

Case study

Project Information

- Location:** Mirani, Queensland, Australia
- End client:** Mackay Regional Council
- Main contractor:** UGL Pty Limited
- Start date:** August 2019
- Scope of works:** Design, manufacture and delivery to site of concrete components required for construction

Background

UGL is a market leader in end-to-end asset solutions, delivering operational value and enhanced customer experiences through its whole-of-life offer for critical assets in power, water, resources, transport, defence and security, and social infrastructure. As a company UGL are striving to carry out more off-site manufacturing in keeping with the DfMA ethos. UGL approached FLI Carlow because of our proven track record in the UK and Irish water sectors to explore the opportunity of improving the delivery process whilst reducing site programmes and preliminaries.

This is the first project in Australia to utilise a modular semi-precast system which is a traditional in-situ design, broken into individual pieces.

The elements are part of a 7,500 EP population wastewater recycling facility design and construction project at Mirani in Queensland, which is a pilot installation undertaken with a view to exploring the application of FLI Carlow's semi-precast approach in Australia and South East Asia.

The 5.40m tall walls have been designed for a perfect fit in 20ft ISO containers at payloads of just under 25 tonnes each. The 625-tonne consignment fills 25 containers and will travel by sea through Dublin, Antwerp, Sydney and Brisbane, and then by road to Mirani.

The project catalysed several significant innovations, initially to facilitate containerisation but which will add value to routine operations across the FLI Carlow product range, both overseas and domestic.

Construction of the concrete structure is to commence early in September 2019 and will be installed on site in just three weeks - a significant time saving when compared to six weeks when using traditional methods.



Solution

- Complex M&E integration
- Reduced site time
- Reduced health and safety risk
- Complex site elements produced in a controlled environment
- Less reliance on the supply chain in a remote area
- Flexibility on site regarding build sequence
- Highly competent design team to support through approvals
- A robust QA system
- Build methodology rehearsed prior to any works commencing on site in the form of clash detection and animated sequencing.



A word from our client

- Why did you choose FLI Carlow?

We saw an engineering paper regarding the use of the semi-precast design and its advantages along with suppliers of various systems. FLI Carlow were recommended as the best in their field as their product had self-supporting legs and a lift frame system.

- Why did you choose precast?

As a Project Manager, I have a philosophy to reduce the man hours worked on site and to do as much work off-site as possible. This reduces the risk of injuring people on site, improves quality and reduces the impact of inclement weather. The on-site programming benefits are also significant for our project because this enables us to progress multiple work fronts.

- What is your experience with precast?

I was the General Manager of a precast manufacturer for 3 years. They precast bridge beams, culverts, retaining wall panels, etc. so I am fully conversant with the advantages of using precast.

- What is the national experience of precast?

Australia has a precast industry. The industry includes: precast bridge beams, culverts, pits, pipes, tilt-up panels, noise walls, etc. For water-retaining structures post-tensioned precast has been used in the past, but I am unaware of the semi-precast system being used before this project.

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