



ENGINEERS
AUSTRALIA
Sydney Division



ENGINEERING EXCELLENCE AWARDS

SYDNEY 2013

WINNERS BOOK



INTRODUCTION

The Annual Engineering Excellence Awards Sydney celebrate the accomplishments of some of the finest engineering companies and individuals in the world. The Awards showcase leaders in the profession along with world class engineering and innovation.

Each year the Excellence Awards judging panel consider the finalists of each category for an Engineering Excellence Award. As winners in their own right, these finalists represent the very best of engineering with the judging panel seeking to identify those unique finalists that demonstrate outstanding excellence, innovation and best practice.

The 2013 Australian Engineering Excellence Awards feature an exciting new array of state of the art technologies and innovations, cementing the position of the profession at the forefront of our society.

The Excellence Awards Winners for 2013 and the judging comments can be found in this book.

BRADFIELD AWARD

COMPUTER AIDED RIVER MANAGEMENT (CARM) PROJECT

State Water Corporation

Joint Entrant: Water for Rivers

State Water and funding partner, Water for Rivers, embarked on an ambitious and innovative program to improve the efficiency of the Murrumbidgee River delivery system.

The aim of the project was to make the Murrumbidgee one of the World's most efficient and best managed working river systems, while achieving real water savings and improved service to all water users and the environment.

The \$65 million program took a whole-of-valley approach to improving river efficiency and encompassed the following elements:

- Infrastructure upgrades (installation of state of the art, telemetry enabled water meters, regulators, fish ways and upgrades of weirs).
- Improved management of en route storages.
- Alternative delivery routes to some reaches of the river.
- Improvement and upgrades to regulating structures.
- Improved SCADA and telemetry across the whole valley.
- Installation of around 600 new metering systems allowing accurate and real time reporting.
- The development and implementation of a hydrodynamic model integrated to State Water's business systems to manage efficient delivery of water within the river valley.

The project will recover water savings of which 33 GL will be returned to the Snowy / Murray systems and the remainder will remain in the Murrumbidgee valley to improve reliability.



The J.J.C. Bradfield Award is presented to the overall winner selected from the winners of all categories. It recognises an accomplishment of exceptional engineering merit.

In deciding the Bradfield winner the following items are considered:

- The delivery of a major contribution to the community.
- The achievement of customer needs.
- Innovation.
- The engineering challenge.
- Sustainability.
- Commercial viability.
- Quality of work.
- Credit to the Engineering profession.

PRESIDENT'S AWARD

TRACKING ELITE ATHLETES WITH CLEARSKY TECHNOLOGY

CSIRO

Joint Entrant: Catapult Sports

CSIRO and Catapult Sports have partnered in the invention of a revolutionary new system for tracking elite athletes.

The ClearSky system solves the current challenge of tracking athletes indoors or in GPS poor environments, such as large stadiums, fulfilling a growing need by coaches, training staff and broadcast media around the world to accurately track athletes.

Features of the world-first system include:

- High accuracy - provides an order of magnitude improvement in location accuracy over existing GPS solutions (down to 0.2m), enabling real-time tactical analysis.
- Versatile in any environment - operates within indoor and covered venues, unlike GPS, enabling use by a wider range of sports. Nodes are lightweight and portable for easy installation in training or competition environments.
- Novel signal processing - enabling high resistance to signal degradation caused by reflections in complex indoor radio environments.
- Provides world-leading athlete analytics - offers full performance monitoring of elite athletes and has been integrated with inertial, heart rate and ball tracking sensors.



The President's Award is selected and presented at the discretion of the Sydney Division President.

The President can nominate any project or program he or she considers outstanding for both its engineering and innovative qualities.

The President's Award was selected by John Nichols.

CONTROL SYSTEMS & COMMUNICATIONS

EXCELLENCE AWARD WINNER

AUTONOMOUS ROBOTIC SYSTEMS FOR STEEL BRIDGE MAINTENANCE

University of Technology, Sydney
Joint Entrant: Roads and Maritime Service, NSW

A world first autonomous grit-blasting robotic system for steel bridge maintenance has been developed through collaboration between the University of Technology, Sydney (UTS) and the Roads and Maritime Services (RMS) of NSW.

The novel high-level sensing and control system developed enables the robotic system to intelligently sense and explore an unknown 3D environment, build a 3D map, plan collision-free motion that maximises grit-blasting coverage, and operate in a very dusty environment. It significantly improves workers' Occupational Health & Safety by reducing their exposure to large forces, fine dust/paint particles and the dangerous blast stream, while providing operational efficiencies.

Two such robotic systems are currently being used on the maintenance sites of the iconic Sydney Harbour Bridge. This project has led to breakthrough control solutions to autonomous robots, resulting in three awards and one patent application.

A start-up company, SABRE Autonomous Solutions Pty Ltd, has also been formed to commercialise this autonomous robotic system.



SPONSORED BY



JUDGES COMMENTS

This project received excellence for:

- The development of a world first robotic system for grit-blasting surfaces in steel bridge structures through collaboration between the University of Technology, Sydney (UTS) and the Roads and Maritime Services (RMS) of NSW.
- This system can autonomously sense and explore an unknown 3D environment, build a 3D map, plan collision-free motions that maximise grit-blasting coverage, and operate in a very dusty environment.
- It significantly improves workers' OH&S by reducing their exposure to large forces, fine dust/paint particles and the dangerous blast stream, while providing operational efficiencies.
- Two robotic systems are currently being used on the maintenance sites of the iconic Sydney Harbour Bridge. This is a breakthrough solution that has resulted in three awards and one patent application. A start-up company, SABRE Autonomous Solutions Pty Ltd, has also been formed to commercialise this autonomous robotic system.

TRACKING ELITE ATHLETES WITH CLEARSKY TECHNOLOGY

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ENGINEERS
AUSTRALIA
Sydney Division

JUDGES COMMENTS

This project received excellence for:

- The partnership between CSIRO and Catapult Sports has led to the invention of a revolutionary new system called ClearSky for tracking athletes.
- Using a highly innovative and patented wireless tracking technology developed by CSIRO called WASP (Wireless Ad-hoc System for Positioning), the system greatly improves location tracking accuracy compared to existing GPS solutions, and also provides accurate tracking in covered stadiums and indoor venues where GPS systems fail.
- It is the product of a well-controlled development which has delivered excellent results in product quality, time, cost, performance and time-to-market.
- The project has produced valuable intellectual property with licensing success and commercialisation potential on a global scale.
- The Catapult application is the first of a wide field of potential applications, many of which are life-saving, for example in the case of emergency first-responders and workers in hazardous enclosed spaces, such as underground miners.

HIGHLY COMMENDED

State Water Corporation
Joint Entrant: Water for Rivers
Computer Aided River Management (CARM) Project

PRODUCTS, MANUFACTURING FACILITIES & PROCESSES

EXCELLENCE AWARD WINNER

TEKTUM SPACE 2.0 – BUCASIA BEACH HOUSE

TEKTUM Ltd

Joint Entrants: Arup and Make Good Pty Ltd

TEKTUM advances a disruptive technology, the SPACE2.0 building platform, to transform the pre-industrial construction industry into a high-tech one, ensuring buildings can be produced and operated at a higher quality for a lower cost.

The key innovation with SPACE2.0 is the design mechanism which allows a full sized house to be transported as standard ISO transport platforms, then merely unfolded on site, with all services and finishes in place.

The modularity of SPACE2.0 allows TEKTUM to constantly produce the same elements - the final layout of the house is a question of shipping the right mix of elements. This will generate economies of scale through strategic procurement, manufacturing efficiency and controlled quality. Mass manufacturing will allow TEKTUM to continuously improve the product and process, thus initiating a rapid innovation cycle.



SPONSORED BY



JUDGES COMMENTS

This project received excellence for:

- This project sets new benchmarks for factory-made houses through its innovative design which enables folding to container sizes for standard transport and easy un-folding on-site for occupancy within days.
- The attention to detail in the product, including manufactured tolerances, quality control, first-class materials and finishes, all deliver high value to customers.
- The result is a modern yet variable and permanent appearance which includes a range of floor areas with flexible allocation; excellent operability, reliability and durability; high thermal, ventilation and acoustic performance; cyclone rating; suitability for wide-ranging sites and, of course, re-foldability for relocation to another site.
- The innovative design also suits buildings for other functions like offices, libraries, education/training facilities and retail.
- It has exiled the days of “pre-fabs” with their connotations of poor quality and drab monotony.
- The design’s application includes remote communities as well as offering fast responses for emergency situations.

ENVIRONMENT & HERITAGE

EXCELLENCE AWARD WINNER

UWS EUCFACE PROJECT

Steensen Varming Pty Ltd

The University of Western Sydney (UWS) has established the Hawkesbury Institute for the Environment with the aim of assessing the impact of climate change on Australia's land and water resources and assist the nation to adapt to a carbon-constrained economy.

The recently completed eucalyptus woodland free-air CO₂ enrichment (EucFACE) facility is the basis for one of the most significant national and international research projects for the institute to date. It is the only one of its kind in the Southern Hemisphere and the only such facility in the world to be located in a native forest.

Steensen Varming met the challenge from an engineering perspective of providing variable levels of CO₂ to the research area whilst minimising any additional physical impact on the project site. The elegant solution integrates science, structure and services - a world leading engineering outcome for a research facility of this nature.



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JUDGES COMMENTS

This project received excellence for:

- The iconic EucFACE facility has not only demonstrated a world leading engineering outcome but also a commitment to delivering sustainability outcomes for a research facility of this nature.
- The protection of local flora and fauna during all phases of the project was impeccable.
- The project implemented an innovative approach to design and installation.
- Minimal impact and great respect for Aboriginal sites of archaeological and historical significance were applied.
- This facility raises the profile of climate change both nationally and internationally whilst helping scientists to understand the threats and risk to climate change.

WELFARE, HEALTH & SAFETY

EXCELLENCE AWARD WINNER

UUBED NEW HOSPITAL BED

UUBEE Pty Ltd

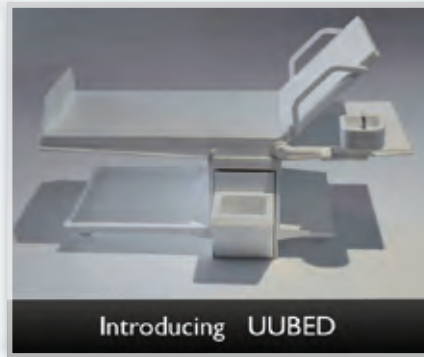
Joint Entrant: Lehr Paul & Partners

UUBED provides a new innovative hospital bed with an integrated toilet and rotational basin. The mattress rotates 90 degrees to reveal a shower tray with plug in connectable drainage.

The UUBED acknowledges the high costs and risks of injury in moving patients to bathrooms and considers workplace health and safety essential for staff and patients. UUBED minimises the demand for single bed rooms in hospitals with en suite facilities now being reassessed on cost and social wellness benefits.

The combined risk and cost for the current trend to provide 100% single bedrooms is unsustainable in the long term given the greater demands for patient care coupled with greater stress on healthcare workers. This new innovative bed highlights a more affordable and viable alternative to rebalance bed configurations.

The UUBED has been designed with both sound engineering and salutogenic design principles that demonstrate creative innovation to significantly improve the quality of future health facilities.



SPONSORED BY



JUDGES COMMENTS

This project received excellence for:

- The way that the UUBED hospital bed demonstrates a vision for change in hospital infrastructure, to incorporate toileting and showering into a hospital bed, replacing the need for traditional en suite bathrooms.
- This development includes a retracting toilet and hand basin that shows a radical rethink to traditional plumbing through the use of innovative hydraulic and sanitary engineering.
- The development of this project has progressed to a functioning prototype, approved for connection to the domestic water services. The next stage will be progression to a functional prototype of the complete bed. This would be a highly innovative departure from traditional practice with the potential savings to set a new best practice worldwide for hospital infrastructure.
- The benefits include significant saving of nurses' time with the potential to save many millions of dollars in hospital care costs in Australia alone.

INNOVATIONS & INVENTIONS

EXCELLENCE AWARD WINNER

WIDEBAND MULTIBEAM PHASED ARRAY FEED RECEIVER FOR THE AUSTRALIAN SQUARE KILOMETRE ARRAY PATHFINDER

CSIRO

CSIRO has developed a revolutionary technique for receiving radio astronomy signals. It transforms sky survey speeds by more than a factor of 20 and is expected to have a major impact enabling breakthroughs in the way we understand the universe.

The key new technology is a patented, wideband, low-noise, room temperature Phased Array Feed (PAF) analogue receiver and an associated high rate digital beam former. The overall receiver system sits inside a standard radio astronomy dish antenna but allows for multiple electronically configurable beams that increase the field of view by a factor of 30 over more than an octave of frequency bandwidth.

The system has been implemented on the Australian Square Kilometre Array (SKA) Pathfinder telescope, and its demonstrated success in the field has been one of the key underpinning aspects of the Australian bid to host the full SKA – the biggest multinational project in radio astronomy worldwide.



SPONSORED BY



JUDGES COMMENTS

This project received excellence for:

- The technology, as a new technique for receiving radio astronomy signals, transforms sky survey speeds by more than a factor of 20 and is expected to have a major impact enabling breakthroughs in the way we understand the universe.
- The receiver sits inside a standard radio astronomy dish antenna but receives multiple electronically configurable beams that increase the field of view by a factor of 30 over more than an octave of frequency bandwidth.
- The quality of the data received by the multibeam receiver is nearly as good as that received by a single beam pixel receiver.
- The system has been implemented on the Australian Square Kilometre Array (SKA) Pathfinder telescope, and its demonstrated success has been one of the key underpinning aspects of the Australian bid to host the full SKA – the biggest multinational project in radio astronomy worldwide.

HIGHLY COMMENDED

CathRx
A Re-Usable Cardiac Catheter

RESEARCH & DEVELOPMENT

EXCELLENCE AWARD WINNER

AUTONOMOUS ROBOTIC SYSTEMS FOR STEEL BRIDGE MAINTENANCE

University of Technology, Sydney
Joint Entrant: Roads and Maritime Service,
NSW

A world first autonomous grit-blasting robotic system for abrasive blasting and the cleaning industry (e.g. for steel bridge maintenance) has been developed through a collaboration between the University of Technology, Sydney (UTS) and the Roads and Maritime Services (RMS) of NSW.

Once placed within a steel structure, a user can simply activate the robot which then automatically senses and explores an unknown 3D environment, builds a 3D map, plans collision-free motion, and performs blasting operation. It significantly improves workers' OH&S by reducing their exposure to large forces, fine dust/paint particles and the dangerous blast stream, while providing operational efficiencies.

Two such robotic systems are currently being used on the maintenance sites of the iconic Sydney Harbour Bridge. This project has led to breakthrough solutions to fundamental research and engineering problems, resulting in three awards and one patent application. A start-up company has also been formed to commercialise this autonomous robotic system.



SPONSORED BY



JUDGES COMMENTS

This project received excellence for:

- The development of a world-first robotic system for grit-blasting complex surfaces in steel bridge, tower, gantry, and other civil and industrial structures.
- It enables autonomous sensing and exploration of an unknown 3D environment, construction of a 3D map, planning of collision-free motions that maximise grit-blasting coverage, and operation in a very dusty environment.
- The system provides a dramatic increase in operational efficiency for grit-blasting processes on large civil structures such as bridges, towers, and gantries, while significantly improving workers' OH&S by reducing their exposure to large forces, fine dust/paint particles, and the extremely dangerous blast stream.
- The fundamental research involved in this project has led to breakthrough solutions to 3D spatial recognition problems, and has also resulted in patent applications and the formation of a start-up company, SABRE Autonomous Solutions Pty Ltd, to internationally commercialise this autonomous robotic system technology.

HIGHLY COMMENDED

CSIRO

Wideband Multibeam Phased Array Feed Receiver
for the Australian Square Kilometre Array Pathfinder

PROJECT MANAGEMENT

EXCELLENCE AWARD WINNER

BEACONSFIELD SUBSTATION REBUILD

TransGrid

Joint Entrants: UGL Infrastructure and ABB Australia

The new Beaconsfield Substation (the Substation) is a critical asset to secure the future power supply for Sydney's CBD, and was required to replace a life-expired GIS substation. The Substation site in Sydney is located adjacent to the state heritage-listed Alexandra Canal, which flows into Botany Bay.

The Substation, the world's first major in-situ Gas Insulated Switchgear (GIS) substation replacement, is one of two major supply points to Sydney CBD and inner suburbs.

The replacement was one of the most complex substation projects ever completed in Australia. The new Substation has more feeders and a higher capacity, as well as an increase in its reliability in comparison with the existing GIS Substation.

Furthermore, the Substation takes into account future projects as there is space for additional 330 kV GIS switchgear, transformers, cables, reactors and the associated control equipment.

We are proud to report that the project was delivered on time and under budget – it was approved with a budget set at \$144 million and delivered for \$140 million.



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EVERYTHING
INFRASTRUCTURE



JUDGES COMMENTS

This project received excellence for:

- The refurbishment of the Gas Insulated Switchgear (GIS) Beaconsfield Substation was a world first which also expanded capacity for future use and was managed to allow AusGrid to concurrently install four 132kV cable circuits.
- The real measure of the project's success was this tight integration of the Client (TransGrid), the Design & Construct Contractor (UGL) and the major switchgear Supply & Installation sub-contractor (ABB).
- TransGrid were rigorous in their selection process of Alliance Partners and each of these team members involved their Project Managers from the initial tender phase. This retained a thorough knowledge of the project within the team, which enabled many issues to be resolved at collaborative on-site meetings, and helped achieve key delivery dates and under budget total cost.
- TransGrid anticipated critical issues that required in-depth consideration, so accordingly facilitated workshops regarding risks associated with maintaining continuous supply to Sydney CBD and with NSW Fire Brigade for fire protection.

HIGHLY COMMENDED

State Water Corporation
Joint Entrant: NSW Public Works
The Copeton Dam Safety Upgrade

INFRASTRUCTURE PROJECTS

EXCELLENCE AWARD WINNER

GLENFIELD JUNCTION PROJECT

Glenfield Junction Alliance

The Glenfield Junction project forms a critical part of the South West Rail Link Glenfield Transport Interchange part of the NSW Government initiative to respond to issues of reliability and passenger growth on the rail network.

It involved a rebuild of the existing Glenfield Station and bus/rail interchange and the construction of two rail flyovers. The \$344 million project was designed and constructed by the Glenfield Junction Alliance (GJA), comprising of Transport for NSW (TfNSW), Parsons Brinckerhoff, Bouygues Travaux Publics and John Holland.

Glenfield Junction was a complex project that required innovation in design and construction to deliver a major junction upgrade, in a live rail environment with limited access. The careful use of innovative methods, segregation walls and precast concrete ensured efficient project delivery.

Glenfield Junction achieved success with a positive safety culture, no environmental impacts during construction, was internationally recognised for its use of GIS technology and received client and customer commendation with on-time and on-budget delivery.



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JUDGES COMMENTS

This project received excellence for:

- The way that multiple site constraints of the new rail junction connecting East Hills Line and the new South West Rail Line to Leppington at Glenfield station was managed.
- The work site was severely constrained with closeness of a gas pipeline, waste landfill facility, restrictive geography, flood plain, a protected forest area and interface with the southern Sydney freight line.
- It was even more constrained by the need to maintain rail operations throughout the work.
- The judges were impressed with the innovative way this challenging site was managed especially the isolation of the work site from the active rail line to facilitate new construction activities.

HIGHLY COMMENDED

Lawson Alliance
Great Western Highway Upgrade

BUILDINGS & STRUCTURES

EXCELLENCE AWARD WINNER

THE STAR CASINO REDEVELOPMENT

**TaylorThompson Whitting
Joint Entrant: Brookfield Multiplex**

The opening of the Event Centre at The Star in Sydney in January 2013 marked the completion of an \$860 million project. The development was one of the major building construction projects in Sydney over the period of the Global Financial Crisis.

The redevelopment of the complex involved the construction of a new 5 Star Hotel and Event Centre, as well as a major redevelopment of the Retail Precinct and extension and renovation of the main gaming floor. The venue remained open throughout the works with the public only occasionally seeing the large degree of restructuring works occurring.

Challenges from an engineering perspective ranged from tightly constrained sites and the allowance for Metro tunnels under The Darling Hotel, to demolition and construction around live operating facilities of the Retail Precinct and the complex geometry of the Event Centre. Innovative structural strengthening works were required throughout the project as the existing structure had not been designed with allowance for future expansion.



SPONSORED BY

Engineers
MEDIA

JUDGES COMMENTS

This project received excellence for:

- Accurate management of a series of major projects, all of which had to be carried out as one integrated project.
- The structural consultant (TTW) worked closely with the builder (Brookfield Multiplex) to allow the engineering to be fully integrated with the construction, including the engineering of temporary works, demolition and strengthening of existing structures.
- The requirement to maintain all aspects of The Star Casino's operations within close proximity of constructions works, presented extremely difficult challenges.
- The diversity and scale of the works presented engineering challenges which set this project apart from most other building projects.
- TTW demonstrated a high level of ingenuity in applying excellent engineering in relation to strengthening existing structures, and the removal of major load bearing elements such as columns, to meet architectural requirements.

HIGHLY COMMENDED

Arup
Joint Entrant: JHA Consulting
The Kinghorn Cancer Centre

SMALL BUSINESS VENTURES

EXCELLENCE AWARD WINNER

SENSOR TECHNOLOGY: A SMART WAY TO MANAGE INCONTINENCE

Simavita Pty Ltd

SIM® (Smart Incontinence Management) is the world's first instrumented urinary incontinence (UI) assessment tool that can detect multiple incontinent episodes during an assessment period.

This tool enables accurate and reliable data to be collected during an incontinence assessment to assist clinicians when developing a personalised continence care plan.

UI is not a disease, but rather a symptom that corresponds to a wide range of social and pathophysiological factors. Although it is not an inevitable part of ageing, UI is more common among older people and is often curable and always manageable.

SIM® sets the foundations for good continence management and replaces the current manual approach involving care staff checking a person's continence pad every one to three hours.

The result of implementing SIM® is improved continence management, better continence outcomes, and dignity for those with UI. SIM® is currently being used in the Residential Aged Care market, but has applications more broadly in incontinence management.



SPONSORED BY



JUDGES COMMENTS

This project received excellence for:

- Sound engineering and commercial practices implemented by Simavita Pty Ltd to develop the world's first instrumented urinary incontinence assessment tool.
- This Sensor Technology sets a new standard for continence management through the use of an ergonomically designed sensor to collect the frequencies of the urinary events, transmitting this data to a computer for assessment and enabling the development of a management plan for that individual.
- The technology can detect multiple incontinence episodes during an assessment period.
- This innovative solution delivers many benefits including improved patient comfort and hygiene with less disruption to their normal activities, reduced workload for nursing staff, lower costs, and more effective care planning and validation.

HIGHLY COMMENDED

SignRISE International Pty Ltd
SignRise 360

ENGINEERING FOR REGIONAL COMMUNITIES

EXCELLENCE AWARD WINNER

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- Infrastructure upgrades (installation of state of the art, telemetry enabled water meters, regulators, fish ways and upgrades of weirs).
- Improved management of en route storages.
- Alternative delivery routes to some reaches of the river.
- Improvement and upgrades to regulating structures.
- Improved SCADA and telemetry across the whole valley.
- Installation of around 600 new metering systems allowing accurate and real time reporting.
- The development and implementation of a hydrodynamic model integrated to State Water's business systems to manage efficient delivery of water within the river valley.

The project will recover water savings of which 33 GL will be returned to the Snowy / Murray systems and the remainder will remain in the Murrumbidgee valley to improve reliability.



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Transport
Roads & Maritime
Services

JUDGES COMMENTS

This project received excellence for:

- This project is the evolution of engineering and water management practices in the water industry.
- CARM puts theory into practice by utilising real time data, better forecasting of tributary flows, demand forecasting, and couples these with hydrodynamic modelling.
- It takes into account the complexities of the catchment flow processes and river flow dynamics, and builds on sound engineering science and many years of operational experience.
- Besides the 33 GL of water savings already achieved, the proponents see the potential for another 200GL of savings. These water savings are found by reducing wastage, instead of using buy-backs, minimising any economic and social impacts on regional communities.
- The CARM model has the potential to be utilised in other valleys and countries.
- This degree of river management integration appears to be a world first, certainly at this scale of river valley.

HIGHLY COMMENDED

Lismore City Council
Joint Entrant: Public Works NSW Water Solutions
Southern Trunk Main

THE 2013 JUDGING PANEL

Excellence Awards Committee

Chair Bruce Howard, Amal Hanna, Norm Himsley, Bill Thompson, David Kinniburgh, Stephen Finlay and John Nichols.

Professional Engineer of the Year

Chair Peter Tyree, David Croft AM, Prof Mike Dureau, Dr John Nutt AM, Ron Christie, Prof Graham Davies, Peter Wellings and Shane Geha.

Young Professional Engineer of the Year

Chair Roland de Broglio, Neil Wyles, Doug Roser and Maryam Torabi.

Entrepreneur of the Year

Chair Peter Tyree, David Croft AM, Prof Mike Dureau, Dr John Nutt AM, Ron Christie, Prof Graham Davies, Peter Wellings and Shane Geha.

Engineering Student of the Year

Chair Norm Himsley, John Perdriau, Astrid Perdriau, Jon Lee, Stan Scahill, Alexandra Meldrum, Ian Ackland and Chris Skinner.

Control Systems and Communications

Chair John Lear, Peter Goudie and Nick Fondas.

Software & Embedded Systems

Chair Tony Strasser, Robi Karp and Adam Schindhelm.

Products, Manufacturing Facilities & Processes

Chair John Fullagar, Alan Tilley, John Hilton and Gordon Weiss.

Environment & Heritage

Chair Sarah Marshall, Jon Breen and Danny Azavedo.

Welfare, Health & Safety

Chair Jim Munro, Andrew Bath and Chris Turner.

Innovations & Inventions

Chair Jim Vickery, Rod Pomroy and Shane Kim.

Research & Development

Chair John Baxter, Prof Mark Wainwright AM and Branko Celler.

Project Management

Chair Bruce Judd, Terry Fernando, Peter Walsh and Hari Kishan.

Infrastructure Projects

Chair Ken Dobinson, Jim McCarthy, Bob Davies and Desmond Dent.

Buildings & Structures

Chair Boyne Schmidt, David Foster, Tony Denham and Simon Hill.

Small Business Ventures

Chair Keith Bashford, Robert Funke and Carlos Quaglia.

Engineering for Regional Communities

Chair Stewart McLeod, Bryan Short and David Byrne.



ENGINEERS AUSTRALIA, SYDNEY DIVISION WOULD
LIKE TO THANK OUR SPONSORS:



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