

**THE Fleetwood
Challenge Cup**

in association with



The Challenge Cup 2020 Awards

15 September 2020

Presented by

FLEETWOOD
BUILDING SOLUTIONS



Welcome



As the peak body for Australia's off-site construction industry, we have been delighted to have partnered with Fleetwood Australia in creating and delivering The Challenge Cup.

We are passionate about the growth of prefabrication and the broader construction industry now embracing off-site manufacturing technology and design. To us, at prefabAUS, The Challenge Cup represents a wonderful opportunity to encourage emerging talent and this is our way of supporting a new generation of young AEC design professionals. This cohort will play an important role in the future of the industry. We congratulate all the entrants for their hard work and dedication.

I would like to add our thanks to the participating Universities and our Judging Panel. Your involvement has helped us to create a design competition of the highest standard.

In closing, my thanks also to the team at prefabAUS and Fleetwood for bringing The Challenge Cup to life. We look forward to many more years of partnership to further develop the Australian construction industry.

Damien Crough
Executive Chair,
prefabAUS



Fleetwood Australia is very proud to be the naming rights sponsor and joint co-founder of the Challenge Cup, in association with prefabAUS.

Today marks an important milestone in what we all hope will become a regular event. It's important because it's a culmination of 18 months planning and organisation to deliver what we believe will become an essential curriculum activity for new generations of young, built environment design professionals.

At Fleetwood we see the modular construction industry as having an exciting future and it is in that context that we wanted to play a role in encouraging emerging design professionals to embrace that future.

We would like to thank our leading Australian Universities for participating in the Inaugural Challenge. To the students themselves, thank you. It has been a wonderful experience to witness first-hand the extremely high standard of entries.

In partnership with prefabAUS we had the ambition to create an event of significance. To do that, we had to make sure we had an eminent Judging Panel. This year's Panel represents the best of the best and I thank them for their professionalism and diligence to the task.

My congratulations to all the entrants and on behalf of Fleetwood Australia I wish you all the very best with your future careers.

Brad Denison
Managing Director and Chief Executive Officer,
Fleetwood Australia

Our thanks

University Partners



Judging Panel



Laurence Robinson
Director
Brand Architects



Emma Bennett
Senior Structural Engineer
Arup



John Lucchetti
Principal
Stantec Australia Pty Ltd



James Murray-Parkes
Chief Scientist
Brookfield



Dr Mark Dewsbury
Senior Lecturer
University of Tasmania

Curtin University of Technology

Team 1

Project

Infinity Apartments

Submission Extract

Our project submission aims to achieve two main objectives:

Firstly the ability of the solution to be effective as a “site-less” design... a landmark adjustable social housing concept. Secondly, to maximise communal interaction which is critically important in social housing settings.

The modules are created so that any formation upwards and across is achievable between the three units. Reorganisation of the modules will be able to meet any site restrictions.





Curtin University of Technology

Team 2

Submission Extract

The objective for our team was to create a midrise building, valuing sustainability, construction speed, precision of elements and a lightweight robust structure.

The complex comprises of four standalone buildings forming a cube with north, south, east and west orientations. A central tower of stairs provides access to each floor. The eastern building additionally provides a two-storey height access to the building.

Materials sourced for this design are intentionally chosen to reduce the building carbon footprint.



Curtin University of Technology

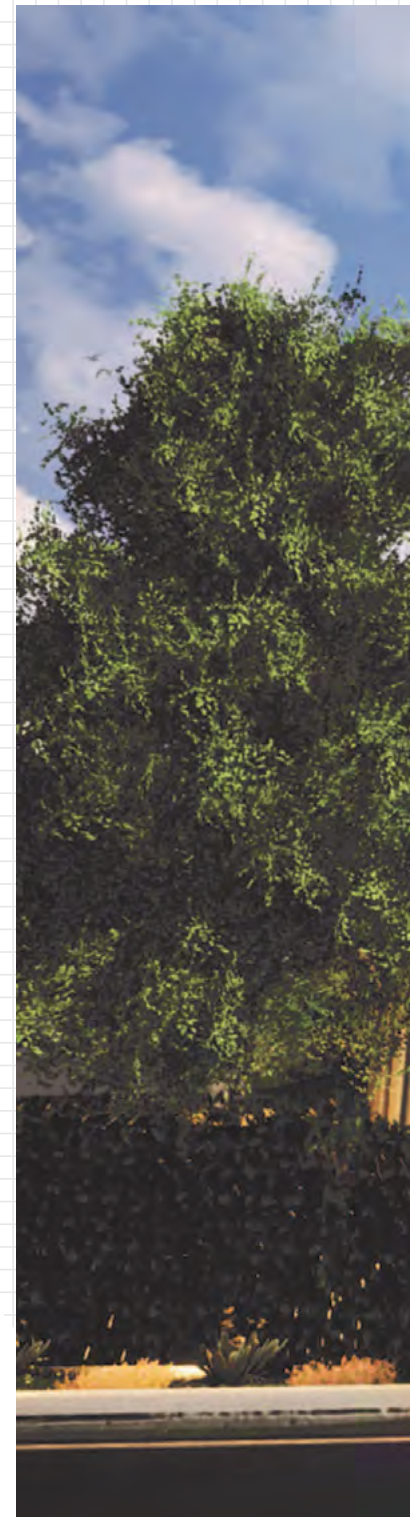
Team 3

Submission Extract

Our social housing scheme has been designed to be affordable, movable and adaptable.

We have focussed on simple, but effective floor plans and adaptable facades to create architecture that can be placed anywhere. The module design unit fits perfectly on one transport truck that can be hauled and placed on-site with little construction

Overall this design focusses on personal and private spaces for residents, as well as public communal spaces to form a community within the complex.





Curtin University of Technology

Team 4

Submission Extract

This project interrogates the balance between pragmatism and liveability within the growing field of ephemeral architecture.

The proposed exoskeleton spaceframe acts as a primary interface with the outside world in presenting the building's character. Moreover, the flexibility of the building system allows for the module and floor plates to be configured according to the existing site conditions such as the building massing configured to retain existing tree canopies for a more sustainable driven solution that leaves minimal impact on the retired site.

With an increase demand in social housing, this solution-based design is positioned between readily prefabricated, easily dismantled and reassembled structures that create a relationship of architectural and structural componentry to expand the possibilities of transportable and modular housing.





Curtin University of Technology

Team 5

Project

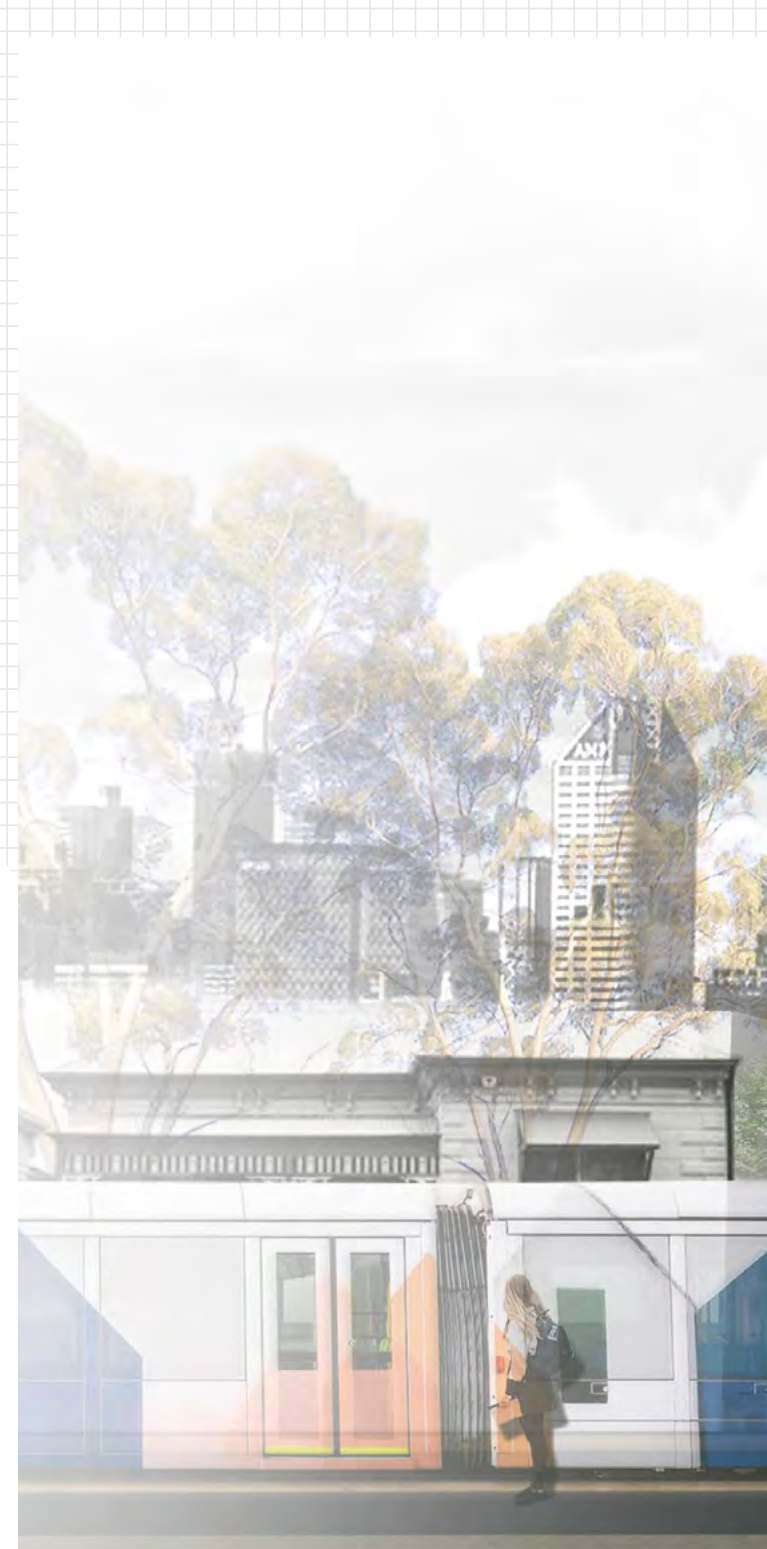
Cross Laminated Townhouse

Submission Extract

Our approach has been to design a high performing cross-laminated timber (CLT) modular system that could be transported to site on a single 14.5 x 5.4m flatbed truck as 6 individual modules.

Because of the transient nature of the building, we have made the design as passive as possible to limit the reliance on hard wired services such as air conditioning and hot water systems. It is important that this solution can be moved and used on other sites, nationally or internationally.

This project pushes the limits as to what can be done with CLT panels and works in a way that expresses its modularity.





Curtin University of Technology

Team 6

Project

3x3 HAUS

Submission Extract

This project brings a clear focus to the benefits of prefabrication in architectural design to develop healthy, comfortable carbon positive housing to Australia.

We have replaced the conventions of concrete and steel construction as these methods are responsible for the largest amount of carbon dioxide to the atmosphere.

Utilising CLT as the primary superstructure for the apartment modules has multiple environmental benefits through its storage of CO2 in its cellular structure, as well as its flexibility in the fabrication process, especially through the implementation of robotics and computer numerical control (CNC) computer-aided design (CAD) technologies.



The University of Melbourne

Project
ecoShip Apartments

Submission Extract

The ecoShip solution proposes an innovative and cost-effective method of modular building construction which re-uses bolsters containers as apartment room modules to create the ecoShip Apartments — a low rise apartment complex consisting of a mix of one and two bedroom apartments.

The general base structure for all container modules is similar and different arrangements of walls and cladding added depending on the size, shape, use and location of the module.

This allows for an easily customisable and flexible method of modular design using a single base structure.





Monash University

Submission Extract

This project is an affordable, prefabricated housing solution for the Australian Market. Using design for manufacture and assembly (DfMA), off-site construction and plug and play, this concept uniquely develops an affordable housing solution that can be cost-effectively relocated with minimal cost and stress.

The design employs a volumetric construction system. The dwellings are made up of a series of prefabricated modules constructed off site in a factory and delivered to site 85% completed.

These modules are designed so they can be taken apart and rearranged in multiple configurations depending on the site.





The University of Queensland

Team 1

Project

Link_POD

Submission Extract

We focused on the demand from people who need short-term living places from six months to two years. Traditional housing supply such as student flats and rental properties are not flexible and affordable enough to accommodate their ever-changing demands.

Our proposal of fully finished prefabricated modules will bring the housing demand and industry 4.0 manufacturing process together to solve these issues. We aim to increase the efficiency of construction, reduce associated costs of development, minimise our carbon footprint and create a sense of community.

By reducing all the traditional development costs, the benefit can be passed on to people who live in the community and achieve affordable housing supply for our target customers.



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



The University of Queensland

Team 2

Project

Honeycomb Housing

Submission Extract

Honeycomb Housing provides an innovative choice for affordable accommodation with vitality, sustainability and flexibility.

It challenges and surpasses the conventional residence by its unique and creative construction form and architectural design. In its new interpretation of affordable housing, the issue of natural environment and construction pollution as well as the imbalance between housing shortage and increasing accommodation requirement in the society, will be alleviated.

The vitality of this project is presented in the innovative hexagonal form which is bio-inspired by the honeycomb, a masterpiece of nature.



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA





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