



ENGINEERS AUSTRALIA
Queensland Division



Engineering Queensland News, Edition 2, 2011

PUTTING THE PIECES BACK TOGETHER

Engineers work to restore communities devastated
by the 2011 earthquakes, floods and cyclone

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ENGINEERS AUSTRALIA
Queensland Division

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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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QUEENSLAND PRESIDENT

Dennis Wogan FIEAust CPEng

Over the last few months, I have been able to attend meetings of our regional Local Groups in Rockhampton, Burnett, Wide Bay and Mackay. I was also fortunate to visit engineering works and projects in their area and join with the Ipswich Local Group in an inspection of the Wivenhoe Hydro Power Station. I appreciated the great hospitality I received and was impressed by the level of energy and enthusiasm in these groups.

Preservation of our engineering heritage is important. Our Engineering Heritage Panel has been very active with a number of recent events including the heritage listing and ceremony of the Bundaberg Waterworks, the launch of a booklet on the engineering heritage of inner Brisbane, and the posthumous naming of the library at Engineering House as the 'Whitmore Room', in honour of Professor Ray Whitmore. Professor Whitmore was an Honorary Fellow and driving force behind the creation of Engineering Heritage Australia.

The newly formed Overseas Qualified Engineers Group and the Oil and Gas Group (Facilities and Pipelines) recently held very successful inaugural formal events. Both these groups will help address growing needs in our engineering community. My congratulations to the organisers of these events.

A significant amount of concern has been raised by members over the lack of a visible public profile of Engineers Australia during the natural disasters earlier in the year. This has been a source of concern and discussion within the Queensland Division Committee.

We believe that there are lessons to be learnt and that Engineers Australia must have a better response in future events. However, this must be in a considered and balanced way and we are working to develop strategies to better meet the expectations of our members in the future. Nonetheless, we have been active in joining with kindred bodies to liaise with and support the Queensland Reconstruction Authority. We are



also in the process of setting up a group to review and comment on the findings of the Flood Inquiry when the draft report is released in August.

In this Year of Humanitarian Engineering, Engineers Australia is seeking to help address the large and unacceptable gap between the living standards and opportunities for the Aboriginal and Torres Strait communities and the rest of Australia. This is reflected very pointedly in terms of differences in average lifespan and education.

At the national level, Engineers Australia is developing a Reconciliation Action Plan (RAP), which is planned for release in August. The plan will address ways engineers can positively influence the lives of Australians, in particular those living in remote and regional areas. It will also recommend strategies for improving community knowledge of how people working in industry and government can work with indigenous Australians to improve life and business outcomes in remote areas.

I encourage you to become involved with the RAP when it is released and to be active in promoting the benefits engineering brings to the community in this Year of Humanitarian Engineering.



Congratulations to our newly **Chartered** Queensland members

Abbany, Nizam
Ahmed, Masum
Allen, Mark
Allen, Sharon
Al-Merhebi, Azzam
Barnes, Thomas
Barrett, Amanda
Bartels, Aida
Bausang, Santy
Blines, Anthony
Bratic, Veselin
Brown, Chris
Brown, Neil
Butt, Anthony
Capati, Guillermo
Cartwright, Nigel

Caton, Craig
Chambers, Kevin
Cooper, Nathan
Cunningham, Dale
De Leeuw, Ryan
Dekker, Frans
Evans, Richard
Ezeajugh, Lambert
Hackney, Shaun
Hagaman, Bruce
Haines, Trent
Hill, Jakki
Hingorani, Manu
Jayathilake, Ranjith
Kennedy, Zoe
Khatmamaab, Babak

Kolarkar, Prakash
Lepelaar, Michael
Liu, Tierang
Loh, Kevin
Lopez-Rolden, Jose
Machekra, Claudious
Marynych, Boris
Massingham, Gavin
Masterson, Peter
Mauger, Peter
Mendis, Agampodi Anura
Mutton, Peter
Myers, Michael
Neale, Josh
Pathirana, Badra
Radojcic, Dragan
Rasti, Arash
Redman, Warren
Rekowski, Robert
Rijal, Amod

Ringer, Michael
Rowel, Dilan
Schwerin, George
Scott, Joshua
Service, Matthew
Shrestha, Man Kumar
Smallhorn, David
Smit, Floris
Sneyd, Alex
Srikanthan, Kanan
Stephens, Kim
Suriyaaratchie, Ajith
Sutton, Richard
Tavahodi, Mana
Thattasserry, Joman
Van der Horst, Adrian
Van Eysden, Peter
Venter, Daniel
Walsh, Michael
West, Michael
Willaton, Andrew
Williams, Michael
Worthington, Bernard
Zannes, John
Zeilmeier, Thomas
Zeng, Jane



Project Services' engineering expertise

on the newest building at the SkillsTech training centre in Brisbane has resulted in a state-of-the-art facility for trade apprentices in the Electrical, Refrigeration and Air Conditioning industries.

The building's design boasts two pre-conditioners with enthalpy wheels, a DX cooling and reheat unit, chilled water cooling coils, and training equipment including fan coil units, ductwork systems, supermarket cold storage freezers, ammonia cooling, and CO2 cooling.

It's just another example of engineering excellence by Project Services, the 2010 RW Hawken Award winning professional design and building consultancy of the Queensland Government's Department of Public Works.





Queensland Division Committee update

Ian McEwan, Executive Director

The role of the Queensland Division Committee is to set strategies to support Engineers Australia's strategic plan, provide leadership and direction to Queensland Groups and Office Bearers,

guide and liaise with staff, offer advice to Council on strategic and division matters, and to provide a public voice for Engineers Australia within Queensland. To enhance the communication with all Queensland members, a regular article will be included in this newsletter to update members on the key actions of the Queensland Division Committee.

This year the Division Committee has established several working parties to identify strategic issues, and then develop plans to address them. Working parties have been established to review communications, population growth, and plan activities for the 2012 Year of the Regional Engineering Team. A working party has also been established to identify additional issues that should be included in future operational plans.

The outcomes from these working parties will feed directly into the formation of future strategic plans for Queensland Division. This marks a change in

the strategic planning process for the Queensland Division Committee, with a longer-term focus being adopted to guide our future actions.

At the May 2011 Queensland Division Committee meeting, the main issues discussed included:

- Approval of a Terms of Reference to form a Queensland Flood Inquiry Review sub committee.
- Endorsement of a Student Engagement Strategy that aims to improve our interaction with the next generation of the engineering team.
- An update on the completed and planned activities for the Year of Humanitarian Engineering.
- A review of the latest developments from the Professional Engineers Act working party.
- Reports from the Division President, Congress representatives, Engineers Australia's representative on the Board of Professional Engineers Queensland, finance report, and the planned activities of the National College Boards.

The Queensland Division Committee represents all members in Queensland. If you would like to put forward issues for the Division Committee to consider, or are interested in additional information on current activities, please contact the Division President, Dennis Wogan via email qldpresident@engineersaustralia.org.au.

Engineering Heritage Queensland honours Ray Whitmore

A small ceremony was recently held at Engineering House to name the second-floor library 'The Whitmore Room' in honour of Professor Emeritus Ray Whitmore AM DSc HonFIEAust (1920-2008).

Ray was a professor with UQ's School of Mining and Metallurgical Engineering from 1967 to 1985. The Whitmore Room was named in his honour for his significant contributions to engineering heritage in Australia, and for his leadership in the National and Queensland Panels for Engineering Heritage upon their formation within Engineers Australia.

The ceremony showcased Ray's lifetime achievements and his passion for engineering heritage, highlighting his research and publications in this area, particularly his work in Queensland.



Engineering House library named in honour of Professor Ray Whitmore (1920-2008)



Call for Chartered interview panelists

As a Chartered Professional Engineer (CPEng), your peers have confirmed your competence to practice as a professional engineer in your own right. Part of the responsibility of being a CPEng is to participate as a panelist in a CPEng Professional Interview from time to time. Without this commitment, CPEng standards would be very difficult to maintain.

Engineers Australia has received a significant increase in CPEng applications. Queensland Division staff currently schedule 50-90

Professional Interviews per month, and in turn need to source two CPEng volunteers per interview. We would appreciate your support in volunteering to assist the next generation in achieving their Chartered status.

If you are available for 90 minutes during work hours, you could make a big difference to the career of a future Chartered Professional Engineer, as well as earning CPD hours that you can claim as part of your 150 hours over three years requirement.

Engineers Australia encourages its Chartered Members to participate in at least one CPEng interview per year as part of your ongoing support to the engineering profession.

If you are able to assist, please provide your availability and contact information by completing a brief CPEng Panelist form online (go to qld.engineersaustralia.org.au and follow the links from the homepage) or call us on 3832 3749.

AEW 2011

**AUSTRALIAN ENGINEERING WEEK
ENGINEERING A BETTER WORLD
1-7 AUGUST 2011**

View all events in Queensland

engineersaustralia.org.au/aew

Leadership in risk management

Simon Orton, Chair, Centre for Engineering Leadership and Management Queensland



CELM leadership events have started well for 2011 with two sold-out events so far. The first presentation was on leadership in risk management, presented by David Hudson who is Leighton's Risk Executive General Manager and a CELM national board member.

David spoke about key leadership principles relating to risk management with a presentation that explored governance principles of risk, status of the Risk Manager, and some case studies of catastrophic risk management. "Managing risk in all forms is no easy task for a complex business, especially in today's world of financial and economic volatility," David said.

Some of the key leadership traits described in the presentation were:

- Risk leaders display personal power, courage, influence and exceptional communication.
- Quantitative Risk Models can't replace wise heads (i.e. gathering wider stakeholder input can assist quality outcomes).
- Industries concentrate well

on personal-safety but catastrophic-risk and process-safety are the next challenge for Australian businesses.

- A good risk system and leadership culture does not make a risk-adverse culture: it facilitates risk comfort and a competitive position.
- Promoting organisation culture to prevent passive compliance is critical where all parts of an organisation support risk mitigation measures.
- Power of persuasion, influencing ownership of risk in stakeholders is a critical leadership trait to follow.

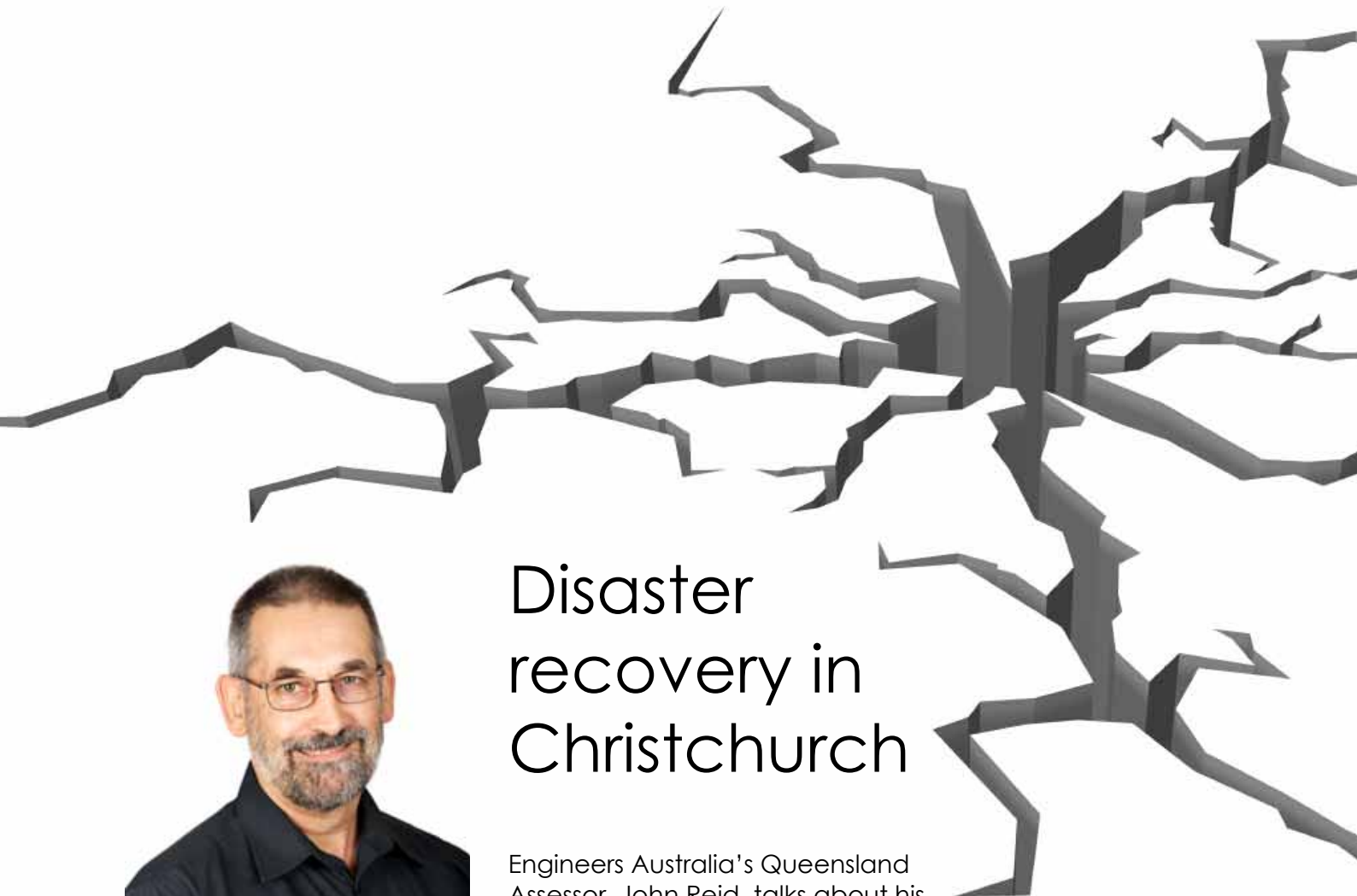
Our second major event for 2011 was a corporate breakfast featuring a keynote address from Graeme Newton, CEO of the newly formed Queensland Reconstruction Authority (QRA). The QRA has been established to develop, implement and manage a state-wide plan for rebuilding and reconnecting communities affected by the floods and cyclones. In one of his first public presentations of this type since the formation of the QRA, key aspects of Graeme's presentation included:

- How the reconstruction efforts are being approached.
- Definition and structure around the funding process.
- Role of industry and local government in the reconstruction efforts.
- Outline of the way forward.

The presentation included up-to-the-minute data detailing the massive recovery effort of Queensland's engineers including:

- 6,627km state roads recovered
- 4,421km rail network reopened
- 64 bridges and culverts with major damage recovered
- 103 disrupted or impacted water supply schemes now operating.

Throughout 2011, CELM will provide opportunities to develop your leadership skills through competency-based assessment, mentorship and events. Events will include a series of presentations, breakfasts, dinners and other networking functions where you will hear from keynote speakers and be able to interact with peers from across the industry. Please check the website for regular updates on our programs.



Disaster recovery in Christchurch

Engineers Australia's Queensland Assessor, John Reid, talks about his experiences with Queensland Urban Search and Rescue in Christchurch

Queensland's Urban Search and Rescue (USAR) Taskforce One is an internationally recognised heavy rescue team with UN accreditation. Although staffed primarily by firemen, Taskforce One also includes specialists from outside the fire service, including doctors, paramedics, engineers and specialist dog handlers.

Structural engineers on call with USAR are charged with assessing the relative stability and safety of damaged buildings when the rescue team needs to gain access. We are volunteers, and undergo training in the basics of USAR procedure and the tools they use to cut through concrete and steel, all the while gaining an understanding of how much risk is liable to be judged tolerable in an emergency. Most of this training takes place on the 'Rubble Pile', which is a carefully

constructed masonry and concrete ruin at Whyte Island and is a lot of fun to play on!

We found out, however, that the Rubble Pile is actually remarkably realistic when we were called to go to Christchurch, New Zealand, immediately after their recent earthquake. Taskforce One, complete with two structural engineers, assembled at the Cannon Hill depot and rushed, under police escort, to RAAF Amberley to board a Globemaster aircraft. The crew of the aircraft packed 72 people and some 30 tonnes of equipment into the plane, and off we went, arriving in Christchurch a little more than 24 hours after the earthquake had struck.

The trip into the city centre from the airport gave us some idea of the damage suffered by the

city, but the full devastation was only revealed once we had set up camp and started to deal with the problems directly. The camp itself was sited in a park in the CBD, where rescue teams from all over the world had gathered.

My first exposure to the reality of the earthquake damage came just after we got the camp set up and my shift was deployed to patrol and assess a few city blocks, looking for survivors and assessing structures. Many of the buildings looked healthy until examined closely when it was found that liquefaction of the ground had destroyed the skin friction on their foundation piles, allowing differential settlement to occur. It was not unusual to walk down a considerable slope from the front door to the lifts, where the heaviest part of the structure had settled the most.

Another problem was found in a tall building that seemed OK at first, bar a few tolerable cracks, until a fire escape door was opened. We then found all the precast flights of the escape stairs at the bottom of the stair shafts. When we left Christchurch 11 days later, other teams were still trying to establish whether or not there was anyone under them.

Many of the city centre buildings were constructed of brick masonry, typically unreinforced, and these had generally suffered severe damage. Total collapse had occurred in some cases, and partial collapse was common.

There were, of course, some cases of total collapse in more modern concrete structures as well. We

spent more than three days working on the remains of the CTV building. Our two shifts (with one engineer to each shift) took it in turns to work through the day and the night, cutting away the debris to make removal possible without any more disturbance than was necessary and guiding the local excavator drivers and a crane, who did the heavy lifting for us.

It had to be slow and careful work, both to keep any survivors alive while we rescued them and to minimise damage to any bodies under the rubble. Sadly, there were no more survivors by the time we arrived - any that were in the rubble having been asphyxiated by the fire beneath the pile as we worked. We did remove 43 bodies, treating them all with care and

respect as they were handed to the authorities for identification. Other tasks during our deployment included assessing buildings for demolition, checking rooms in relatively unsafe buildings for people (alive or otherwise) and generally assisting the search teams as required over safety and access issues.

As we left, the engineers reflected on the deployment and realised that it had been a great learning experience, but at a terrible cost. We were all saddened by the loss of life and the reality of the total disruption to livelihoods and businesses was heartbreaking. I am sure Christchurch will recover, but it will take a long time to rebuild the fabric of its society, replacing or rebuilding all that was lost.



Flying in a Globemaster – not quite business class



CTV building - only the lift tower was left standing



Car park - mercifully, the cars were all parked and unoccupied



Our temporary home - the base of operations

Humanitarian engineering

Shoey's VIEW



Glenn Schumacher, affectionately known as 'Shoey', is Queensland's 2010 Professional Engineer of the Year and is General Manager Gladstone Operations for NRG Gladstone Operating Services.

I am certain that if you stopped people in the street and asked them if they believed there was any connection between engineering and humanitarian causes, the result would be nothing but blank looks. Indeed within the engineering community itself, it may be interesting to know just how many engineers give real consideration to their role and the role of our profession on the wider body of humanity.

At the risk of perpetuating stereotypes, perhaps there is still some truth in the popular view of engineers as boffins, with their

heads down toiling away worrying about their roads and bridges, their structures, their machines, their systems and their processes. A group of people perhaps somewhat disconnected from the human world around them.

Engineers and engineering may also be perceived as part of the problem of technology that appears to be failing humankind. Issues such as climate change are bringing a more critical focus on the development path that the industrial world has taken.

It is against this background that Engineers Australia is promoting 2011 as the Year of Humanitarian Engineering. It provides a timely opportunity for many of us to stop and think about the role of our profession and our practice of engineering in making a difference to our fellow human beings.

Like most engineers, I am a practical person and interested in objective, real issues and actions, as opposed to the more subjective warm 'fuzzy' approach. If I consider my own field of professional practice, namely the electricity industry, in recent times there has been a very large focus on the issue of climate change.

However, one side of the energy issue that is often overlooked and which directly impacts upon the bulk of humankind is what the World Health Organisation (WHO) has termed 'Fuel for Life'. In the WHO report, *The Energy Access Situation In Developing Countries*, (November 2009), it is reported that three billion people (nearly half of humanity) rely directly on solid fuels – traditionally biomass and coal. In the less developed world up to 80% of people rely on these fuel sources.



Perhaps there is still some truth in the popular view of engineers as boffins.

Heads down, toiling away worrying about their roads and bridges, their structures, their machines, their systems and their processes.

A group of people perhaps somewhat disconnected from the human world around them?

Two million deaths per annum are associated with burning of solid fuels indoors in unventilated kitchens with children accounting for 44% of this toll and women accounting for 60% of the toll amongst adults.

In addition to the death toll, 2.7% of the global burden of disease is attributed to indoor air pollution from solid fuel, making this risk factor the second biggest environmental contributor to ill health, behind unsafe water and sanitation.

The issue of health implications as shocking as they may be are only part of the problem of biofuels such as wood and dung. Deforestation has a direct effect on wider issues such as climate change and the erosion of formerly fertile fields reducing food production. Resorting to

the burning of dung as a lower-grade fuel interrupts the normal composting cycle and prevents the dung from being used as a natural soil fertiliser. In the absence of any chemical fertilisers, this will ultimately reduce field productivity.

For these reasons, improving household energy practices will also boost agricultural productivity and food security. By restoring natural soil fertility, expenditure on chemical fertilisers is reduced. Higher fuel efficiency frees women's time for growing food and tending animals.

So, what does this mean for us engineers living and working here in Australia? There are relatively few of us who can emulate the direct action of our colleagues in organisations such as RedR.

It is important to support our colleagues who are taking direct action but, if the world is to come to grips with the issues we currently face and at the same time seek to improve the lot of all humankind, we engineers need to do what we do best: find solutions to problems.

Issues such as climate change have made us more aware of the inter-connectivity of the world in which we live and thus the solutions we need to find must be much more holistic and must take account of the human factors as much as the technical.

Glenn 'Shoey' Schumacher

Nominations for the 2011 Professional Engineer of the Year award are now being accepted. For details, go to the Awards page at qld.engineersaustralia.org.au

Engineers Australia Committees of Council and Congress are busy representing the needs of Queensland members

The Year of Humanitarian Engineering is well underway and the Committees of Council are hard at work with membership and contributions drawn from Council, Congress, Staff and Members. The range of activities is wide and reflects the areas of interest for Engineers Australia. For each Committee, powers and tenures are defined in the Terms of Reference.

Standing Committees of Council

Standing Committees of Council perform governance tasks on behalf of Council and may have specific delegated powers. Standing Committees of Council are formed by Council on an ongoing basis, and members are appointed by decisions of Council.

The Committees include:

- Audit and Risk Committee
- Honours and Awards Committee
- International Committee
- Accreditation Board
- Remuneration Committee.

Special Committees of Council

Special Committees of Council (or Congress) are task-based committees formed under a specific Terms of Reference to investigate a particular strategic issue and provide advice back to Council (or Congress). Congress delegates are often given opportunity to be appointed to Special Committees. Special Committees are generally formed

by Council (or Congress) for a 12 month period. A subsequent Special Committee is sometimes formed if the issue requires further investigation.

The current Committees include:

- 2011 Reconciliation Action Plan (RAP) Committee
- 2011 Post-Ballot Committee
- 2011 CEO Succession Committee
- 2011 'Being Chartered' Review Committee
- Year of Humanitarian Engineering 2011 Committee
- Year of Regional Engineering Team 2012 Committee.

Special Committee of National Congress

- 2011 Disciplinary Processes Committee

The Queensland representatives on Council and Congress are participating in a number of these Committees and in other activities through National Office, for example:

- Geoff Haigh has been contributing as a corresponding member of the RAP Committee and passing on some of the effective reconciliation actions undertaken in Queensland.
- Due to a Congress Paper on Innovation presented by Sam Fernando, a discussion paper on Innovation is being prepared to lead to a Policy Paper to be considered by Council.

- All Congress members have been invited to nominate for other committee work and these will commence shortly.
- David Hood, as National Deputy President, is Chair of the International Committee and also participates in many of these committees and their deliberations as he prepares to take on the role of National President in 2012.

It is fair to say that your Congress representatives are busy contributing on your behalf to the national processes of Engineers Australia. With so much engineering going on in Queensland, we understand that you are all busy as well. However, we do invite you to contact us as below if there are issues you want explored. If any of these issues need to be addressed by National Congress in November 2011, the supporting papers should be developed in the next few months so that we can consult and have them endorsed.

Contact us

- Geoff Haigh 3834 5940
geoffrey.b.haigh@tmr.qld.gov.au
- Sam Fernando 0422 406 619
samfernando87@yahoo.com
- Andrew Chapman 3832 3749
(to leave a message)
- Hari Krishnan 3339 8136
hari.r.krishnan@tmr.qld.gov.au



ENGINEER QUICK CHAT

with Stephen Misson BEng (Hons)
Mechanical/Building Services Engineer
Project Services, Department of Public Works



Current job function?

I design and audit air conditioning systems and mechanical building services for government buildings including prisons, hospitals and police stations.

Why are you an engineer?

I was always fascinated with mechanical things. I was one of those kids who pulled everything to pieces to see how it works. I started work in an automotive and mechanical trade and completed my engineering degree part-time later in life while doing the Mr Mum thing.

What are you working on now?

I am upgrading the central energy plant at Royal Brisbane and Women's Hospital, the largest hospital in the southern hemisphere. My role is designing the expansion to 38 megawatt, the central chilled water and condenser water systems. The project includes auditing and upgrading campus-wide infrastructure to improve reliability and energy efficiency of the central energy system.

Most challenging or interesting project you have ever worked on?

The current project because of the challenges in providing a fully operational facility at all times throughout the project while work is being carried out by different contractors on many different parts of the system at any one

time. The complex staging of the project requires back-ups on top of contingency plans for each item of works, which has been extremely challenging to say the least.

Dream engineering job?

Designing mechanical systems on luxury boats in the Greek Islands.

What makes Project Services such a great place to be an engineer?

Working in multidiscipline teams across a wide variety of building types and being involved in setting the standards and leading the way in sustainable development.

Any advice for young engineers just starting their career?

Get your hands dirty and know how everything works. Be focused on the end result and in particular how it will work. It's easy to specify and install equipment in a building but it's difficult to make it all work properly.

What was the first concert you went to?

Ian Moss and Richard Clapton in Coffs Harbour. We couldn't get tickets at the time but managed to talk bar staff into getting us in through a side entrance. I think they just wanted to get us out of the bar.

TV show you secretly enjoy?

Top Gear. I like British humour and how three ordinary clowns can get so many laughs doing ridiculous things.

Something or someone you miss most from childhood?

Grandma's rice pudding. Although the recipe was handed down no one can understand what a splash of this and a dollop of that really means and it's just not right.

If the whole world was listening, what would you say?

Shoosh, the less said the better.

Weirdest or silliest thing you will admit to ever having done?

Lying about my age when I was 15 to enter a demolition derby and it just goes down hill from there.

What's the most recent present you bought yourself?

A 7'6" mini-mal surfboard, I'm getting to old and fat for a short board.

You know it's not good for you, but you do it anyway?

Bundaberg Rum. God bless the square bear.

Biggest celebrity you've ever met?

Quade Cooper, he pops in regularly to South's rugby club where my boys play. He's usually keen to sign autographs and give the boys pre-game pep talks.



VOLUNTEERING IS *but are there enough opportunities?* IN

Dale Young CPEng, Queensland's 2010 Young Professional Engineer of the Year and founder of a major humanitarian engineering project in Tanzania

Young professionals want to volunteer and make a difference. There are some excellent programs available such as Engineers Without Borders (EWB), Australian Youth Ambassador Development (AYAD) Program, Australian Volunteers International and RedR – however opportunities are limited and highly competitive.

In the development industry there can be a prohibitive culture that generally requires persons to have more than 10 years experience to gain entry. Of course, how does one gain 10 years experience in the first place? This closed door approach can breed preferential treatment and a stale culture.

Large programs are often run by generalists and not specialists, resulting in poor technical decisions that impact on the environmental, economic and social sustainability of interventions. This is seen largely

in the water and sanitation development field where, broadly speaking, technologies and 'cookie cutter' models have not changed over the last 30-40 years.

It is time to open the doors and tap into the exuberance and wealth of technical expertise that young (and old) engineers can offer international development programs. Naturally, a cautionary approach is required. Too often young people without wider cultural experiences who are fresh from university and full of know-how want to change the world in a day.

While we have the amazing fortune of the best education in the world, we can suffer from elitism and sometimes lack the sensitivity to understand that solutions for Australia will not always work in other countries and cultures. Myself, an ex-AYAD volunteer (Vietnam, 2003)

was certainly guilty of rushing to impart my engineering wisdom without first properly engaging the local community and understanding what it was they wanted and how it could be sustainably managed. Engineers have a particularly bad reputation for poor communication and community involvement.

However, I see an opportunity for balance. Combining in-country experienced program managers with technically minded engineers can result in great collaborations with communities and local governments. From my experience, it takes more than six months in a placement to begin to settle into a foreign environment, learn the basics of a new language and culture, appreciate the local demands of a new job and form relationships with local people. You need even longer if you want to see beneficial and sustainable community change.

Given the opportunity and under carefully managed support structures, young engineers will flourish and make rewarding contributions – of which the most valuable will be imparting their knowledge to the local community members they work with.

Presently, it is generally acknowledged that there is too much emphasis on hardware (infrastructure) than software (capacity building of local communities). For example, there are over 50,000 abandoned water pumps in sub-Saharan Africa, representing a lost investment of between US\$300-500 million.

Why is it that communities have not managed to sustain the operation of these assets? The answer is complicated and the solution requires a long-term commitment to investing in local people – something that historically is not popular with foreign aid donors as it is difficult to tangibly document results within a funding (election) cycle.

For the last four years I have been based in rural Tanzania. I moved there to support my partner who was starting a new job in malaria research. Through tragic (cholera outbreak) and frustrating (no response from government or NGOs) circumstances I found myself motivated to start working with the surrounding local rural communities to improve their water and sanitation situation. I have been working with a dedicated team of local Tanzanians and young volunteer engineers developing MSABI - a replicable and expandable program model for the implementation of low

Large programs are often run by generalists and not specialists, resulting in poor technical decisions that impact on the environmental, economic and social sustainability of interventions.

overhead community based, water, sanitation and hygiene (WASH) projects that are owned, managed and operated by small local businesses.

The project promotes low cost, simple, easy to use 'smart' technologies constructed locally from available materials. MSABI facilitates the training of local businesses that include the manufacture of rope pumps and drilling equipment, manual drilling and pump installation services, maintenance and repair services, construction of sanitation facilities, irrigation lease arrangements, and the production of clay filter pots.

While we have the amazing fortune of the best education in the world, we can suffer from elitism and sometimes lack the sensitivity to understand that solutions for Australia will not always work in other countries and cultures.

Complementary businesses include the sale of water by local owners of pumps and increased agriculture production through the use of compost fertiliser and irrigated crops. These interventions promote ownership, self-reliance, independence and lead to sustainable management of local businesses. Local businesses create employment and stimulate village level economies.

Within 20 months of start-up, MSABI has achieved some great milestones:

- Managed the training and



creation of local WASH supply businesses for more than 45 local people.

- Facilitated the installation of 145 new safe water point business (increasing safe water access to over +30,000 disadvantaged rural Tanzanians).
- Constructed 20 compost latrines and two large school wastewater treatment systems.
- Commenced a pilot trial for irrigation cash crop lease arrangements.
- Established local production of clay filter pots (currently in the final process proving stages leading to commercialisation).

This has been achieved by a local team of rural village persons of whom 90% are illiterate, supported by volunteer engineers under the age of 30 (with the exception of myself who is creeping into mid-30s). It is my hope in this Year of Humanitarian Engineering that both our government and large multinational aid and development programs start to look seriously at creating greater opportunities for young professionals to gain experience and transfer their skills and knowledge to those less fortunate.

Nominations for the 2011 Young Professional Engineer of the Year award are now being accepted. For details, go to the Awards page at qld.engineersaustralia.org.au

Where in the world

will this message take you

With the 2011 Year of Humanitarian Engineering in full swing, Engineers Without Borders (EWB) is encouraging engineers and non-engineers alike to get involved with its many programs and activities.

EWB has joined with Engineers Australia and RedR Australia to promote the Year of Humanitarian Engineering: a year to recognise the role of engineering in improving quality of life and disaster recovery. Our goal is to promote the significance of humanitarian engineering to both the engineering profession and the wider community so that humanitarian engineering receives the necessary support in Australia and abroad so that it continues to make a difference.

EWB is a place for sharing knowledge and experience between communities, organisations and individuals. It is also a place for meeting people, having fun and making a difference. EWB offers a wide range of volunteering opportunities that are internationally and locally based so volunteers can opt to dedicate as much or as little time as they can spare.

EWB has 21 member chapters across Australia, including six chapters in Queensland. Members have the opportunity to get involved in the various programs listed below or can simply attend regular chapter meetings and be involved in the numerous local initiatives and events including seminars, workshops, social events and more. For further information, check out ewb.org.au or contact your local chapter.

International projects

International projects are currently being run in India, Cambodia, Timor Leste, Vietnam, Nepal and Indonesia. Project areas include: water, sanitation and hygiene; renewable energy; computer technology; construction, technical education and more. International volunteer intakes take place twice per year.

Local initiatives

Local initiatives include: the High School Outreach Program that encourages students to consider engineering as a profession; and a range of local projects such as the Spokes in the Wheel Program (repair and recycle of bicycles for disadvantaged youth) and the Connectivity (PCs) Program (repair

and recycle of computers for disadvantaged youth).

Curriculum and research

EWB runs a number of educational programs including the hugely successful EWB Challenge which involves 26 universities across Australia and over 8,000 first year engineering students working on an EWB design project. Queensland universities involved in the challenge are the University of Queensland, Queensland University of Technology, the University of Southern Queensland and Central Queensland University.

Aboriginal and Torres Strait Islander Program

Another exciting initiative is the Aboriginal and Torres Strait Islander Program. In 2010, EWB launched a refreshed version of its Reconciliation Action Plan for 2010-2012. EWB is currently operating six specific ATSIP projects in Queensland, NSW and Victoria which include the Kooma Energy Project, the Kooma Water Management Project, the Shipton's Flat Infrastructure Project, the Bentinck Island Project and the Dialogues on Country Leadership Project.

PDP

NEW PARTNERS

The Professional Development Program (PDP) is a planned period of professional formation structured around an identified job and career progression. It can be tailored to match both the professional formation needs of employees and the business requirements of an organisation.

LOGICAMMS is a results and client focused, growth driven and high performing engineering, project delivery and asset management company. Our graduate program starts with a career development plan followed by guided rotations across business divisions, and training opportunities aligned with the PDP.

KEY SOLUTIONS GROUP is an engineering services company based in Mackay providing professional engineering and consultancy services to clients in the Bowen Basin coal fields, and port facilities. Our objectives of the PDP are to provide an avenue for professionals to obtain recognition for their skills, ensure ongoing currency with the industry standards and practices, and obtain CPEng and RPEQ accreditations.

KNIGHT CONSULTING places a high emphasis on developing current skills in all aspects of structural engineering. The main objectives of KCE joining the

PDP are to nurture the potential of our younger engineers and to provide the relevant experience that will help mould the next generation of structural engineers.

ETS GROUP is a multidisciplinary company of Architects, Project Managers, Civil and Structural Engineers and Environmental Engineers. We are committed to promoting professional development by encouraging our employees to reach their potential, both personally and professionally, by providing support to training and through the mentoring program.

URS AUSTRALIA is a professional services company providing engineering and environmental expertise. We are dedicated to delivering technically excellent, cost effective, innovative and sustainable solutions tailored to specific project and client needs. URS Australia aims to develop and recognise the competencies found in the Chartered Status process in our engineering team.

Knowledge Hubs

For more senior engineers who have plenty of experience to share but are unable to dedicate large chunks of time on projects there are Knowledge Hubs. A Knowledge Hub is a network of people with a common passion for a theme central to EWB. Knowledge Hubs allow for information sharing, development and support for our overseas and local project volunteers. Current Knowledge Hubs include Water, Sanitation and Hygiene (WASH); Information and Communication Technology; Energy; Structural Engineering; Curriculum and Research; International Development; the Aboriginal and Torres Strait Islander Program and Marketing and Fundraising.

Leadership and training

EWB's mission is to be a leader in its field. It provides its volunteers and members with numerous training and personal development opportunities to support the various programs on offer.

BE RECOGNISED with us

Monadelphous is a leading national engineering group, providing extensive engineering construction, maintenance and industrial services to the resources, energy and infrastructure sectors. Our commitment to quality and strong customer focus means we have earned an enviable reputation for the successful delivery of some of Australia's largest resources projects. If you're looking to be recognised, this is the place to be.

Due to recent contract wins, we have exciting opportunities available for experienced and motivated professionals within the following disciplines:

- PROJECT MANAGERS
- HEALTH & SAFETY ADVISORS
- PROJECT ENGINEERS
- PLANNERS / SCHEDULERS

For more information and to apply, visit:

www.jobswithus.com.au

 **Monadelphous**
Engineering Success

When the world falls down, engineers will be the first to pick up the pieces and put it back together

John Carr, National Representative
Young Engineers Australia Queensland

When I started civil engineering as a fresh-faced student in Ireland, I learned about the forces that could - and would - test the strength of my future designs. I learned about the loadings of vehicles, the effects of fire and the power of the wind. Any one of these can have potentially devastating consequences for structures poorly-designed and/or constructed. But it wasn't until I moved to Brisbane a few years later that I learned first-hand of another destructive force, that posed by water.

As a civil engineer in AECOM's Brisbane office, I gained early experience designing sewer and storm water pipelines and systems before making the move to civil and building structures. I benefited from two years practical on-site experience both here and in Ireland. This combination of cross-engineering skills and practical, on-site experience has provided new opportunities to develop my

engineering career, most recently in the engineering of disaster recovery.

Ipswich, west of Brisbane, was ravaged by the 2011 floods. Faced with the monumental task of recovery and repair of its assets, Ipswich City Council engaged AECOM to assist with its flood recovery program. Knowing of my background, AECOM's project manager invited me to join the Ipswich City Council Flood Recovery Project Team in March. I've been embedded within Ipswich City Council since then and I assist their team with the recovery and rebuilding effort.

My role is three-fold: I am a contracts manager, a design coordination lead and construction manager for Bridges and Major Drainage Reconstruction. The collaborative relationship between AECOM, Ipswich City Council and contractors ensures reconstruction deadlines are met.

It's an exciting role that tests my technical and practical knowledge of old and newly-engineered structures. It allows me to work with Council, my own AECOM colleagues and the Contractor at the same time, and we have developed productive working relationships to deliver positive outcomes for the local communities.

The best part of the job is in knowing what we do every day makes a real difference to peoples lives. As my dad said to me when I was still that fresh-faced student, "when the world falls down, engineers will be the first to pick up the pieces and put it back together". As we continue to help rebuild the city of Ipswich, I'm proud of what we as engineers can achieve.

Upcoming Young Engineers events

June	Gen2X
July	RedR speaker night
August	Annual gala ball Engineering challenge Regional talks

Update from Women in Engineering Queensland

Jamie Mullins, Chair

I would like to take this opportunity to promote the 15th International Conference for Women Engineers and Scientists (ICWES15), which is jointly hosted by Engineers Australia National Committee for Women in Engineering and the International Network for Women Engineers and Scientists (INWES). The conference will be held in Adelaide 19–22 July 2011.

The conference will provide an opportunity to discuss innovative technology in the 21st century across the engineering, science and technological professions, as well as providing excellent networking opportunities with colleagues

in business, academia and government. It will highlight the important roles and contributions women in STEM make to society in the 21st century as well as demonstrating the value of having women as part of the professional team.

We are still looking for corporate support to help us offer our events and activities during 2011. Sponsorship of our committee offers great exposure for organisations seeking to support the role of women in engineering. We are also keen to secure sponsorship for the 'Spark' Engineering Camp, which is a Youth

Without Borders initiative bringing together a variety of stakeholders to provide up to 50 school children with the opportunity to see what the university experience can provide. Please contact us at wieqld@engineersaustralia.org.au for more information.

Finally, at the upcoming AGM Joann Kirby will step up as the new Chair of the Queensland Women in Engineering Committee as I have recently moved to Perth. I offer a heartfelt thanks to the WIEQ committee members and my employer, Aurecon, for their unwavering support during my time with the committee.

Paid study on offer for careers with Brisbane City Council! Applications for Brisbane City Council's Cadet and Associate Cadet Programs open in August for roles starting early 2012. For young professionals studying a variety of disciplines, including Civil Engineering, the programs offer either permanent full-time work coupled with part-time study, or casual work and full-time study.

EARN while you LEARN

Whether you're at university or TAFE, Council has a program to cover your career aspirations! Your course fees are covered and you have the opportunity to pick up some fabulous skills through multiple Council projects, and build your work experience. Kick start your career with Australia's largest Council. For more information contact Nicole Oates via email nicole.oates@brisbane.qld.gov.au or visit brisbane.qld.gov.au/careers.



ENGINEERING WONDERS OF QUEENSLAND

For the non-engineers in your life who don't understand what it is you actually do...
Order your **FREE COPIES** online at qld.engineersaustralia.org.au

Mains Road and Kessels Road Intersection Upgrade project

The Mains Road and Kessels Road Intersection Upgrade is a \$300m Australian Government funded project to improve safety and efficiency at one of Queensland's busiest intersections.

To accommodate 90 000 vehicles per day and cater for future traffic growth the intersection and road corridor will be upgraded from the Pacific Motorway overpass to the Queensland Sports and Athletics Centre.

This upgrade is part of the overall commitment by the state and federal governments to improve transport along the Brisbane Urban Corridor (BUC).

Key features of the project include:

- a short Kessels Road underpass beneath Mains Road, with two lanes in each direction
- improved turning movements through the intersection to provide greater capacity for road users
- bus priority lanes through the intersection along Mains Road
- safer signalised u-turns at intersections and removal of median breaks in the project area to improve safety and efficiency along the road corridor.
- shared off-road paths for pedestrians and cyclists
- dedicated on-road cycle lanes along Kessels Road.

Main construction is expected to commence in early 2012 and be completed in mid 2014. Prior to the main construction period, the community can expect to see some early pre-construction activities.

The project is adjacent to a high density commercial and residential area. During construction the department is committed to maintaining the efficiency of Mains Road and Kessels Road while ensuring accesses to residential and commercial properties are maintained.

For more information about the project or to leave feedback please log on to www.tmr.qld.gov.au/mainskessels or call the project hotline on **1800 227 804**. To receive free project sms updates please register at www.mkusms.com.au.



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Nation Building Program





Get noticed.

Take your place as one of Queensland's engineering high-achievers and be acknowledged as a leader in your field.

ENGINEERING EXCELLENCE AWARDS

The Engineering Excellence Awards is the engineering profession's most prestigious event in Queensland and we encourage all Queensland engineering organisations to put forward a nomination for the 2011 program.

Projects that were completed from January 2009 to December 2010 can be entered for consideration in the 2011 awards. Entrants will receive valuable industry promotion:

- Peer recognition of your organisation at the prestigious awards event
- Inclusion in awards commemorative magazine, which is distributed to all Queensland Division members across the state
- Category winners will be featured in the Courier Mail supplement about the awards
- Category winners will be invited to submit their projects in the National Engineering Excellence Awards

IMPORTANT DATES

'Intent to enter' registrations close: **call today!**
Entry fee payment deadline: **30 June 2011**
Full submissions due: **1 August 2011**
Engineering Excellence Awards: **7 October 2011**

INDIVIDUAL AWARDS

Nominations are being accepted for our 2011 series of Individual Awards to recognise the achievements of Queensland's most outstanding engineers.

- Professional Engineer of the Year
- Engineering Technologist of the Year
- Engineering Officer of the Year
- Young Professional Engineer of the Year
- Young Engineering Technologist of the Year
- Young Engineering Officer of the Year

INDIVIDUAL AWARDS JUDGING CRITERIA

- Financial member of Engineers Australia
- Engineering competence
- Demonstrated leadership skills
- Positive/notable engineering work outcomes
- Creativity/innovation
- Service to industry, the profession or the community

IMPORTANT DATE

Nominations close: **30 June 2011**

For detailed information about the 2011 Engineering Excellence Awards or Individual Awards, go to qld.engineersaustralia.org.au and follow the links to the Awards page or telephone 3832 3749.