Ingkarni Wardli Building – In-Use Experience of the First 6 Star Green Star Education v1 Building

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This paper examines the Ingkarni Wardli building, the First 6 Star Green Star Education v1 Building and looks in detail at the user experiences in this new and innovative building a year into its life.

Ingkarni Wardli in the Kaurna indigenous language means 'place of learning or enquiry'. Originally named the New Engineering building and then Innova 21, the Ingkarni Wardli building houses the University of Adelaide's Faculty of Engineering, Computer and Mathematical Sciences.

The $100M nine-level building was built to provide world-class and purpose-build teaching, learning and research facilities, and is the largest construction project in the University's extensive redevelopment program. Its state-of-the-art facilities cover more than 11,000 square metres and Ingkarni Wardli also offers innovative, modern and convenient student amenities including a cafe, computer labs, study areas, an exhibition space and 24 hour, seven-days-a-week student access to support resources.

The University of Adelaide's made an early commitment that the project would target the achievement of 6 Star Green Star ratings for both design and as-built. Ingkarni Wardli achieved a certified 6 Star Green Star rating in October 2010, becoming the first project in Australia to achieve this significant feat. The project is also in the final stages of certifying the as-built rating, which is also on track to achieve a 6 Star Green Star rating.

The achievement of a 6 Star rating required the design of a building that integrated numerous new sustainable design technologies. This was a challenge both for the design but also for the local construction market to deliver a highly innovative building in Adelaide's challenging climate. Some of the key features of the design that led to the projects world leading sustainable performance are summarized below:

- A complex façade design incorporating high performance glazing, extensive external shading, daylight redirecting louvers, thermal chimney's and fritted glazing.
- Underfloor air distribution through a raised floor plenum that supplies 100% outside air through individually adjustable floor outlets.
- An active thermal mass cooling system where chilled water pipes embedded in the exposed concrete soffit provide 3 radiant cooling to the spaces below.
- A trigeneration plant that uses a natural gas fired generator to supply electricity, cooling and heating to the building. The plant is designed to run stably in an island mode off grid configuration.

- Large capacity underground rainwater tanks that provide treated rainwater to amenities, landscaping and heart rejection plant.
- Highly efficient mechanical and lighting systems installed throughout.

With so many innovative systems including the trigeneration and radiant cooling systems there was some understandable concern from various parties as to how these systems would perform.

Now with nearly a year of operation since its occupation in late 2010 we can clearly state that the building has performed extremely well. Apart from a few minor tuning items the performance of the building systems has generally exceeded expectations. The innovative air conditioning systems have provided comfortable conditions even in Adelaide's extreme summer heat. The trigeneration system has also been operating automatically and reliably since its final commissioning in November 2010.

The response from the faculty and University to the building has been extremely positive and complimentary to the building. This paper will share the reflections on the building from various users and key stakeholders including the Dean of Engineering, Peter Doud, Property Services project lead Jeremy Kwan and Maintenance Manager Paul Jenkins.

This paper also details actual performance of the building in terms of its energy and water targets, thermal comfort performance and indoor environment quality.