ENGINEERS
AUSTRALIA

AUSTRALIAN
ENGINEERING
EXCELLENCE
AWARDS

ICONIC INNOVATION

Celebrating Extraordinary Engineering

AUSTRALIAN ENGINEERING EXCELLENCE AWARDS

VICTORIA ENTRANTS 2018

AUSTRALIAN
ENGINEERING
EXCELLENCE
AWARDS

These awards recognise and promote new and innovative ideas that are brought to life in ways that bring fundamental change to our society.

OVERVIEW

Engineers Australia recognises outstanding achievement in engineering and the invaluable contribution engineering makes to the economy, community and the environment.

The Australian Engineering Excellence Awards (AEEA) inspire and encourage engineering distinction through teamwork, innovation, and technical excellence.

The AEEA is an integrated program resulting in awards at National level once local finalists are determined. To enter the AEEA, entrants are required to submit project nominations at the relevant local level, depending on the project's location.

Excellence, distinction, merit, perfection and quality are the characteristics that winning entries exhibit. View the 2018 entrants.

ENGINEERS
AUSTRALIA

Victoria

Level 31
600 Bourke Street
Melbourne VIC 3000

VICTORIA
PRESIDENT'S MESSAGE

The Australian Engineering Excellence Awards puts the spotlight on the greatness of our engineering profession. It is an opportunity to showcase the very best that we as engineers have to offer and to recognise and acknowledge the individuals, teams and organisations behind these great projects.

Congratulations to all finalists. I would like to commend you all for your commitment to excellence. It is an inspiring reminder to us all that we should aim high and strive for excellence in all we do.

Thank you, of course, to the judges who have volunteered their time and effort to assess and judge the entrants. It is not an easy task, but is rewarding nonetheless.

The Australian Engineering Excellence Awards provide us the opportunity to reflect and acknowledge the valuable contribution that engineers make to the society. To celebrate and promote the engineering profession. As we celebrate these projects I encourage all engineers to consider the impact that you have on the lives of others. Be proud of this contribution. Share your stories, make visible the role of engineers within society and encourage the next generation to consider joining us on an engineering journey. Thank you all for the valuable contribution that you make.

Alesha Printz FIEAust CPEng EngExec NER APEC Engineer IntPE(Aus)

Victoria President

CHIEF JUDGE'S MESSAGE

I would like to congratulate all the Victorian entrants for the AEEA. I feel very privileged to have judged your entries as do all the judges. The quality of entries was exceptional and separating finalists for the National Award was no easy task. We thank all entrants for the time and effort they have put into their entries but also providing the judges such stimulating and engaging abstracts and multimedia exhibits.

The entrants are a showcase of the vibrant state of the engineering in Victoria that continue to shine a spotlight on the contribution engineering makes in the communities that we live. The innovation displayed in the entries highlight the depth of engineering skill that resides locally that is both world leading and inspiration of all engineers at all levels in their careers.

The best of engineering builds on the accomplishments of others and test new boundaries. All the entrants lead the way in new directions to take engineering in the future and open up new possibilities for learning from their achievements and building on those accomplishments. Thank you to all entrants for sharing your achievements and showing us the best that engineering can aspire to be.

Damien Kennedy FIEAust CPEng EngExec NER
APEC Engineer IntPE(Aus)
Chief Judge

JUDGING
CRITERIA

Actual or potential contribution of the work to the economy

Contributes to the local, regional or national economy by reducing whole of life costs or adding to the efficient use of existing engineering construction, manufacture, maintenance or application.

Impact of the work on the quality of life of the relevant communities

Contributes positively to the communities using it in respect of cost, time, environment or general amenity of the community.

Significance of work as a benchmark of Australian Engineering

Sets new benchmarks or continues current high standards thereby raising the standard and standing of Australian Engineering.

Extent to which the work represents world best practice

Can be matched against similar engineering achievements to represent world best practice.

Other considerations

The environmental impact of the work, the sustainability of the project and the work health and safety consideration. These must outline the effect on those directly or indirectly involved and members of the community in general.

JUDGES
2018

Benita Husband
FIEAust CPEng Victoria Division Committee Member
Engineers Australia
Director, Clients & Markets
Norman Disney & Young

Carla Cher
Manager, Intellectual Property and Commercialisation
RMIT University

Peter Farley
FIEAust CPEng EngExec

Robert J. Ladd
AFIEAust CEngA EngExec NER IntETn(Aus) MAICD
M.IPWEA Dip.EngTech(Civ) BEngTech(ProfHons)
Manager Asset Lifecycle Planning
Asset Planning and Management
Court Services Victoria

Nick Tassigiannakis
BAeroEng(Hons) BSc MBA(Exec) CPEng NER MIEAust
RPEng RPEQ
Principal Engineer/Director
FG Advisory

Thank you to our panel of judges who generously volunteered their time and effort to review all entrants, and select our Victorian Winners and AEEA Finalists.

PROJECT ENTRIES

BUNJIL PLACE

Taylor Thomson Whitting

Located in the Narre Warren area in Melbourne's east, Bunjil Place is an exciting example of a new form of community and civic building – a multifunctional facility that has become a cultural and civic heart to represent and reflect the values of the community, and instil a new sense of place, pride and ownership for residents. This complex and outstanding project is the result of high levels of collaboration and expertise involving FJMT Architects, Taylor Thomson Whitting (structural,façade and civil engineers), consultants, suppliers and contractors. Featuring visually-striking elements such as the free-form timber gridshell that defines the main atrium and high glass façade facing an expansive landscaped plaza, Bunjil Place delivers: a library; 800-seat performance theatre; public gathering space; a place of exhibition, gallery and display; a flexible and experimental space for events, lectures, debate and celebration; a help point; service centre; and a place of work and collaboration.

CAULFIELD TO DANDENONG RAIL PACKAGE

Metro Trains Melbourne

Level Crossing Removal Authority (LXRA)

CTD Alliance of Lendlease, WSP Parsons Brinckerhoff, CPB Contractors, Aurecon and MTM

The $1.6 billion Cranbourne-Pakenham Line Upgrade, including the Caulfield to Dandenong Package of Works, is a substantial engineering project with a scope of works that will significantly lift the performance of the busiest rail corridor in Melbourne. The delivery of track, signals, substation and overhead wiring upgrades will lay the groundwork for the commissioning of high-capacity metro trains to service this key growth corridor. The project will boost total line capacity by 42%, which is equivalent to an extra 20,000 passengers a day. The project will also create 225,000 square metres of open space for new parks, playgrounds and sporting facilities for local communities.

CENTRAL ASSET MANAGEMENT SYSTEM (CAMS) FOR BUILDINGS

Royal Melbourne Institute of Technology (RMIT University)

A team led by Professor Sujeeva Setunge at RMIT University has developed an intelligent, cloud-based asset management system entitled "Central Asset Management System" (CAMS) for deterioration modelling and sustainable management of buildings.

CAMS-Buildings uses historical data and artificial intelligence based algorithms to forecast the future conditions of the buildings thereby optimising the deployment of scarce financial resources while progressively revolutionising infrastructure management practice.

Currently, CAMS-Buildings is being used by numerous city councils in the greater Melbourne area. A number of building inspection and property management companies are also currently trialling CAMS-Buildings for commercial implementation.

MERNDA RAIL EXTENSION PROJECT

John Holland Group

The $600 million Mernda Rail Extension Project is a Victorian Government project to improve and transform public transport services for the booming communities in Melbourne's northern suburbs. To be delivered by early 2019, it returns metropolitan rail services using innovative designs to Mernda for the first time in 60 years.

The project, delivered for the Level Crossing Removal Authority by an alliance comprising John Holland Group, KBR and MTM, includes eight kilometres of new double track, five grade separations and three state-of-the-art train stations. In an Australian-industry first, the project introduced its innovative u-trough bridge design to the Victorian network.

ON STATION UNDERWATER HULL REPAIR FOR AN FPSO

AMOG Consulting

OMV New Zealand

In the challenging environment of the Cook Strait New Zealand the OMV Raroa FPSO developed several through hull corrosion pits. Pushing the limits of conventional cofferdam repairs AMOG developed a highly economical solution which would achieve long term repair and could be implemented underwater without taking the FPSO off station. AMOG designed the repair methodology and the cofferdam to achieve the repair and demonstrated its acceptability to the class society and the operator. In the space of 7 days three pits were repaired using the cofferdam to install small insert patches which reinstated the long term integrity of the hull without incident or interruption to operations.

ONE MALOP STREET

Aurecon

Rising 14 levels, One Malop St is an environmental leader in new office accommodation situated in Geelong., With a focus on cutting GHG emissions and occupant wellbeing, the development shows that it is possible to build state-of-the-art commercial spaces to the highest standards in a regional setting using both local suppliers and workers. Malop St is an exemplar workplace that sets a new benchmark for sustainability, health and well-being. 6 Star Green Star (Base Building and Interiors) and NABERS 5.5 Star Energy (Base Building) are targeted. In addition, the development is the first in Australia to achieve dual WELL Gold precertification for Base Building and Interiors.

The base building is set to be certified WELL Platinum. GHG emissions at Malop St will be cut by up to 70% compared with conventional standards and the building design can reduce stress, improve productivity and most importantly, increase occupant health and happiness.

RED ROVER - THE REMOTE CONTROLLED ELECTRONIC 'SHEEP DOG' COLLECTOR OF COLES SUPERMARKET TROLLEYS

Lockelec Innovation

Local engineering company, Lockelec Innovation, was chosen from companies throughout the world to design and produce an innovative device for supermarket trolley collecting.

Red Rover, a Bluetooth, lithium battery-powered Wi Fi controlled device was developed for Coles supermarkets across Australia.

The result was increased productivity, improved safety and decreased workplace injuries. It's a 'David and Goliath' Australian engineering win for this third-generational Melbourne company.

RMIT NEW ACADEMIC STREET

Arup

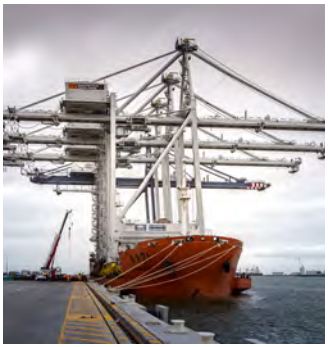
RMIT New Academic Street is world leading example of adaptive re-use.

A once disjointed, dark, confined and scattered campus, RMIT's flagship City Campus has been transformed into an interconnected, open, light and lively collection of buildings, which has re-established a long-lost connection between the University and Melbourne's CBD. A complex project with five architects and a timeline of over five years, Arup's structural, civil and façade engineers helped RMIT and the architectural team realise the project's diverse architectural intent.

Creative and considered engineering enabled the repurposing of existing structure. Existing structure was adapted, extended and interconnected, transforming the existing disconnected 1960s and 70s architecture to create a vibrant and dynamic student hub.

VICTORIA INTERNATIONAL CONTAINER TERMINAL

BMD Constructions



Melbourne's newest international container terminal, VICT, was conceptualised as part of the Port Capacity Project, a Victorian state government initiative conceived to redevelop Webb Dock East. The aim was to create more competition within the port by introducing a third stevedoring operation at Webb Dock East, as well as to maintain Melbourne's position as the busiest container port in Australia, handling over one third of the nation's container trade.

BMD was engaged by Victoria International Container Terminal Limited (VICT) to carry out the infrastructure 'base build' construction works at the container terminal under an ECI agreement. The project has reconfigured and redeveloped Webb Dock East, returning it to its original role as an international container handling facility. The facility is one of the most technologically advanced, environmentally sustainable and safest container terminals in the world, capable of handling the equivalent of at least one million shipping containers per annum.

THE AVENUE PRIVATE HOSPITAL NEW THEATRE BLOCK

JMP Consulting Engineers

JMP Consulting Engineers broke new ground when it demonstrated the viability of offsite modular construction in the design and construction of a three-level expansion of Ramsay Health Care's flagship orthopaedic hospital, The Avenue.

Lower costs, shorter construction periods, minimal disruption to hospital operations and the surrounding residential zone point the way of the future for construction. Commercial considerations and The Avenue's location imposed constraints. Firstly, the 24/7 healthcare facility needed to remain open throughout construction. Secondly, the hospital's residential location meant noise limitations and restricted hours of work.

The use of prefabricated steel modules meant The Avenue's new theatre block was erected over just one weekend, with minimal disruption to the local area, while the addition of concrete meant the vibration performance criteria were met.

THE BARTON ENGINE

Capricorn Power Pty Ltd

Austeng

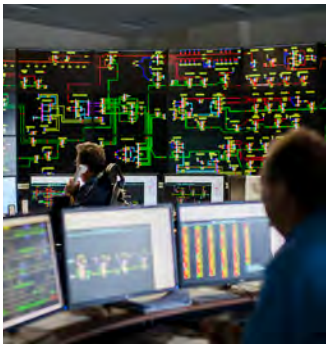
Capricorn Power's Barton Engine is a major step forward in the waste heat to power field.

A scalable on-site heat engine in a 20ft shipping container. The Barton Engine produces world class heating /thermodynamic efficiencies by utilising a new manifestation of the Brayton cycle.

It can use any low grade heat source (350 degrees C-600 degrees C) , opening up a whole new area and is 30% more efficient than single stage Rankine cycle.

UNINTERRUPTIBLE POWER SUPPLY FOR LEGACY RAILWAY SIGNALLING

Metro Trains Melbourne



Metro Trains Melbourne has engineered a highly innovative solution for raising the performance of the city's railway signalling system. A customised Uninterruptible Power Supply (UPS) provides critical signal power backup during network faults, giving the electrical control centre an important window in which to route alternative feeds without disrupting signal power.

This kind of technology is traditionally used within the computing, high speed data and telecommunications industries. However, the UPS deployed by Metro Trains Melbourne is a world first for the railway industry, successfully integrating industrial scale continuous power supply technology with a legacy phase-reliant railway signalling network

STREAMLINING HODDLE STREET

SMEC

The 4km Punt Road/ Hoddle Street corridor is Melbourne's busiest arterial roads.

A total of 330,000 trips are generated along or across Hoddle Street on a daily basis. It provides important transport links to the Monash, Eastern and Westgate Freeways.

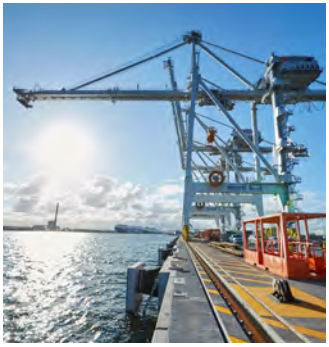
It is also a vital public transport hub with links to trains, trams and buses, as well as providing access to nearby cycling routes. SMEC was engaged by VicRoads to provide engineering design services from concept development through to detailed design and commissioning for a new 'Continuous Flow Intersection' at the Punt Road/ Swan Street intersection. A highly innovative approach was explored, developed and successfully implemented, which in turn, gave rise to a whole new world of understanding and opportunities for how engineering design can interact with a virtual environment. In addition, this was done within a highly complex project in an iconic Melbourne precinct.

WEBB DOCK EAST INTERNATIONAL CONTAINER TERMINAL

AECOM Australia Pty Ltd

Victoria International Container Terminal Limited

Advanced Consulting Services Pty Ltd



In May 2014, Victoria International Container Terminal (VICT) was announced by the Victorian State Government as the successful bidder for the contract to design, build, finance and operate the new international container terminal at the Port of Melbourne, Australia's largest and busiest port.

Just over two years later, and having worked in close collaboration with AECOM (designer) and BMD (contractor), both industry leaders in their respective fields, VICT is proud to have delivered the world's most-advanced container terminal in Australia.

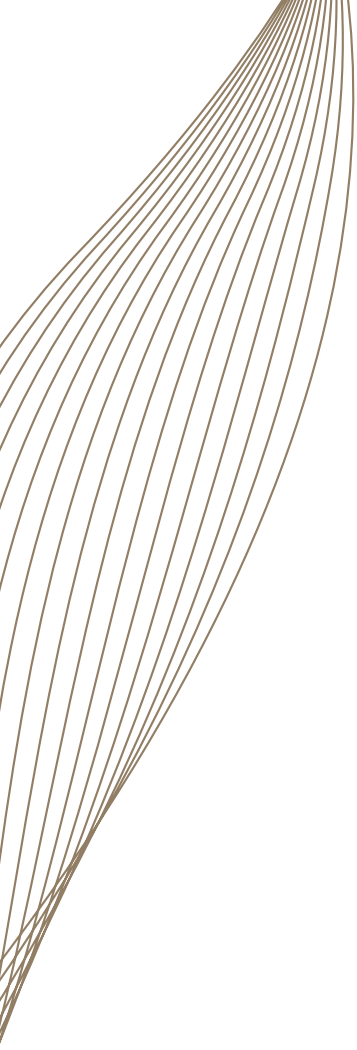
In designing and building VICT at Webb Dock East, leading technologies from around the world were selected, many of which were new to Australia. But VICT's real innovation lies in integration — putting those technologies together in new ways to create one seamless operation. Everything about VICT, from its technology to its location and layout, has been designed to deliver unprecedented efficiency, safety, sustainability and security.

AUSTRALIAN
ENGINEERING
EXCELLENCE
AWARDS

These awards recognise and promote new and innovative ideas that are brought to life in ways that bring fundamental change to our society.

ENGINEERS
AUSTRALIA

WE ARE THE GLOBAL HOME FOR ENGINEERING PROFESSIONALS RENOWNED AS LEADERS IN SHAPING A SUSTAINABLE WORLD.



ENGINEERS
AUSTRALIA

engineersaustralia.org.au

@EngAustralia

/EngineersAustralia

/engineers-australia