



Committed to Engineering Excellence

Laing O'Rourke is a privately owned, international engineering enterprise with world-class capabilities spanning the whole of the client value chain.



Laing O'Rourke

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AT A GLANCE

WHO: Laing O'Rourke

WHAT: Laing O'Rourke is an international engineering enterprise, founded on 166 years of experience.

WHERE: NSW 2060, Australia

WEBSITE: laingorourke.com

A construction company with origins stretching from 1848, Laing O'Rourke is an international engineering and construction firm with operations in Australia, Canada, Europe, the Middle East and Asia.

With 50 years of involvement in Australian construction and



The organisation is committed to ensuring that sustainability becomes fundamental to the way it goes to work for its clients, and to embed a sustainability culture across the business and through the supply chain.

By identifying sustainability as a core value and establishing a global sustainability function, Laing O'Rourke has changed its thinking about project delivery at every level. From procurement processes and waste material management, to community engagement and innovation.

Laing O'Rourke is committed to the continual pursuit of innovation to secure Australia's sustainable infrastructure future and has established a sustainability roadmap that provides direction across the entire company and sets targets up to 2020.

Sustainability roadmap

In its efforts to promote clean technology, Laing O'Rourke has established a Sustainability Steering Committee which brings together senior leaders and subject matter experts from a range of disciplines. In 2014 a 7.5% reduction against 2010/11 baseline, in carbon emissions was achieved, which was 2.5% more than the target of a reduction of 5% that was set.

infrastructure – including a decade under the Laing O'Rourke banner, the business has delivered some of the country's largest, most technically-complex projects within the oil and gas, transport, building construction, defence, airports, mining, marine, civil and social infrastructure sectors.



A number of innovative methods have been adopted to meet sustainability goals. One of these, an online ‘waste tracker’ system, brings all relevant information on to one platform. This has been met with great success in reducing wastage of raw materials.

Amongst the many innovative steps taken by the organisation to promote clean technologies, one that stands out is the world’s first fully portable large-scale solar –diesel hybrid power plant.

Will Rayward-Smith, Clean Technology Leader at Laing O’Rourke describes this unique initiative, “SunSHIFT is a technology that we have developed with the support of the Australian

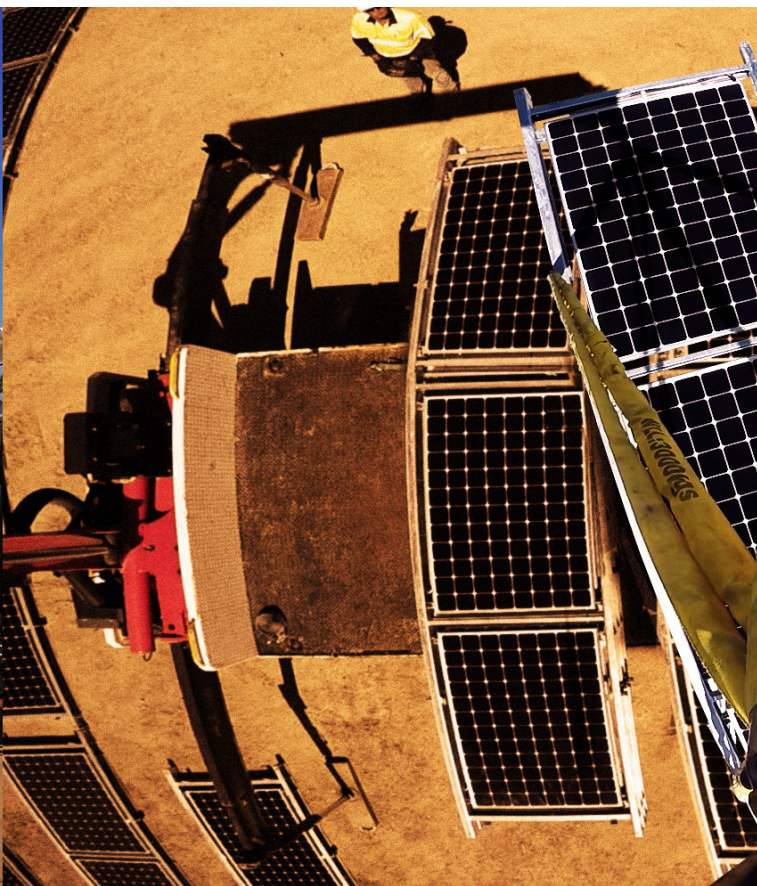
Renewable Energy Agency (ARENA).

“For years, our industry has grappled with the challenges associated with powering off-grid operations in remote locations.

“Whenever we do construction at a remote location, we have to build a village to house our workers. Traditionally, that is powered by generators, which have a high diesel fuel consumption.

“Working with ARENA, we brought the SunSHIFT idea to reality, providing a versatile, competitive alternative to traditional diesel-powered generators.

“The 1 MW hybrid solar diesel plant



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includes 144 kWp of solar PV and has successfully supplied power to an accommodation village for one of our large construction projects in regional Queensland. The system was delivered, unpacked and fully functional in one week.

“That is just an example of something which we have developed in-house, manufactured and delivered for our own jobs. We are now in the process of taking it to external markets.”

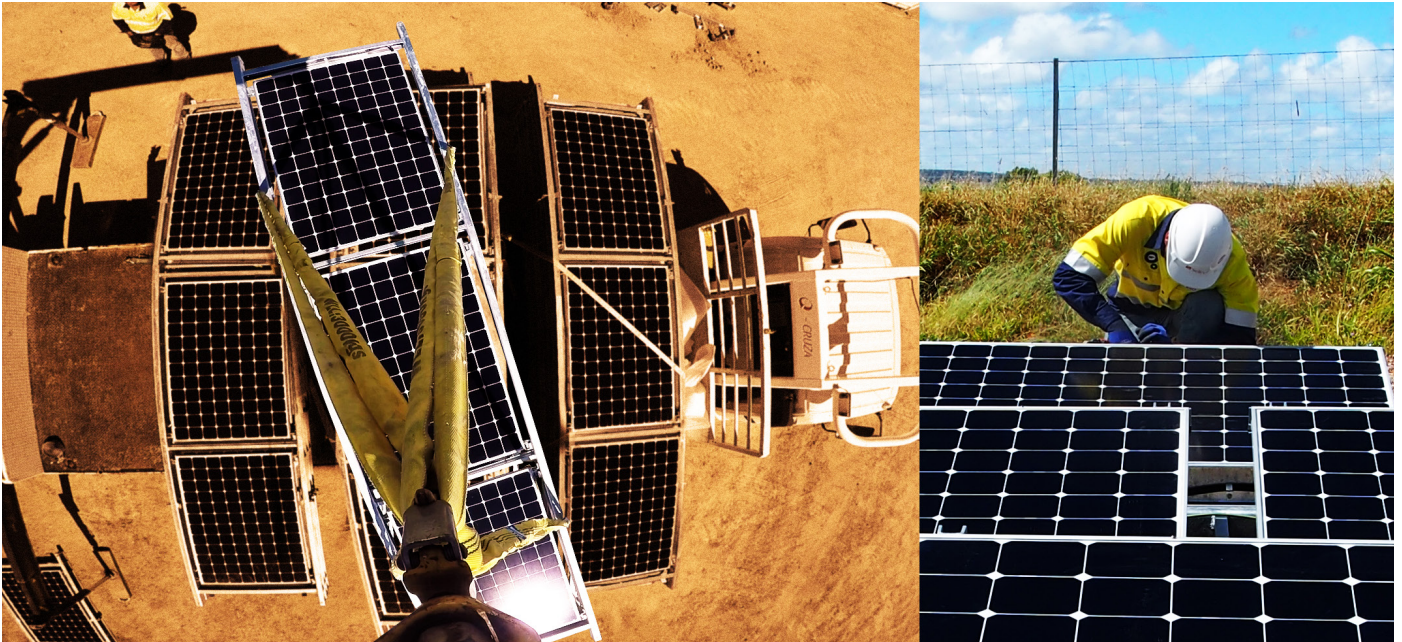
The project was recently named winner of the 2015 Green Globe Awards for Environmental Innovation, an award recognising excellence in leadership and innovation, and named as a finalist for Sustainability in the International IET Innovation Awards.

The Australian Renewable Energy Agency (ARENA) provided \$450,000 towards funding the \$1.4 million pilot-scale project. ARENA’s CEO, Ivor Frischknecht said, “A semi-portable hybrid system like this carries enormous potential – it may provide industries and communities in regional and remote locations with a viable renewable energy alternative and could equally be used to assist in international relief efforts”.

Will Rayward-Smith says, “Construction has not been seen as an innovative sector but we are investing very heavily in research and development so that we can bring on board new technologies within the construction industry. We were awarded as the eighth most innovative company across all sectors in Australia in 2014 and again this year by Business Review Weekly.”

Laing O’Rourke has developed a concrete moulding technology that uses 3D printing to achieve an environmentally friendly and economical solution to the high-cost techniques currently prevalent. At present, most concrete moulding is done using materials such as timber, polystyrene, fibreglass and rubber mats. These are expensive materials and have the added disadvantage of resulting in high labour costs.

As these materials require large outlays of funds, it is essential to re-use them if they are to be economically viable. This results in repetitive concrete facades which take away from the aesthetics of the structure. To overcome this, Laing O’Rourke developed FreeFAB, a construction-scale 3D printing technology, which has resulted in the



company being recognised as one of the most innovative in the country.

The patented technique uses wax that can be recycled to produce moulds, which are cheap and easy to make. In fact these can be produced in as little as a minute and cost just 4% of a similar timber version.

Engineering Excellence Group

Laing O'Rourke has established a unique in-house consultancy, the Engineering Excellence Group. This unit consists of experts from key engineering disciplines covering heavy civil, structural, mechanical, electrical, electronic, chemical process and manufacturing.

In addition to the company's highly skilled and experienced personnel,

the Engineering Excellence Group draws upon the expertise of external consultants at the highest levels to help Laing O'Rourke to devise engineering strategies that effect positive change and enhance the prestige of the profession.

The group serves four important purposes. The first is to act as an intellectual resource for Laing O'Rourke's design and delivery business by providing the engineering expertise to address specific challenges.

Secondly, the group functions as an external consultant and in this role advises clients, governments, charities and not-for-profit organisations.

Thirdly, the Engineering Excellence Group plays a key role in the company's research and development efforts. It has partnered with and supported

some of the world's leading universities, complemented by Laing O'Rourke's own commercialised in-house research and development capability.

The fourth function that the group performs is that it supports education networks and acts as a thought leader in the development of stimulating education and training programs.

Strong focus on sustainability

Laing O'Rourke has put great emphasis on being environmentally friendly. Each of its activities is conducted keeping this critical factor in mind. In the short period in which it has been operating in Australia, it has earned the distinction of successfully delivering projects across a wide range of sectors to the highest standards possible.

Innovations such as SunSHIFT and FreeFAB have cemented Laing O'Rourke's reputation as a company that has developed an extremely competent research and development capability.

Each of the company's projects is a testament to its values and strong commitment to quality. The Australian Sustainability leader, Hollie Mapson describes the company, "We have a

collaborative approach with clients and we take an innovative approach in all our contracts. We are not your average contractor. We have developed very good relationships with our clients and we deliver the best outcomes for them rather than simply delivering the bare minimum.

"We always go the extra mile and take the opportunity to add value whether that is in delivering the most efficient building that we can, whether it is in terms of the lowest cost or giving early occupation of the building by giving a program that is faster than our competitors. We spend a lot of time wanting to understand our clients. That is really what is different about us. We spend the time upfront getting to know our clients intimately.

The core value within our organisation is to challenge and change construction and we do not want to do it just within our company, we want to challenge the whole sector."

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