

Habitat on Juers

Kingston, Queensland



All photographs: Scott Burrows unless stated otherwise.

Responding to context
Pitched forms harmonise
with surrounding residential
developments

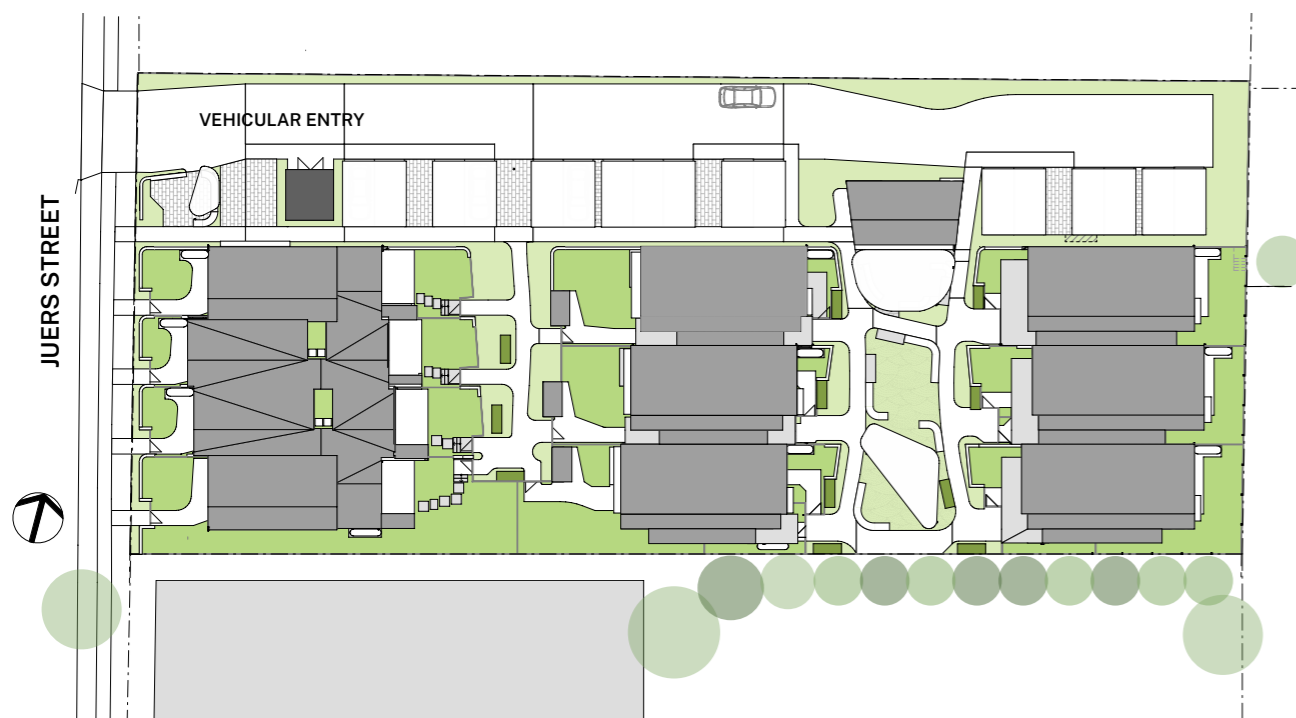


An exemplar development featuring 16 social units, designed with a holistic approach that fosters community and achieves exceptional sustainability outcomes

QUICK FACTS

BUILDING TYPE: Social housing	PROJECT TIMELINE: Project initiation: 2019 Construction start: Nov 2020 Handover: Apr 2022
LOCATION: Logan, QLD	ACCESSIBILITY 10x Gold 6x Platinum
COUNTRY: Yuggera Country	SUSTAINABILITY
LOCAL GOVERNMENT AREA: Logan City Council	RAIN WATER TANKS 12 x 3000L
PROJECT COST: \$5.4mil	SOLAR PANELS 270L (hot water)
CLIENT: Juers Queensland Government HPO	HOT WATER SYSTEM Solar
PROCUREMENT PROCESS Design and Construct/ Design for Construction	BUILDING ENERGY Electric
PROJECT DATA: Site area 3382m ² Gross floor area 1659m ² 2 storeys 16 units (2x 3BDR, 2x 2BDR, 12x 1BDR) 30 bicycle parking spaces 16 car parking spaces	NATHERS RATING 8.5 stars
PROJECT TEAM:	FIXTURES + FITTINGS 6 stars LEDs
ARCHITECTURE Refresh Design	
BUILDER Bryant Construction	
ENGINEERING NGS Engineers	
LANDSCAPE ARCHITECT LAUDINK	
HYDRAULIC ENGINEER H Design	





Site plan



Communal hub



A well-considered street facade

Habitat on Juers is a medium density social housing project in Kingston, Queensland that demonstrates a strong commitment to environmental and social sustainability, fostering high amenity and sense of community for its residents. The project was part of Queensland Government's twenty social and affordable housing demonstration projects and utilises a hybrid Modern Methods of Construction (MMC) system of cross-laminated timber (CLT) floor cassettes.

Located in a low medium density residential zone, the surrounding area in Logan is characterised by a mix of commercial buildings, townhouses, and predominantly detached single houses. Habitat on Juers thoughtfully responds to its local context by incorporating low single-storey structures at the front, featuring pitched roof forms that reflect the styles of traditional homes. Double-storey one bed units are located to the rear of the site with common stairs accessing the communal courtyard.

Spatial planning

A human and community-centric approach has been integrated in the planning of the site. Despite the original brief calling for 10-12 social housing units, the architects were able to effectively increase this yield to 16. All units are accessible and adaptable and cleverly arranged to allow for maximum amenity and illustrating how density can be achieved in a thoughtful manner.

Vehicular access and parking is kept to the side of the site away from the units with clear separation between vehicular and pedestrian entry. The four units facing the street frontage have a private front yard and separate front and rear entry, mirroring the language of the detached dwellings on the street.

The central communal area, known as the 'biophilic heart space' provides play equipment, productive gardens, shared tool shed and informal seating areas, fostering social interaction between residents. A semi-public communal hub provides a designated area for service providers to provide support to tenants in a safe setting. Private and communal landscaped areas act as a buffer between the units.

The tenant at the heart

Habitat on Juers is a prime example of how user engagement can enhance a project and respond to specific needs and values of tenants. Public Research + Design was engaged by the architects to conduct evidence-based and participatory research to help inform the design.

This process involved:

- A review of existing academic research on social outcomes in architecture and social housing
- Observational place analyses in Logan
- Interviews with 11 residents in 2 social housing sites and one housing manager in Logan
- Design workshops with the architects
- Stakeholder workshops with occupational therapists, clients and the Housing Partnerships Office.

The user research found the following key themes to be important to tenants:

1. Maintenance requirements

Tenants preferred easier and minimal maintenance, more storage for maintenance equipment, less active landscaping, high quality of materials and a desire for outdoor furniture to be protected.

2. Positive social interactions

A strong desire for positive social interactions as this is directly linked to creating a feeling of care amongst residents, preventing harm and crowding out spaces where negative interactions might occur.

3. Service provision

The research identified challenges in effective case management due to insufficient safe spaces for confidential conversations and limited parking, complicating the transport of service equipment.

4. Privacy

Key privacy issues included concerns about visibility, noise, trespassing, theft, and the safety of animals and children.

5. Service hub

A need for a dedicated service hub was identified, providing a space for service provision, social gatherings for tenants and visitors, and a respite area away from the indoors.

Each of these key themes were addressed in the design of the project. Following its completion, a post-occupancy review was conducted and yielded highly positive feedback from the residents.



Designed for wellbeing
Private balconies providing light, ventilation, and a personal retreat



Internal courtyards
Allow for increased solar access and ventilation and opportunities for landscaping



Fostering social interaction
Multifunctional 'biophilic heart space'

Layered privacy
A seamless transition from private courtyards to the communal open space

Sustainability

Habitat on Juers showcases exceptional sustainability outcomes. The use of CLT significantly reduces the carbon footprint and minimises waste during construction. The project is entirely electric, with solar energy used to provide hot water and reduce the operational carbon footprint, with an estimated annual energy consumption of 4.08 kWh/m²/year per unit.

In addition, all major trees on site have been preserved, and all rainwater is harvested for irrigation, demonstrating a strong commitment to water-sensitive urban design.

User research by Public Research + Design revealed that energy costs significantly impact the financial situations of tenants in social housing. Refresh Design collaborated with an external energy supplier to conduct energy modeling using a single meter. This aimed to explore more effective energy consumption management, through the implementation of solar panels paired with separate submeters. The results demonstrated substantial cost benefits, highlighting the potential for tailored energy solutions in social housing. These findings challenge existing legislation and underscore the need for reforms to enhance financial fairness and sustainability for tenants.

Amenity and wellbeing

Passive design principles have been employed to enhance comfort and reduce energy consumption, without the need for mechanical heating and cooling systems. All units have a north-south orientation, maximising solar access and north-easterly breezes in summer.

Large overhangs, awnings and hoods above doors and windows provide protection against harsh summer sun, while allowing winter sun to penetrate during cooler months. Additionally, all living areas are cross-ventilated, with breaks between units and open staircases that further improve airflow.

Balancing privacy and social connectivity

The layout of the development thoughtfully addresses user feedback related to privacy concerns while fostering opportunities for social interaction and respite. There is a clear hierarchy of spaces and circulation paths, incorporating private pathways leading to individual units, semi-private pathways, and public pathways that connect to shared communal areas. Passive surveillance is integrated into the design, creating a sense of ownership of communal spaces without compromising residents' privacy.

Accessibility

Habitat on Juers consists of ten LHA Gold Level and six LHA Platinum Level units, ensuring inclusivity and catering to people with diverse abilities and life stages.

The flexible planning accommodates shifting demographics in social housing and evolving living and working patterns, allowing residents to comfortably age in place. The diverse mix of units supports various living scenarios — singles, couples, families, and multi-generational arrangements while providing ample private and communal outdoor spaces.

Materiality

The design carefully considers the environmental impact and embodied energy of materials, both in their selection and delivery. The materials were selected in response to user research, with tenants having a preference for materials that were durable, high quality, safe and low maintenance.

Brick and blockwork walls along the western facades and party walls, along with concrete floors internally, enhance comfort through passive solar design and make effective use of thermal mass. Fibre cement cladding and timber battens alternate in black and white on the upper level facades. The minimal material palette, together with the staggering of the forms and slight variation gives each unit a sense of individuality. This considered selection of materials balances construction costs with energy efficiency, ensuring comfortable living conditions while delivering cost-effective buildings.

Thoughtful materials
Curved brick seating blends function and warmth

High amenity
Open staircases enhance ventilation and airflow



Lessons for MMC

1. Be curious

Look to include MMC at every opportunity and have traditional methods as back-up.

2. Get supplier input early

Establish sound foundations with expert advice to allow for detailed resolution later.

3. Collaborate, test, design, repeat

Integrate compliance testing into the design and production process.

4. Think about site access during construction

Plan the site layout and construction process with MMC in mind - think about cranes & delivery.

5. Standardise floor plans where possible

Replicable floor plans with vertically aligned structural and service elements reduce complexity, material waste and risk.

6. Design in modular increments

Adopt regular grids based on material sizes to reduce waste, minimise structural spans and heavy engineering.

7. Create interest while standardising

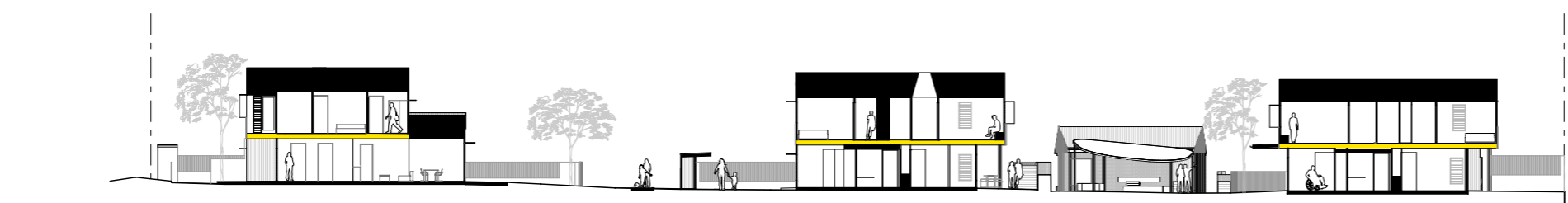
By using standard components and varying elements like the facades, materials and landscaping it is possible to deliver cost-effective and high quality outcomes whilst creating individuality and a sense of place.

8. Ensure design continuity

Keeping the design architect involved through novation to maintain design integrity.



Ground floor plan
Effective site planning
and replicable floor plans
enabled the use of MMC



Section
CLT floor cassettes
highlighted in yellow

Advanced construction

Refresh Design originally intended to use MMC and CLT more extensively across the project, including vertical wall elements and the roof. However a number of factors including time constraints to get project out to tender quickly, coupled with a lack of data to support compliance testing led to a hybrid construction process and the select use of CLT for the floors.

Habitat on Juers demonstrates that when a project is designed for MMC it can be delivered in a variety of ways. Some of the characteristics that make a design suitable for MMC include:

- Commitment to investing in the design process up front with early inputs from suppliers
- Intentional site planning including a wide access route to enable crane and vehicle access for modular units
- Replicable floor plans with structural elements and wet services arranged vertically above each other

- The use of regular modules and short spans between supporting members.

The design incorporates four different floor plans across 16 units with variations in the facade and external landscaping to ensure a unique identity for each unit. The buildings were ultimately comprised of lightweight timber frame and brick veneer at ground floor, with CLT cassettes for the upper level floors and lightweight construction above. The exposed CLT timber ceiling finish provided warmth and contributed to thermal comfort.

Driving improvement and innovation

The one bedroom units located at the rear of site were arranged vertically above each other and were therefore classified as Class 2 buildings. These needed to comply with more stringent regulations around fire separation, waterproofing and acoustics.

Close collaboration between the architects from Refresh Design, consultants, and the CLT supplier X-Lam was essential, given the relatively new application of CLT in the Australian context. This process was followed by extensive testing and simulation to ensure compliance. The resulting evidence and data can now serve as valuable references for future projects, contributing to a growing body of knowledge supporting other MMC initiatives. Notably, another demonstration project using the same construction method is currently underway nearby, featuring CLT for both the ceilings and the roof structure.

Although this testing required time, the overall speed of construction still surpassed that of traditional methods and the buildings were delivered on time.



Accelerated construction
Delivery of CLT floor slabs to site