news from
ENGINEERING WA
ENGINEERS AUSTRALIA WA DIVISION NEWSLETTER AUGUST 2010

# 2010 WA Engineering Excellence Awards Entries

**All entries have now been received for the 2010 WA Engineering Excellence Awards, with the winners to be announced at a Presentation Dinner on Saturday 18th September. The list of entries in their respective categories is as follows:**

## Resource Development

**Cape Lambert Upgrade**
Sinclair Knight Merz, Rio Tinto Iron Ore

**Boddington Gold Mine Expansion Project**
Aker Solutions Australia Pty Ltd and Clough Limited, Newmont Mining Corporation

## Infrastructure and Buildings

**Access Alliance - Great Northern Highway (Muchea to Wubin)**
AECOM, Brierty Limited, Main Roads Western Australia

**Berth 10 Reconstruction**
Thiess Georgiou Joint Venture, Fremantle Ports, AECOM

**Bishops See - Stage 1**
Aurecon Australia Pty Ltd

**Condor Tower**
Pritchard Francis Pty Ltd

**Maximising the Capacity of Western Power's Transmission Network**
Western Power, ABB Australia, Norman Disney and Young

**Reid Highway West Swan Road to Great Northern Highway (GNH)**
Macmahon Contractors Pty Ltd, BG&E Pty Ltd, Golder Associates Pty Ltd, Main Roads Western Australia

## Products and Manufacturing

**Alcoa Pinjarra Refinery Blow Off Tank Replacement**
Alcoa of Australia Limited

**Fluidised Catalytic Cracking - BP Cracks Oil with New Technology**
WorleyParsons, BP Refinery (Kwinana) Pty Ltd

**Mobile Mining Unit Plant (MUP)**
RCR Mining

## Environment

**A Natural Biological Removal System for Oxalate**
Alcoa World Alumina

**Access Alliance - Great Northern Highway (Muchea to Wubin)**
AECOM, Brierty Limited, Main Roads Western Australia

**Blaydin Point Phase 2 Onshore Geotechnical Investigation**
Arup, INPEX, J & S Drilling

**Drinking Water Source Protection for Remote Indigenous Communities**
Parsons Brinckerhoff Australia Pty Ltd

**New Perth Bunbury Highway**
Southern Gateway Alliance

**The Advanced Solar Thermal Initiative - Engineers Driving Change**
WorleyParsons

## Engineering for Regional Communities

**The Kimberley ECI Great Northern Highway Project**
AECOM, BGC, Main Roads Western Australia, Laing O'Rourke

**Decentralised Asset Management System: Engineering the backbone of Regional Growth**
Horizon Power

**The Narngulu Wastewater Treatment Plant**
Water Corporation

## Management of Engineering

**Berth 10 Reconstruction**
Thiess Georgiou Joint Venture, Fremantle Ports, AECOM

## Innovation and Development

**A Natural Biological Removal System for Oxalate**
Alcoa World Alumina

**Condor Tower**
Pritchard Francis Pty Ltd

**Goodwyn 'A' Safeguarding Systems Upgrade (GSSU) Project**
Plexal Group Pty Ltd

**The Kimberley ECI Great Northern Highway Project**
AECOM, BGC, Main Roads Western Australia, Laing O'Rourke

**MetroCount® MCS712 Timing Analysis System for Signalised Intersections and Railway Crossings**
Microcom Pty Ltd T/A MetroCount, Main Roads Western Australia

**Oil & Gas Well Production Tubing Flow Control Devices**
Peak Well Services Pty Ltd

**Reid Highway West Swan Road to Great Northern Highway (GNH)**
Macmahon Contractors Pty Ltd, BG&E Pty Ltd, Golder Associates Pty Ltd, Main Roads Western Australia

**The Advanced Solar Thermal Initiative - Engineers Driving Change**
WorleyParsons

## International Projects and Exports

**Buzwagi Project**
Lycopodium Minerals Pty Ltd

## Small Company Projects

**Karrakatta Underpass**
Advanteering Civil Engineers, Capital House Australasia

**MetroCount® MCS712 Timing Analysis System for Signalised Intersections and Railway Crossings**
Microcom Pty Ltd T/A MetroCount, Main Roads Western Australia

*For more information about this year's Engineering Excellence Awards please visit our web site engineersaustralia.org.au/wa*



ENGINEERS AUSTRALIA
Western Australia Division

# In this issue



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# New Fellows recognised at annual dinner

*Above: Recently appointed Fellows with Professor Tony Lucey FIEAust, WA Division President*

**The Annual Fellows Dinner was held on Thursday 15 July at the University Club of Western Australia and as part of the proceedings recently appointed Fellows were presented with their certificates. They included:**

- Robert Bingham FIEAust CPEng
- Bruce Bowman FIEAust CPEng
- Charles Chesterman FIEAust CPEng
- Paul Hardisty FIEAust
- Steven Hart FIEAust CPEng
- Graham Hawkins FIEAust CPEng
- Fred Howie FIEAust CPEng
- Graham Jackson FIEAust CPEng
- Steve Lieblich FIEAust CPEng
- Bassam Matty FIEAust
- Ian McRobbie FIEAust CPEng
- Elio Novello FIEAust CPEng
- John Taylor FIEAust CPEng
- Brendan Trappe FIEAust CPEng
- David Young FIEAust

## Award of Merit presentation

*Above: Tony Moulds (left) and Professor Tony Lucey*

**At the recent Fellows Dinner Tony Moulds (pictured above) was presented with the Award of Merit by Engineering Heritage Australia in recognition of significant contribution to the conservation of engineering heritage.**

# National President visits WA

**Engineers Australia National President Doug Hargreaves visited WA in late June and maintained a busy schedule of site visits and meetings during his five-day stay.**

Site visits around Perth included the Royal Perth Hospital, Fiona Stanley Hospital, Willeton SHS, the Australian Marine Complex and Curtin University.

Doug also visited Rio Tinto and BHP Billiton sites in the North West and made presentations to Engineers Australia groups in Dampier and Port Hedland.

He also met with His Excellency Dr Ken Michael AC as well as Engineers Australia Partners.

*Above: (L-R) Doug Hargreaves, National President; Chris Fitzhardinge, Past President, Engineers Australia WA Division; Geoff Zimmer, Director Project Delivery, Fiona Stanley Hopsital; Janice Lake, Director, Engineers Australia WA Division; and Hudson Lun, Project Manager, Brookfield Mutiplex, inspect the Fiona Stanley site*

# From the President

## Engineering Sustainability

**Professor Tony Lucey FIEAust**

**Engineers Australia's new strategic plan envisages a future in which 'Our communities will look to our members to create a sustainable future'. Engineers cannot fail to be apprised of the sustainability imperative and already apply many of its principles in their work. However, we can do more to demonstrate how this occurs and how sustainability is becoming an integral part of engineering practice. In particular we can develop and promulgate a more complete understanding its complexity and the multi-faceted contributions that Engineering can make to a sustainable present and future.**

The word 'sustainable' and its derivatives is now in such common use that it is in danger of becoming yet another 'buzz-word', to be dropped into conversations, discussions and advertising in order to gain advantage or falsely claim the moral high-ground. However, its use as shorthand has made it a ubiquitous concept – an advantage in terms of engaging and converting the public. On the other hand its over-use, without constant reflection, can over-simplify and diminish the importance and depth of what is an entire approach to life at all of individual, community and global levels. Sustainability is complex. It interweaves facets of idealism with the pragmatism of the present and the projected realism of the future. In the sustainability 'movement', Engineering has a leading part to play, a part that is complex and that will always have built-in tensions through which we must navigate.

To some, the Sustainability agenda may seem to be a contemporary distraction based on mushy, emotional or fear-mongering grounds and promoted by left-leaning 'do-gooders' looking for a topical cause. This is not the case and it is incumbent upon the rational members of our communities to ensure that sustainability practices are based upon the rigorous thinking that characterises Engineering. There is no doubt that sustainability needs to be embedded in all that Society does. We live in a world of finite resources and capacity that has a growing population that has inexorably increasing expectations of their quality of life.

Engineering has been an early, but largely unrecognised, leader in sustainability principles. The concept of concurrent engineering was established decades ago. This approach to design was, and is, visionary in that it takes into account the entire life of a product all the way through to its disposal and recycling of its materials. The breakthrough aspect of concurrent engineering was its awareness and consideration of the temporal span of products and processes. This type of thinking, that allows future situations to inform present plans and actions, is central to Engineering Sustainability.

The path of Engineering Sustainability follows the same temporal principles but is now broader and more complex because it now needs to incorporate considerations, or design factors, that go beyond the limited set applied to just products and processes. Four main elements, that are interconnected, need to be addressed and balanced: Engineering Sustainability is to be judged by its

- contribution to the well-being of people in the community and/or Society,
- support of the sustainability of the natural environment,
- creation of commercial and economic sustainability, and
- promotion of technological advantage and innovative advancement.

While the first of these speaks explicitly to the needs of people and communities, all four are concerned with securing a future that does not stifle the human spirit but instead exploits avenues for a more diverse awareness and sense of fulfilment in the way that lives are led. Civilisation is, and always was, defined by development. This is not about to stop. The very nature of humanity is such that it always needs to progress and this must be accounted for in the design and planning of a sustainable future.

In an age when development may have erroneously become synonymous with growth using unchanged models of Society's functions and its forward march, a fundamental reappraisal of directions and aspirations may be necessary. New paradigms offer new opportunities in which the ingenuity and innovation of Engineering will be at the fore, not only in delivering new, sustainable, technologies but equally in educating and leading the community.

Clearly, engineering activities are already making significant contributions to each of, and across, the foregoing four elements to varying degrees. In many cases this occurs 'automatically'. Where we are perhaps lacking is in lifting our own awareness of, and thereby focus upon, Engineering's multi-faceted contribution to the sustainability of our communities. If we do so, not only will the public understand and support Engineering better, but our members can more effectively serve as ambassadors for our profession. The importance of this role lies in the need for Engineering to participate actively in the development of a rational culture of Sustainability that permeates Society and underpins a natural way of thinking for present and future engineers.

# Climate change? Cervantes or Carnarvon

## Letter from London

Jerome Bowen MIEAust, 2009 WA Young Professional Engineer of the Year

*Inset: Jerome Bowen | Main: Bournemouth, UK, in 30 degree heat with a sea fog in the distance. Climate change?*

**Summer has come to London, and it's warm enough to visit the beach along with what seems like every other person in the UK. The 30 degree heat is unusual, and to be taken advantage of in droves! The theme of climate extends to my work also. We are currently executing a job for the Uzbekistan government to determine the optimum power supply for the country over the next 40 years. Coal? Gas? Renewables? It isn't just about power and funding, but also the effect of climate change. It's only a couple of degrees temperature rise here or there, with a couple of percentage points changes in power station efficiency and demand.**

So, how can we take climate change seriously when a couple of degrees temperature rise means almost nothing to our engineered outcomes? What about in our everyday lives? A 40 degree summer day or a 42 degree summer day... who cares?

The UN issued a report in May this year that reads "the geographical distribution of species and vegetation types is projected to shift radically due to climate change, with ranges moving from hundreds to thousands of kilometres towards the poles by the end of the 21st century."

So, roughly, given a 1 degree rise in temperature by 2100 Perth would be a bit like Cervantes; a 3 degree rise, it could look more like Carnarvon. Wherever you have your house and garden, look on a maps at places 100s to 1000s of kilometres towards the equator. The climate at one of these places *will* be the climate at your house and garden when your great-grandchildren inherit them.

It's a sobering thought, especially if we extend our thinking to our farmland, ocean-production systems, rivers and other water supplies. What implications does this have for our food-security and water-security? On a bigger scale, what implications will this have in more populous, food-stressed and water-stressed places than Australia? What implications does this have for migration and geo-political stability?

It's not alarming just yet. Our global climate system has inertia - climate change up until 2030 is small, and is already set by our past action. But we do need to act. It's the post-2030 predictions that are more interesting and unsure - at least Cervantes, but perhaps Carnarvon? This uncertainty is the reason for the concerned faces of policy-makers.

The beaches and bush of Carnarvon are pretty, but for the sake of Perth's future, and that of our neighbours, I'd prefer Cervantes thanks!

**By Jerome Bowen MIEAust**

# National President gets behind purple boot campaign

*Ros Worthington and Engineers Australia National President Doug Hargreaves*

**On Tuesday 22 June the Women in Engineering and Young Engineers WA hosted the Purple Boot Cocktail Party at the New Esplanade Hotel. The fourth anniversary of the Purple Boot Campaign was celebrated in style with National President Prof Doug Hargreaves being presented with his own pair of boots by Ros Worthington, founder of the WA Breast Cancer Foundation.**

It was a pleasant evening of socialising and networking overlooking the Swan River. Ros spoke with her own special brand of sincerity and energy about her reasons for being so involved with her five charities. Her personal values and love of people were the main reasons she gave for her passion to work for others.

Doug followed up with a discussion of Values Driven Leadership – leadership is about valuing people and developing a sense of Belonging, a sense of Identity and a sense of Purpose (BIP) in the people who work in any organisational unit. He noted that Ros is a perfect example of his message.

The Purple Boot Booth was at the party – many of the guests took advantage of the great opportunity to get fitted for their very own pair of boots! Purple boots by Steel Blue can still be purchased via www.purpleboots.com.au - go online and buy a pair today or just check out the site for information on the BCF. Worthy cause, great boots.

Ros reinforced the message on how important it is for both men and women to check for lumps (some men are diagnosed with breast cancer too) – and of course being Ros she placed responsibility on men to regularly ensure their partner's breasts are lump-free!

**By Helen Pedersen FIEAust**

# Leading the search for energy answers


*Encouraging new leaders ... Dr Beverley Ronalds at the CSIRO's energy labs at the Australian Resources Research Centre in Bentley.*

**You could almost say that Bev Ronalds became an engineer because it was in her genes.**

Her father inspired her to be an engineer when she realised the variety of work he undertook and how challenging and stimulating it was.

"He was everything from being one of the first chief engineers in the Snowy Mountains Scheme, to being chief engineer at the Melbourne and Metropolitan Board of Works, to being in charge of building the first gas pipeline from Bass Strait to Melbourne," she says.

"He even designed bridges and designed and built weirs ... that was the beauty of life as an engineer back in those days.

"I basically grew up wanting to design dams and bridges because Dad designed and built dams and bridges."

Dr Ronalds is one of Australia's most respected engineers, having been included in Engineers Australia's list of 100 most influential engineers three times since 2004.

She is the Group Executive of Energy with CSIRO, based at the Australian Resources Research Centre (ARRC) in Bentley, where she manages CSIRO's energy R&D projects and an annual research budget of nearly $200 million.

A civil engineer by training, Ronalds says the most important step in progressing her career was taking up a post-graduate scholarship overseas:

"That's because it opened up different career paths in different locations and increased my self-confidence that I could be an engineer," she says.

"I've learned from every leader I've worked with, not just one or two people, because leadership is so multi-faceted."

When Ronalds was studying engineering at Melbourne University, she says leadership in engineering was virtually an all-male domain. Since then, she says things have changed to recognise the value of "female" traits and behaviours.

"By that, I mean things like empathy, nurturing, getting wider input into decisions, and emotional intelligence (EI). I wasn't aware of any of that being discussed and valued in the workplace 30 years ago," she says.

"There is diversity now and it's valued, these things are discussed more broadly now in engineering, and the literature has placed much more emphasis on those aspects of leadership over the years, which I think is fantastic."

Dr Ronalds has extensive experience in the oil and gas sector and was formerly the Woodside Chair with The University of Western Australia's School of Oil and Gas Engineering. She's worked in the design, installation and operations support for offshore platforms in the North West Shelf, the North Sea and the Gulf of Mexico.

But her work has a new focus now.

"My big priority now is accelerating large-scale cuts in greenhouse gases by supporting demonstration of new low-emissions energy technologies," she says.

"The ones we're particularly focused on at the moment are solar energy, geothermal energy and carbon capture and storage."

She says engineers have a special role in the community.

"I think we can not only help understand a complex problem but we can help solve it," she explains. "There are some really complex problems in the world and the great thing that engineers can do, and naturally do, is help solve them working with stakeholders and the community."

She believes it is possible to help people realise their leadership potential.

"I think one way is encouraging people to take early opportunities to lead an initiative while really supporting them and providing a safety net," she says. "So letting them really stretch themselves but not being out there on their own doing it."

And her advice to students contemplating a career in engineering?

"Do it! The world needs engineers now more than ever," she says.

**By Tony Malkovic**

**As part of the Year of Engineering Leadership, the Centre for Engineering Leadership and Management (CELM) is profiling prominent engineers for their thoughts on the profession and leadership.**

2010 YEAR OF ENGINEERING LEADERSHIP

# Special Notices

## The Senior Engineers Leadership Program

### Engineering Education Australia

**As we continue to strive for engineering excellence in Australia, how do you become the leader that you and your engineering organisation needs?**

The Senior Engineers Leadership Program is a 6-day full board residential program specifically for engineers with 15 or more years of experience who are seeking to improve their executive potential, expand their circle of influence and further contribute to engineering excellence in Australia.

The Senior Engineers Leadership Program has been developed in consultation with senior engineers that represent all engineering sectors in Australia. It includes CEO briefings, detailed syndicate work, workplace application and real dialogue on key topics in engineering business and leadership. This program also introduces the Engineers Australia Stage 3 Competencies (Engineering Executive) and presents a unique opportunity to exchange ideas with top engineering professionals in your field.

For more information please visit: www.eeaust.com.au/Engineering-Leadership-Program

## Rotary International Group Study Exchange

### Scholarships for Business and Professional Persons 2011

**The two West Australian Rotary Districts 9455 (north of Perth ) and 9655 (south of Perth) are approved by Rotary International to send away two Group Study Exchange (GSE) teams s of business and professional persons to Germany and Portugal respectively in 2011.**

This can be such a rewarding and yet challenging experience with valuable professional knowledge gained and experiences that provide life time friends and exciting memories. As a Team your members, if selected, will be offered personal development opportunities, language lessons to learn a new language to communicate in a foreign country , learn about their profession overseas and experience the culture and history of the host Rotary District.

Further information is available from http://rotarygse9455.webs.com/

# Retired Engineers visit RAAF Pearce Base

**Work on a major upgrade of facilities at the RAAF Pearce Base is nearing completion and members of the Retired Engineers Group and partners recently had the opportunity to see the progress on the project.**

Our escort at the Base was Squadron Leader Paul Falconer–West, MIEAust CPEng. Senior staff at the Base and pilots who had recently completed their training provided expert advice on the training and maintenance facilities at the Base for the Pilatus PC 9 turbo prop trainer aircraft and the British Aerospace Hawk lead-in-jet fighter. It was a most interesting visit and our thanks to Paul and the staff at Pearce for their efforts. The visit was followed by lunch at Toodyay and a brief stopover at a winery on the way back to Perth.

Membership of the Retired Engineers Group is open to all retired and semi retired members of Engineers Australia and kindred institutions. Members of the Group and partners meet on a regular basis for informative visits and talks, generally followed by lunch. Interested engineers who are not on the Group's mailing list should contact Sharleen Mantle at the WA Division Office. **By Mike Corboy, FIEAust CPEng**

# Upcoming Event: International Engineers Networking Function

**Are you an overseas trained engineer who has migrated to Australia? Would you like to have the opportunity to talk to representatives of our Division Advisory Board and senior representatives from the engineering industry?**

You are invited to attend an informal networking evening on Tuesday 31st August, 5:30 PM at Engineers Australia, 712 Murray Street West Perth.

The event is hosted by the International Engineers Special Interest Group of Engineers Australia. For more information please see the events section of our web site www.engineersaustralia.org.au/wa

The International Engineers Group has been formed to support engineers making the transition to the Australian engineering workplace.

Issues that the Group will try to address include:

- Integrating with Australian culture
- Difficulty in finding (first) job
- Communication
- Assimilation in the workplace
- Cross-cultural sensitivity

Engineers Australia also recognises that overseas qualified and experienced engineers have a reservoir of international experiences and cultural insights that, if shared, can enrich the cultural intelligence of domestic engineers.

# Dates for your Diary



| Date/Time | Host | Event & Venue | For more information |
|---|---|---|---|
| Wed 18 Aug | Engineers Australia | Chartered Status Workshop<br>An Engineers Australia National Assessor delivers a free public workshop on the requirements and process involved in becoming a Chartered Member in your occupational category<br>Lecture Room, Engineers Australia WA Division | Register Online:<br>www.engineersaustralia.org.au/wa |
| Tue 24 Aug<br>6:00 PM | Australian Geomechanics Society | Rock mass characterization; a vehicle to translate Geology into the design of Engineering Structures<br>Speaker: Dr Paul Marinos (2010 Jahns Distinguished Lecturer)<br>Austin Lecture Hall, The University of Western Australia 35 Stirling Highway, Crawley, WA | Visit:<br>www.engineersaustralia.org.au/wa |
| Tue 31 Aug<br>5:30 PM | International Engineers Special Interest Group | International Engineers Networking Function<br>Engineers Australia, 712 Murray St West Perth | Register Online:<br>www.engineersaustralia.org.au/wa |
| Mon 6 Sep | Society of Building Services Engineers | Site Visit to Desair - Ductwork Manufacturer<br>Speaker: Peter Whalley | Visit:<br>www.engineersaustralia.org.au/wa |
| Fri 10 Sep<br>06:00 | Engineers Australia WA Division | 2010 WA Engineering Excellence Awards Cocktail Party<br>The Woodside Building | Visit:<br>www.engineersaustralia.org.au/wa |
| Thu 16 Sep<br>5:30 PM | Engineers Australia | Chartered Status Workshop<br>An Engineers Australia National Assessor delivers a free public workshop on the requirements and process involved in becoming a Chartered Member in your occupational category.<br>Auditorium, Engineers Australia WA Division | Register Online:<br>www.engineersaustralia.org.au/wa |
| Sat 18 Sep | Engineers Australia WA Division | 2010 WA Engineering Excellence Awards Dinner<br>Perth Convention Exhibition Centre | Visit:<br>www.engineersaustralia.org.au/wa |
| Mon 20 Sep - Fri 24 Sep | Society for Underwater Technology | Subsea Awareness Course<br>Parmelia Hilton Hotel, Perth | Please contact Joyce Bremner on j.bremner@sut.org Tel +61 8 9446 9903 |
| Thu 21 Oct<br>5:30 PM | Engineers Australia | Chartered Status Workshop<br>An Engineers Australia National Assessor delivers a free public workshop on the requirements and process involved in becoming a Chartered Member in your occupational category.<br>Auditorium, Engineers Australia WA Division | Register Online:<br>www.engineersaustralia.org.au/wa |
| Thu 28 Oct<br>9:00 AM | Society for Underwater Technology | Autonomous Underwater Technology - Subsea Solutions for a new Decade | Please contact Joyce Bremner on j.bremner@sut.org Tel +61 8 9446 9903 |
| 12 - 16 Dec | Engineers Australia's National Committee on Applied Mechanic & the Australian Institute for Non-Destructive Testing (AINDT) | The 6th Australasian Congress on Applied Mechanics<br>Perth Convention and Exhibition Centre | Visit the congress website at:<br>www.acam6.org or<br>email acam6@acam6.org |
| Wed 15 Dec<br>5:30 PM | Engineers Australia | Chartered Status Workshop<br>An Engineers Australia National Assessor delivers a free public workshop on the requirements and process involved in becoming a Chartered Member in your occupational category.<br>Lecture Room, Engineers Australia WA Division | Register Online:<br>www.engineersaustralia.org.au/wa |

*Some event dates and times are subject to change. Please check our website www.engineersaustralia.org.au/wa/events for up-to-date information*