete EPR for formal assessment. The average EPR is a document of 15 to 30 pages that addresses the 25 to 30 elements. The success rate of these applicants is lower (50% to 60%) because of a lack of understanding of the process and the requirements for addressing the separate defining activities in the individual elements. Additionally, the majority of the applicants have not attended a Chartered workshop held bi-monthly by Engineers Australia.

## **Mature Pathway Applicants – experienced engineers with at least 15 years' experience who have been approved to apply for CPEng through this pathway**

These senior engineers submit a detailed CV, Career Professional Development (CPD) log and a Statement of Experience (6 to 15 pages) addressing the competencies required. Again, the success rate is less than 60% for similar reasons outlined in category two above.

If the formal application is not successful with the first submission, each applicant is provided with a detailed letter outlining the requirements to be addressed in a supplementary submission.

If the application is successful, the engineer attends a Professional Interview with a panel consisting of a National Assessor and two Chartered engineers from their particular discipline and area of practice. This interview involves a 15 minute presentation by the applicant, 30 minutes of technical questions on the area of practice, plus questions on the code of ethics, sustainability and the environment.

The targeted timeframes for assessments are as follows:

- CERs – assessed and returned to applicant two to four weeks from date of receipt by assessor.
- EPRs – assessed and returned to applicant four to six weeks from date of receipt by assessor.
- Professional Interviews – four to six weeks from assessment approval of the formal application.

The Engineers Australia website has detailed information on the application process and required forms, the Handbook, CPD policy, examples of CERs, and Frequently Asked Questions (FAQs). Click the Chartered Status link on the homepage.

Based on the above the time taken from receipt of a full application to professional interview, the complete process can take approximately three months. Engineers Australia Queensland Division currently has a backlog of assessments and engineers waiting for interview. As a result, two new assessors have been engaged to commence part-time work from February 2010. These two new assessors are introduced on the facing page.

## OUR GOALS FOR 2010

- Present monthly Chartered Workshops at Engineering House in Spring Hill – visit website for dates and details.
- Reduce the current backlog of time taken for assessments and approved applicants waiting for professional interviews.
- Improve the communication with applicants, both at the graduate level and experienced engineers, by developing further the responses to our published Frequently Asked Questions.
- Visit Regional Local Groups to present Chartered workshops and support the RPEQ Board in the communication of the requirements of the Queensland Engineering Act.
- Investigate the potential to hold Professional Interviews in the major regional centres.
- Work with the PDP companies by presenting CER workshops to their graduate engineers.

From the National Assessors team, we wish you a great year ahead. Please feel welcome to contact any of us via the Queensland Division for any additional information or assistance.

### **Dr Ron Black FIEAust CPEng NPER RPEQ MSC PhD**



Dr Ron Black is a Civil engineer, and a specialist in Environmental Engineering, Hydrology, Climatology and Risk Management. Ron is currently a senior consultant in private practice, a role he has held for the past 12 years.

Previously, he was Executive Director and Queensland Regional General Manager of Kinhill Pty Ltd and, prior to this, Senior Lecturer in the School of Physics and Geosciences at the Western Australian Institute of Technology.

Black is also a very experienced lecturer and has published widely in these fields. He was a member of the Queensland Government's Major Projects Advisory Panel from 1998 to 2003.

Black has undertaken a wide range of environmental research programs and has significant teaching experience in hydrology and environmental science, particularly in relation to mining and infrastructure developments.

### **Ted Wheal FIEAust CPEng NPER RPEQ**



Ted Wheal is a Mechanical engineer who emigrated from the UK to Australia in 1965. After initial roles in manufacturing and contracting, Wheal was invited to join consulting engineers, Lincolne Scott, in 1970 and became an Associate two years later and a Director in 1975. After several years managing the Perth office, he left to open his own consulting practice in 1984, specialising in Mechanical, Electrical, Fire and Vertical Transportation in the construction industry.

Through a series of mergers, acquisitions and organic growth, the practice developed into one of the best-regarded multi-discipline consultancies in Australia. In its present form, the company continues to work in most states around the country and has added several peripheral disciplines to its portfolio.

Wheal retired as Managing Director (and, ultimately, Chairman), a few years ago and subsequently consulted to a range of new and pre-existing clients on company structures, staff incentives and equity plans, succession planning, and mergers and acquisitions in the building industry professions.

# It's now up to engineers to take the lead in averting catastrophic climate change

Queensland Congress Delegate, David Hood FIEAust CPEng, reports from Copenhagen on COP 15



While accepting that climate change is a real and serious threat to society, world leaders at COP 15 in Copenhagen have failed to agree on any legally binding action to curb the very human activities that are now accepted as causing that change. Essentially they have signalled it is business as usual for the time being.

The Copenhagen Accord accepts that the world must try to limit global warming to a 2°C (or less) average rise, but it fails to define any action, including emissions targets that would achieve such an outcome. It simply calls on countries to take individual action and report their emissions reduction targets by the beginning of February 2010.

A 2°C rise in global average temperatures will have catastrophic impacts on Australia, including the near death of our Great Barrier Reef, and shifts in rainfall runoff across Australia that would drastically compound the problems of the already devastated Murray/Darling river system. The average temperature rises over our continent will be significantly higher than 2°C, and could be up to 6°C average over much of inland Australia.

The Conference was a big disappointment not only for its weak outcomes, but for its poor management, its chaotic registration and entrance arrangements, and the exclusion for the most critical days of the very people most impacted

by its outcomes – civil society - the tens of thousands of UN-accredited NGO representatives who travelled to Copenhagen thinking that they might have some influence over the negotiations. It is reported that the UN accredited over 50,000 delegates but the main conference centre held only 15,000.

Nevertheless, there were some exciting initiatives discussed at side events. Most encouraging to me was the growing acceptance that the action will have to be at sub-national levels, particularly through local government and personal action. The Conference of Mayors and the International Council for Local Environmental Initiatives (ICLEI) side events probably achieved more than the leaders in showcasing where the action really is. Local government engineering was at the forefront of these initiatives highlighting energy efficiency, demand management in the utilities, and zero emissions transport. The rollout of Personal Rapid Transport (podcars) at local council levels (funded by the Swedish government) was a highlight. These systems are planned for Stockholm, Heathrow Airport and universally throughout Masdar City in Abu Dhabi.

On the energy efficiency front, Denmark has been building energy efficient homes and precincts for years. Their energy efficiency regulations and voluntary uptake of simple things like insulation, double glazing, and thermostats on gas heating, as well as centralised precinct heating have reduced annual average energy across the built environment (commercial and residential) from 140kWh/sqm to less than 35kWh/sqm over recent years. There is growing research in Denmark on the integration of cars with buildings as cars will more and more become mobile energy storage devices.

There were also groups promoting greater understanding of earth system science through partnerships across the science disciplines, looking at how human activity is, and is not,

working with what James Lovelock calls Gaia. Interestingly, these partnerships did not include any identifiable links with engineering and how engineers consider systems in their artefact designs. This is an area where environmental engineering should play a role in more definitively linking engineered systems with earth systems. This is particularly relevant where climate change is concerned in that engineers will need to increasingly consider how their work is adding to, and not, just minimally depleting natural and social capital.

Also, encouraging in this arena was an excellent presentation by the European Environment Agency on work being done throughout Europe to move beyond basing government policy simply and only on GDP data. The metrics for measuring and accounting for wellness across natural and social capital appears well advanced and close to implementation in a number of European states. Speakers cited good work in Australia in this area back in about 2001. Apparently, this work seems to have been ignored by governments here.

While it might be argued that the largest ever in history assembly of heads of state is an indication of the seriousness with which climate change is now taken, the interest and involvement of individuals was also the largest ever in history – 100,000 people assembled in Copenhagen for the Walk Against Warming on Saturday 12 December, and a petition (reported as the biggest ever) signed over the internet by over 13 million people was presented to the COP 15 President calling for serious action to stop climate change.

The call for action is loud and clear – the time is certainly right for engineers to step forward and show that they can be part of the solution. Indeed, we have a privileged position through our knowledge and skills to take a lead role in finding the solutions to the sustainability challenge facing the world.



# Australia's highest value scholarship seeking 2010 candidates



A scholarship worth over \$80,000 is up for grabs by a talented Australian who has a passion for their country and a desire to contribute to its future.

The Australian Cranfield Alumni, together with Cranfield School of Management in the UK, is seeking applications for the 4<sup>th</sup> Cranfield Australian Alumni Scholarship 2010.

The scholarship is the highest value scholarship available in Australia and covers tuition fees for the one-year, full-time MBA program in the UK, and also provides a grant for living expenses and airfares.

The Cranfield MBA program was recently rated number three in the world by the *Wall Street Journal* in a survey of intensive one-year MBA programs.

The Cranfield Alumni looks for talented people who have at least three years of practical, real-life work and life experience with a track record of success.

Candidates are most probably around 26 to 34 years of age and have the passion and character to benefit from an intense one-year accelerated professional and personal development experience.

While this scholarship may not be of interest to you directly, you may know someone who could benefit from the opportunity.

To find out more about the scholarship, Cranfield School of Management, previous winners and how to apply, visit the website.

[cranfieldalumni.org.au](http://cranfieldalumni.org.au)



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2010 YEAR OF  
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**In the Year of Engineering Leadership, the Centre of Engineering Leadership and Management (CELM) and Young Engineers Australia (YEA) have joined together to present the Engineering Leadership Conference.**

The Engineering Leadership Conference will deliver a dynamic and thought provoking combination of high profile speakers and challenging presentations appealing to experienced engineering leaders and those transitioning into leadership roles.

**Confirmed speakers include:**

- Andrew Buckley, CEO, Cardno
- Tony Ellwood, Director, Queensland Art Gallery and Gallery of Modern Art
- Stuart Glenn, CEO & President, PB International
- Helen Gluer, CEO, Tarong Energy Corporation
- Zimi Meka, CEO, Ausenco
- Dr Chris Roberts, CEO, Cochlear Limited
- Ian Shepherd, CEO, GHD
- Bill Wild, COO, Leighton Holdings

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[www.engineeringleadership.org](http://www.engineeringleadership.org)

Visit the website for further announcements on speakers.

# Supporting our future leaders

Amin Kashanchi, YEAQ Chair



Welcome to a new year from Young Engineers Australia Queensland (YEAQ). My name is Amin Kashanchi and I am honoured to be the YEAQ Chair in 2010.

The theme for 2010 is 'Engineering Leadership' and Engineers Australia will dedicate this year to recognising and celebrating leadership within our profession. This is exciting time for young engineers as we are the future leaders in this profession. In 2010, I will work with YEAQ committee to represent, support, and provide a voice for the young engineers here in Queensland.

YEAQ events are always a great way to meet others in industry, expand your professional networks and, importantly, have fun! Some of the events we have planned for 2010 include:

speed networking, annual gala ball, a generational and gender exchange event, CEO breakfast, technical presentations, a wine and cheese night, and site visits. More information about these events will be available soon.

An important event for us in 2010 is the Engineering Leadership conference being held on 5-7 May 2010 at the Brisbane Convention and Exhibition Centre. This is a national annual event that is being hosted in Queensland by Young Engineers Australia in partnership with the Centre for Engineering Leadership (CELM). The conference will explore three concurrent themes: Leadership in Business, Environment and Community, and Pathways to Leadership. Young Engineers Australia will also recognise the most inspiring engineers in Australia during the event.

The Engineering Leadership conference is an excellent opportunity for young engineers to hear from high-profile speakers and experienced engineering leaders so I hope to see many of you there.

So, 2010 looks set to be a great year for young engineers in Queensland! I'm excited to have the opportunity to be part of the YEAQ committee and I look forward to meeting many of you at our events throughout the year.

We are looking for corporate support to help us offer these events and activities

during 2010 – all YEAQ sponsorship enquiries to the Queensland Division office will be gratefully received. Sponsorship of the YEAQ committee offers great exposure for organisations seeking to promote directly to the next generation of engineering leaders.

## 2010 YEAQ COMMITTEE

**Amin Kashanchi - Chair**  
Mechanical Engineer, WestSide Corp

**Sachin Pathak - Vice Chair**  
Electrical Engineer, ENERGEX

**Prakash Sethuraman - Treasurer**  
Mechanical Engineer, QUT

**Alastair Pinkard - National Rep**  
Electrical Engineer, ENERGEX

**Melanie Fasteas - Immediate Past Chair**  
Electrical Engineer, Arup

**Cohan Dew - Immediate Past Chair of YEA National Committee**  
Electrical Engineer, AECOM

**Jamie Robertson - Committee Member**  
Electrical Engineer, AECOM

**Minh Pham - Web-Coordinator**  
Final year student at QUT & Mechanical Engineer, Arup



If you would like to contact us or to be on our distribution list, please email [yeaqlcomm@engineersaustralia.org.au](mailto:yeaqlcomm@engineersaustralia.org.au)

# Ambassadors for change

Kristina Schaeffer, WIEQ Chair



I was privileged to recently attend the Women in Climate Change Forum on behalf of Engineers Australia and Women in Engineering. The Brisbane event brought together high-profile female professionals and politicians to discuss sustainability and how women can use their networks and influence in household consumer decisions to bring about real change in CO2 emissions.

Keynote speakers included Premier Anna Bligh and Natalie Isaacs, founder of the 1millionwomen campaign. The aim of the campaign is to enlist one million Australian women to commit to reducing their greenhouse gas emissions by one tonne in one year, therefore bringing about a reduction of one million tonnes collectively each year.

A website has been established whereby you can find out how CO2 emissions can be reduced. It also allows you to select which activities you will aim to achieve and monitor your progress over the year.

The event also included a panel discussion with Kathy Hirschfeld, CEO of BP Bulwer Refinery, Jude Munro, CEO of Brisbane City Council, and Kate Jones, the Minister for Sustainability. Hirschfeld, together with Leeanne Bond (2007's Professional Engineer of the Year) are ambassadors of the 1millionwomen campaign.

Be sure to check out [1millionwomen.com.au](http://1millionwomen.com.au) to see what you can do to help reduce emissions, and don't forget to tell the women in your life about it as well!

Our final event of 2009 was the Women in Engineering Boat Cruise, generously sponsored by Aurecon. More than 60 guests enjoyed dinner aboard the Kookaburra Queen and heard from guest speaker Captain Clare O'Neill of the Australian Army.

O'Neill spoke about her time in Afghanistan as a member of Reconstruction Task Force 1 and 4 and the difficulties and rewards of engineering in a war zone. She went on to discuss the work carried out at Tarin Kowt Hospital, which was undertaken by locals under the supervision of the Task Force, and the change in attitudes over time.

Things that many of us take for granted, such as being able to access doctors,

going to hospital to give birth, and having a playground for children, did not exist prior to the work carried out by O'Neill and her Task Force colleagues.

The Brisbane Women in Engineering Committee is currently looking for more members. We've got an exciting year ahead so if you would like to be involved, or are interested in learning more, please email us at [wieqld@engineersaustralia.org.au](mailto:wieqld@engineersaustralia.org.au) or contact the Division Office.

Meetings are held on the second Thursday of each month from 5.45pm at the Queensland Division office in Spring Hill and run for approximately one hour.



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Engineering Success

## Green rail projects prove a long-term winner for engineering students



On track: Environmental engineer Evan Smith developed a plan to make rail freight services more environmentally friendly.



Bachelor of Engineering (Environmental) graduate, Evan Smith, now has his career on track after completing an award-winning project for QR. As an Environmental Planning Coordinator (Projects/Tenders), Smith looks at managing the environmental impacts of various railway infrastructure construction projects throughout Queensland plus a number of tenders interstate.

In 2008, Smith won an Engineers Australia award for the Best Student Thesis for developing energy saving ideas to make QR freight services more environmentally friendly and cost effective. The project measured the energy usage of freight trains and identified new energy saving opportunities.

'In a country like Australia with long distances between cities, the economy depends on cheap transport,' Smith said. 'The cost of diesel directly impacts the price of everything we buy. If fuel

prices double, costs must be passed on to the consumer.'

'When trains are filled to capacity, rail is far more efficient between capital cities than road. On average, it takes 27 litres of fuel to transport a tonne of cargo 1000km by a typical truck, but only about seven litres by train,' he said. The project was completed through Griffith University's Industrial Affiliates Program (IAP) in which final year students complete a real project for an industry client.

IAP provides employers with a great ROI and the opportunity to test undergraduate skills in their workplace before making a hiring decision.

**Griffith University is looking for Civil and Environmental Engineering student projects NOW**

Contact Catherine Howe on 07 55528154, 0418790998 or [c.howe@griffith.edu.au](mailto:c.howe@griffith.edu.au)

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# Queensland engineer awarded prestigious national honour

Mike Fordyce, an eminent Queensland engineer, was recently named the 2009 winner of the John Connell Medal, a prestigious national award that recognises the most outstanding contributions in the field of structural engineering.

The award is named after the principal and founder of John Connell and Associates, which operates throughout Australasia under the name of Connell Wagner.

The contribution of Fordyce to the structural engineering profession is prolific, diverse and unique. He served as National President of Concrete Institute of Australia in 1995-96, was a Queensland Building Services Authority mediator for building disputes for several years, and was elected the very first non-UK based President of the Institution of Structural Engineers for the 2004-05 session.

Fordyce has been the backbone in promoting a strong link between Engineers Australia and the Institution of Structural Engineers via the Structural College Board. He played a key role in the negotiation and drafting of the agreement on reciprocal membership between Engineers

Australia and the Institution of Structural Engineers.

Fordyce undertook a prominent role in the development of Safety in Design principles, representing ACEA on a Queensland Government working group producing guidelines for designers. He has also worked with the Board of Professional Engineers in Queensland to further develop and promote registration of engineers in Queensland.

**'The task we undertake as civil and structural engineers is a formidable one'**

'I have certainly enjoyed my career as a Structural engineer and I am honoured to receive such an important award,' Fordyce said. 'Structural engineering is a global profession that has taken me all around the world, allowing me to meet and work with a diverse range of people from different cultures and backgrounds.'

'The task we undertake as civil and structural engineers is a formidable one,' Fordyce said. Upon accepting the

John Connell Medal, Fordyce offered a definition that summarised why Structural engineering has been such an exciting and challenging profession for him throughout his career.

*'Structural Engineering is the art of moulding materials we do not wholly understand into shapes we cannot precisely analyse, so as to withstand forces we cannot really assess, in such a way that the community at large has no reason to suspect the extent of our ignorance'*

Nominations for  
TOP 100 ENGINEERS  
now open

The *Engineers Australia* magazine has begun compiling its 2010 list of Australia's most influential engineers.

Engineers who hold positions of influence outside engineering are welcome and encouraged to apply.

Nominations can be submitted via email [dgeorg@engineersmedia.com.au](mailto:dgeorg@engineersmedia.com.au) or facsimile 02 9438 5934.

Closing date is 26 March 2010. For more information, call Engineers Media on 02 9438 1533.



Above (left to right):  
Rob Heywood, Chair, Structural Branch Queensland  
Peter Ho, Secretary, Structural Branch Queensland  
Mike Fordyce, John Connell Medal recipient  
Dog Hargreaves, Treasurer, Structural Branch Queensland



Above (left to right):  
Mike Fordyce, John Connell Medal recipient  
Andrew Chapman, 2009 President, Engineers Australia Queensland

# WELCOMING NEW PDP PARTNERS

## GS & A Technical Services

GS&A Technical Services was established to provide specialised technical and design services to the electricity supply industry. GS&A are members of the Design Service Providers Panel for both ENERGETX and Ergon Energy and hold an 'A' rating on both panels.

As the 2007 and 2008 winner of the ENERGETX Quality Award for Electrical Design Services, GS&A focus on complex electricity network design, customer negotiations for major project developments, customer substation design and major road lighting design.

GS&A are currently the primary Design Service Provider for ENERGETX projects in the Brisbane CBD and central western suburbs of Brisbane. GS&A is a company that focuses strongly on the capabilities of its staff. With a range of electrical network designers, engineers, CAD operators, and an administrative team to support them, all staff have

formal training in their respective areas and the majority are undergoing further training, with assistance from the company and Engineers Australia.

## Petrochem Industries

Petrochem Industries (PCI) is a specialist engineering design and project management consultancy. PCI is an independently owned Australian company that supports the industries of petrochemical, oil and gas, energy, mining, power, water and sugar refining.

Established in 1985, PCI has offices in Brisbane and Melbourne and provides engineering and drafting services across the mechanical, piping, structural, civil and electrical engineering disciplines.

The Professional Development Program is an essential tool that will assist all PCI professional engineers, engineering technologists and engineering officers achieve their chartered status.

## Engineering Science and Technology Professional Standards Society (ESTPSS)

If you are in private practice the recently approved Engineers Australia Professional Standards Scheme may be of interest to you and your company.

If you and your company become a member of the Engineers Australia Professional Standards Scheme, you can limit your liability under the professional standards legislation in each state and territory. Members of the scheme have a cap on the amount of damages a court can award against them in legal actions for economic loss or property damage that arise from their engineering practice.

The scheme is exclusively for members of Engineers Australia and their companies.

Approval of the Engineers Australia Professional Standards Scheme opens up avenues for members and their companies with a gross annual fee income below \$20million not only to protect and limit the liability associated with their work but also to promote themselves and their firms as practicing with the highest standards.

A longer term benefit for members will hopefully be an improvement in the affordability and availability of professional indemnity insurance.

Key features of the Engineers Australia Scheme are that it draws from both existing compliance requirements associated with membership of Engineers Australia and practices that could reasonably be expected to be in place in engineering practices that operate in accordance with contemporary business frameworks.

Details about the ESTPSS and the online application are available on the Engineers Australia website at [engineersaustralia.org.au/estpss](http://engineersaustralia.org.au/estpss).

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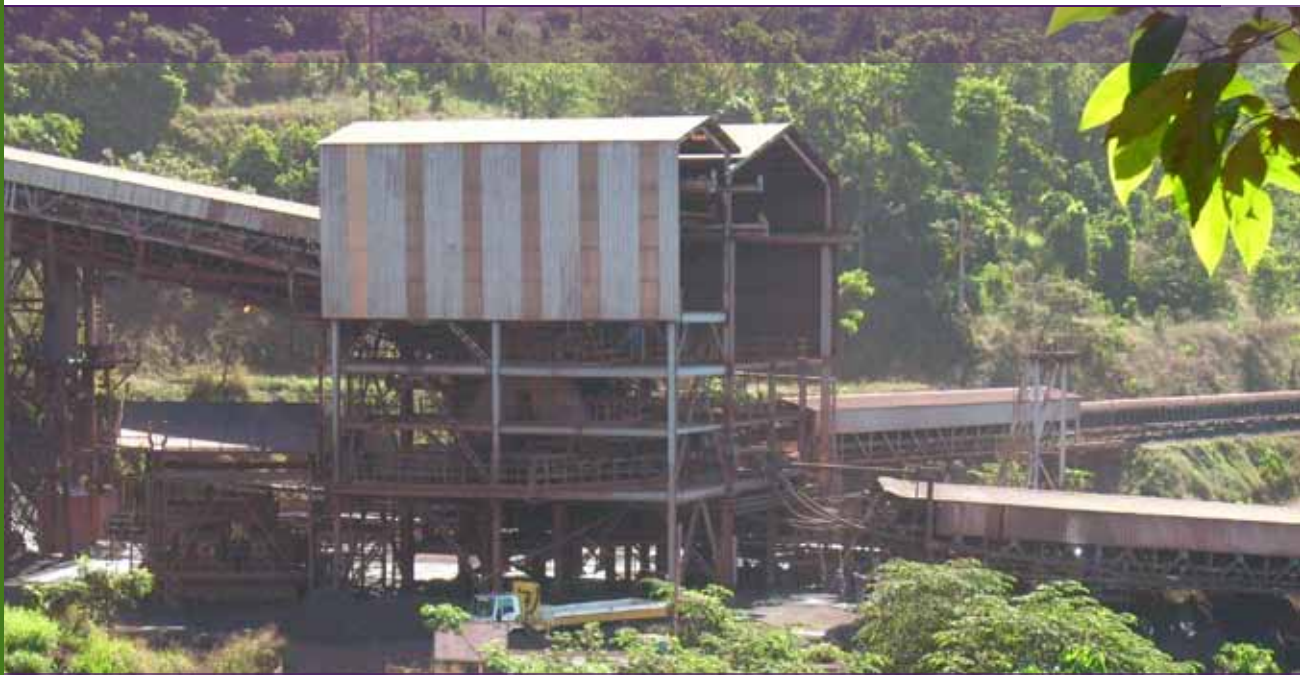
- Concrete structure surveys and scanning
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# TRUCKLESS MINING

SKM Brisbane extends its global reach to Brazil

The Brisbane office of engineering, project delivery and sciences firm, Sinclair Knight Merz (SKM), has extended its global reach by working with Brazilian mining company Vale on a series of feasibility studies relating to the economic and technical viability of in-pit crushing and conveying (IPCC), otherwise known as 'truckless mining', for a major iron ore project in Brazil.

The study has largely been undertaken by an SKM team based in Brisbane, chosen due to SKM's experience in this technology derived from projects such as Rio Tinto's Clermont mine in the Bowen Basin. Brisbane is home to SKM's Mining & Metals Mining Systems team, who worked closely with the Vale client team in Brazil.

The project has required some language and cultural awareness training for SKM staff to better understand their new Brazilian client. 'It's now imperative, rather than an

optional extra, to have people who are good communicators – ideally to understand and speak other languages – and are prepared to be open to different ways of working and living,' said SKM's Project Manager, Tim Atchison.

SKM's contribution to Vale's project portfolio commenced with a structured Value Improvement Project (VIP) Study on crushing and screening circuits of the wet beneficiation plant layouts and equipment selection for planned expansions at Vale's largest iron ore mine, Carajás, in Pará State in north east Brazil. At the time, Vale's Project Director, Carajás Iron Ore Project S11D, Jamil Sebe, said that SKM's experience in Iron Ore Beneficiation Plants had provided exactly what Vale was seeking.

'We visited several Australian Iron Ore Beneficiation Plants between 2006 and 2007, and we were impressed

with their constructability, level of automation and robustness of equipment,' Mr Sebe said.

'The layouts adopted by the plants enhanced the maintenance and operational performance of the equipment and personnel and, most importantly, a reduction in operational cost. This was exactly the model we were looking for...for this reason, we sought a partnership, which today we have with SKM.'

Thereafter, Vale engaged SKM on a Programme of Works for both its Carajás mine and for a new 90Mtpa greenfields iron ore project known as S11D.

The ongoing work with Vale has prompted SKM to establish Sinclair Knight Merz Serviços de Engenharia Limitada, and to accelerate the opening of its Belo Horizonte office.

# Engineering Wonders of Queensland

The Engineering Wonders of Queensland publication identifies and celebrates our state's most outstanding engineering projects, networks and regions.

The Story Bridge is named as one of Queensland's top 10 engineering feats. The Gateway Bridge and Burdekin Bridge were identified as being among the state's top 30.

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## Story Bridge

The Great Depression of the 1930s resulted in devastating Queensland unemployment levels. Anticipating the magnitude of the trouble to come, in the late 1920s the state government started planning for a series of major public works to generate employment. Three major projects were identified including the construction of a river crossing at Kangaroo Point. This river crossing was to become the iconic Queensland landmark, the Story Bridge.

John Bradfield, a distinguished Queensland-born engineer, was responsible for the design of the Story Bridge. With an extensive résumé of engineering achievements to his credit, including being the original designer of the Sydney Harbour Bridge, Bradfield was appointed in 1933 to design and construct a bridge across the Brisbane River. At the time, the population of the greater Brisbane area was just 300,000, and Bradfield was required to anticipate the possible traffic volume and needs of commuters 60 years into the future.

A cantilever bridge, at the time it was the seventh largest of its type in the world and remains the second largest in Australia behind the Sydney Harbour Bridge. What distinguishes the Story Bridge from its Sydney counterpart, which was largely designed in the United Kingdom and built of UK steel, is that it was almost entirely made from Queensland materials. During the height of the Story Bridge construction, more than 400 workers were employed at the site and the Rocklea plant.

The bridge was constructed simultaneously from both ends. The southern pier required foundations up to 40 metres below ground level. An ingenious underwater work-chamber was required and involved the deepest airlock work done in Australia at that time. This included a working chamber pressure of four atmospheres, which required workers to submit to 11 minutes of compression and 103 minutes of decompression.

Built in a time of tremendous economic difficulty, the Story Bridge is one of Queensland's most recognisable landmarks and is arguably the star of Brisbane's beautiful cityscape. From its conception as a job-generator in the 1930s, balanced with the need to anticipate the city's traffic volume decades into the future, the Story Bridge is an exceptional engineering success.



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## Gateway Bridge

In the late 1970s, approximately 180,000 vehicles used the Captain Cook and Story bridges to cross the river each day. As the bridges began to approach capacity, the Queensland Government recognised the need for an additional river crossing and commenced construction of the Gateway Bridge in 1980 (completed 1985).

The Gateway Bridge totals a length of 1.63km, consisting of a 376m southern approach span, a 731m northern approach span, and a 520m main river span over the Brisbane River.

The river section consists of a 260m main span and 130m side spans. Constructed using balanced cantilever segmental methodology, the main span, at the time, was the longest of its type in the world. This span provided significant challenges in design, in particular the suitability of design codes and applicability of material and environment parameters such as wind and temperature.

The approach spans are of twin cell box girder construction while the main span is a single cell box girder. The superstructure is post tensioned concrete. The bridge carries six lanes

of traffic, reaches a maximum height of 65 metres, and provides a 55m shipping clearance with the provision of pier impact protection resistance from large vessels travelling under the bridge. The design of the structure was further constrained by the need to provide clearance to the flight path of nearby Brisbane Airport.

The popularity of travel on the Gateway Bridge increased to a point that duplication of the bridge was required. The second Gateway Bridge is now under construction, as part of the \$1.88 billion Gateway Upgrade Project.



circa 1986



circa 1940



## Burdekin River Bridge, Home Hill

The Burdekin River Bridge is longer than the Sydney Harbour Bridge, took 10 years to complete and is built on sand. But its most valuable characteristic is providing a vital pathway between northern and southern Queensland during the wet season.

The Burdekin River posed the challenge of very difficult foundations. In flood, the river bed 'boils' to at least 15 metres. After examining a number of overseas bridges built over similar sandy foundations, it was decided to use deep caissons with

solid pier stems. The caissons were approximately 30 metres deep and weighed 4,000 tonnes, while the pier stems each weighed 1,300 tonnes.

Foundations could only be built during the six month dry season and took four years to complete. During the wet season, work was carried out when possible on the approach structures. Initial progress was slow due to post-war steel and cement shortages.

The 6,500 tonne high tensile steel superstructure was prefabricated at Evans Deakin's factory in Rocklea.

There were 10 main spans each 75 metres long. Steel components were cut, assembled and riveted in the Brisbane factory while 300,000 high tensile steel bolts were used for on-site connections. The first of the main superstructure spans was commenced in late 1954 and the final span completed in June 1956. Total length of the bridge including approach spans is 1.1 kilometres.

More than 7,000 people attended the opening in June 1957, which was a huge event at the time for the small region.

## Rural Integrated Development Nepal urgently seeking sponsors for engineering projects

Engineering is at the heart of community development as it supports the basics of human life. In developed countries such as Australia, it can be easy to forget the critical role that engineering plays in less fortunate parts of the world.

Rural Integrated Development Services (RIDS) Nepal is a not-for-profit, non-government organisation that works with communities in Humla, the poorest region of Nepal, developing engineering solutions that can make a world of difference to the quality of life.

RIDS Nepal provides sanitation, education and electrification in remote villages in the Himalayas, with a focus on renewable technologies. RIDS holistic community development has led to some unique engineering solutions in high-altitude environments, including a smokeless stove and other innovations.

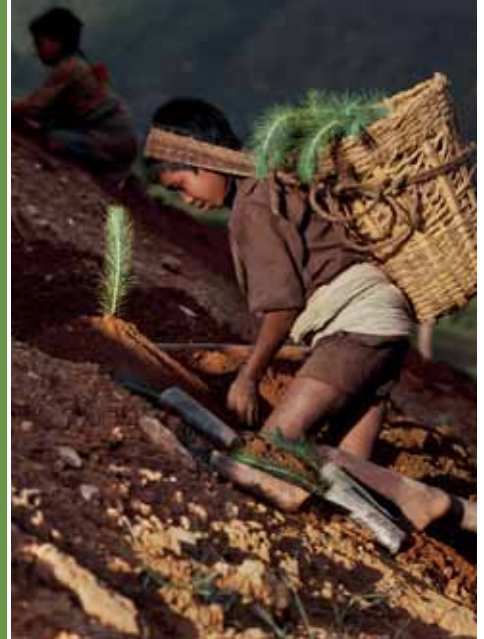
RIDS recently lost their sponsor of eight years and is urgently searching

for new supporters to help them continue their critical work of providing basic engineering services for community improvement in Nepal.

Several drinking water system projects are mid-construction and, from project to project, they require between US\$3,000 and US\$45,000 for completion. Donations can be channelled directly into an existing project, providing immediate benefits to villages in Humla.

Founder and Project Director of RIDS Nepal, Alex Zahnd, was the guest speaker at the 2009 Central Region Engineering Conference in Rockhampton. Attendees who listened to Zahnd's presentation on holistic community development could surely vouch for his passion and inspirational dedication to this cause. To learn more about their vision and work in Nepal and how your donation can help, visit the website or email [azahnd@rids-nepal.org](mailto:azahnd@rids-nepal.org)

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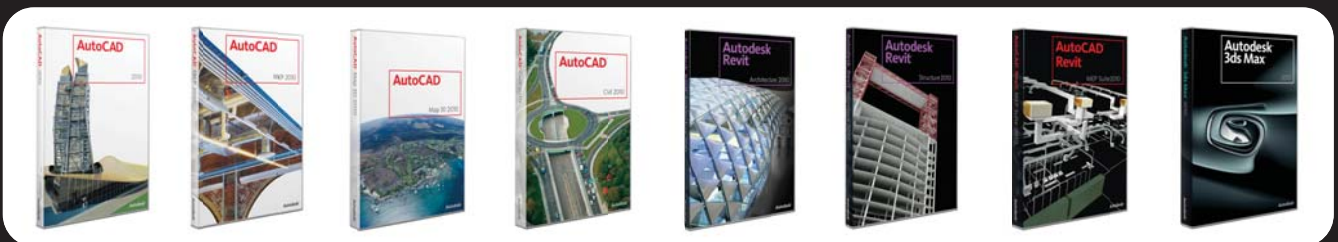
Autodesk are offering on their range of 2007, 2008 & 2009 products **up to 60% discount** to upgrade them to 2010 products up **until March 16th**.

**An example of the pricing benefits is as follows:**

**AutoCAD 2009 to AutoCAD 2010 before the 16th \$1,445.00** (Inc 12 months Subscription) + GST

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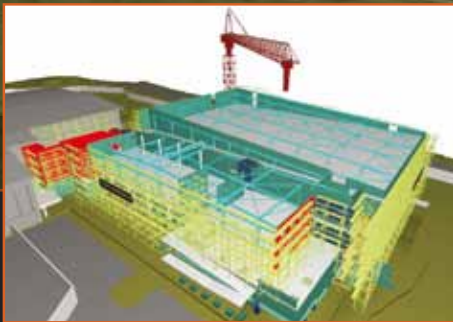


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## Congratulations Project Services engineering team



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# CPD PRESENTATIONS AND EVENTS

Date	Topic	Location	Host
26 February	Becoming a Chartered Member Seminars	Brisbane	Engineers Australia
4 March	RICS: QLD Adjudicator Training Course	Brisbane	RICS Dispute Resolution Service
8-9 March	Contract Management	Brisbane	Engineering Education Australia
9 March	Practical BIM: Now and In the Future	Brisbane	BEDP built environment design professions
11-12 March	Project Management	Brisbane	Engineering Education Australia
15 March	Australian Desalination Schools: Fundamentals of Reverse Osmosis Science, Technology and Management	Broadbeach	National Centre for Groundwater Research and Training
15-16 March	Negotiation Skills	Brisbane	Engineering Education Australia
17 March	Time Management	Brisbane	Engineering Education Australia
18 March	Queensland Infrastructure Summit	Brisbane	IIR Conferences
23-24 March	Writing Winning Technical Documents	Brisbane	Engineering Education Australia
26 March	Mentoring Skills	Brisbane	Engineering Education Australia
26 March	Becoming a Chartered Member Seminars	Brisbane	Engineers Australia
29-30 March	Contract Management	Townsville	Engineering Education Australia
8 April	Safer Construction - Design Stage	Brisbane	Engineering Education Australia
19-20 April	Project Management	Townsville	Engineering Education Australia
29-30 April	Project Management	Brisbane	Engineering Education Australia
30-April	Becoming a Chartered Member Seminar	Brisbane	Engineers Australia
10-11 May	Financial Management	Brisbane	Engineering Education Australia
13-14 May	Earthworks	Brisbane	Engineering Education Australia
26-27 May	Risk Management	Brisbane	Engineering Education Australia

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