

FLEETWOOD
BUILDING SOLUTIONS

The Challenge Cup

A team challenge designed to discover the next generation of leading young built environment professionals.

The construction sector is facing global scale challenges; housing shortages, demand in the social infrastructure space, lagging productivity, tight labour markets, ageing populations and reduced numbers of school leavers choosing to pursue a career in the construction sector. These are just a few of the headwind forces shaping the future of the sector, highlighted in multiple reports from Mark Farmer's UK Government Review of the Construction Labour Market Model, *'Modernise or Die'* to Mc Kinsey and Company's *'The Construction Industry is Ripe for Disruption'* and closer to home the Shergold and Weir *'Building Confidence'* 2018 report. These challenges are further compounded by environmental factors; resource scarcity, sustainability

and the climate emergency. Drivers for sensitive design solutions that engender resilience.

A significant response to addressing these fundamental issues facing the construction sector is the increased promotion and development of prefabrication and offsite manufacturing. Modern methods of construction (MMC), and the industrialisation of the construction sector.

As key representatives of the offsite manufacturing sector Fleetwood and prefabAUS are looking to play an industry leadership role in championing the development of Architects, Engineers and other AEC design professionals of tomorrow. The linkage of industry and academia is vital in preparing for, and investing in the future of the Construction sector.

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THE DESIGN CHALLENGE

Each year select Universities are invited to participate in “The Challenge Cup”. Aspiring students from each University representing the Architectural, Engineering and other AEC design streams will form collaborative and cross disciplinary teams of between 4 to 6 students.

Through an appointed representative steering committee, the competition will articulate a contemporary design challenge topic, with competition submission requirements to be assessed by an expert judging panel of cross disciplinary AEC professionals.

PROJECT CONTEXT

Addressing the shortage of affordable housing in Australia, opportunity exists for the use of excess land holdings to establish temporary residential accommodation. Offsite construction and prefabrication solutions are ideally placed to develop affordable housing solutions that meet a cost-effective relocation requirement.

Design solutions for a multi-level unit typology shall comprise a block plan providing 8 x two-bedroom and single bathroom units and 4 x one-bedroom and single bathroom units as a unit building design that can be readily modified, delivered in multiple configurations and with maximum flexibility to accommodate more than one façade type. This provides for a solution that will be responsive to various site locations over a 50-year period. The competition’s design concept will address the building life cycle cost equation.

THE SITE

In its initial iteration the project will be sited in the inner suburbs of Melbourne with the following characteristics;

- ▶ a greenfield site based in the inner-city suburbs of Melbourne
- ▶ the site will be a rectangular block 1,000m. in total, with nominal dimensions of 32m (in the east-west axis) x 31.25m (in the north-south axis) , the site has a nominal fall from the rear southern boundary to the front northern boundary of 1m
- ▶ there is only one access point to the site via the main road
 - ▷ the road consists of 4 lanes (2 each way) with a major tram line running between 6am-7pm
- ▶ surrounding structures include double storey houses either side of the site with a midrise apartment block (4 storeys) to the rear southern boundary
- ▶ no on site car parking is required. The site has dispensation due to proximity to public transport
- ▶ all the required services for electricity, gas, telecommunications, water, stormwater and sewer are located underground, outside the site’s northern boundary. Connections can be made at any single point along the northern site boundary.

OFF SITE PARAMETERS

- ▶ manufacturing facility will be within 50km to 250km of the building destination site
- ▶ maximum load height for transport and delivery is 3.9m

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PROJECT BRIEF

How can the implementation of offsite construction and modern methods of construction effect innovation in the delivery of **affordable housing** to the Australian market?

Leveraging prefabrication and modular offsite construction technologies, develop an original project “design” that responds to this question through the exploration of Industry 4.0 and emerging strategies in the construction sector, embracing;

- ▶ advanced design that delivers community and client value
- ▶ the potential of new technologies
- ▶ DfMA + D processes and smart engagement with changing construction sites
- ▶ new construction systems and smart materials
- ▶ high building performance across the whole building lifecycle
- ▶ advanced & efficient manufacture of building components, digitisation, robotics, LEAN manufacturing and operational efficiency
- ▶ processes and professions in transdisciplinary design approaches
- ▶ innovative business models and development and financing models e.g. circular economy
- ▶ resilience and sustainability responses to the climate emergency

The project must be a low-rise accommodation typology of between 2 to 4 storey construction.

Emulating “real world” challenges, the cross disciplinary project team will need to demonstrate the “design” effectively integrates building science principles, construction sector best practice, and adherence to the principles of national building codes and regulations.

SUBMISSION DELIVERABLES

Communicate your “design” challenge outcomes to the project brief. The design submission must include sufficient information to fully explain your design, and how it responds to the Project Brief.

The minimum submission requirements include;

- ▶ A1 posters (minimum of 3) conveying;
 - ▷ project drawings
 - ▷ details and connections
 - ▷ project programme
- ▶ 10 slide keynote pitch and project presentation limited to a 10 minute maximum duration
- ▶ 15-page Concept Design Validation report with a minimum 3-page Executive Summary. The report must address key considerations of the Concept design and demonstrate validation of the “design” challenge brief. Key elements that may be covered include;
 - ▷ engineering calculations
 - ▷ construction programme and budget evaluations
 - ▷ building statutory and regulatory compliance
- ▶ All “design” challenge competition entries must be in digital format;
 - ▷ all submissions to be in PDF format (except video content*)
 - ▷ resolution quality at a minimum 150dpi to maximum 600dpi (300dpi recommended)
 - ▷ upload file size maximum: 100MB per file
 - ▷ all video submissions to be in MP4
 - ▷ all competition submission material must be clearly legible
 - ▷ all submissions must have no distinguishing marks or attributes that will identify the teams in the blind judging process, any entries found not to comply will be disqualified from the competition

Key Dates:



Official Industry launch at the prefabAUS 2019 Conference (Sydney)



- Commencement of competition
- Online Competition Q&A portal opens



University team nominations close



Online Competition Q&A portal closes, final requests must be received by 4pm AEST



Online Competition Q&A portal final post uploaded by 4pm AEST



Competition submission deadline 4pm AEST



One week blind judging process completed



The Challenge Cup culminates in a National webinar



- Competition results announced at close of webinar

JUDGING

Announcement of judging panel to be advised

Judging panel will consist of AEC industry experts from a cross disciplinary background.

ENTRY SHOWCASE

- ▶ Winning team, 2nd and 3rd place entries announced at the close of The Challenge Cup webinar event
- ▶ Competition Entries and Webinar Event Presentation highlights showcased on The Challenge Cup 2020 “virtual gallery” online competition archive after the close of the Webinar Event

SUBMISSION PROTOCOLS

- ▶ Competition Q&A online portal
- ▶ Digital Competition Submission to a dedicated online portal
- ▶ Entries must comply with the APA 6th Guidelines for referencing and citations
- ▶ Entries must comply in general accordance with Academic policy guidelines
- ▶ Student Intellectual Property will be treated in general accordance with each University's existing policy guidelines