Charles Street Residences

Project type: Residential

TROPICAL SUSTAINABLE DESIGN CASE STUDIES

Location: Cairns North, QLD, Australia
Year completed: 2011

- **Four townhouses developed on inner city land in Cairns**
- **The existing Queenslander-style home was re-used retaining the character of the streetscape**
- **Passive design and lightweight materials pick up on the Queenslander's cues in terms of scale and rhythm with a modern aesthetic approach**

OVERVIEW

The project encompasses four detached 'units' on a property in Cairns North. The site originally contained a Queenslander to the front of the site that had undergone a number of renovations, and a solid masonry shed to the rear of the site. Using old and new, each residence has its own identity and place, while the complete project is a successful tropical interpretation of the unit / townhouse typology.

The resulting development retains the original parts of the existing Queenslander, transforming it to provide a large open plan living space with car parking underneath. The Queenslander has also been brought forward on the site, allowing two new double storey residences to slot between the Queenslander and adapted shed, which became the fourth dwelling. The resulting streetscape is sympathetic to the remainder of the existing Queenslanders in the vicinity.

Awards: AIA 2014 Far North Queensland Commendation.

PLANNING AND MANAGEMENT

The client's initial idea was to knock down the existing Queenslander home and develop a set of new units. Options were reviewed and it was concluded that saving the Queenslander and retrofitting the garage at the back had many benefits.

The chosen option was four detached buildings with the ability to separate titles with a community title for access – which is beneficial when considering resale.

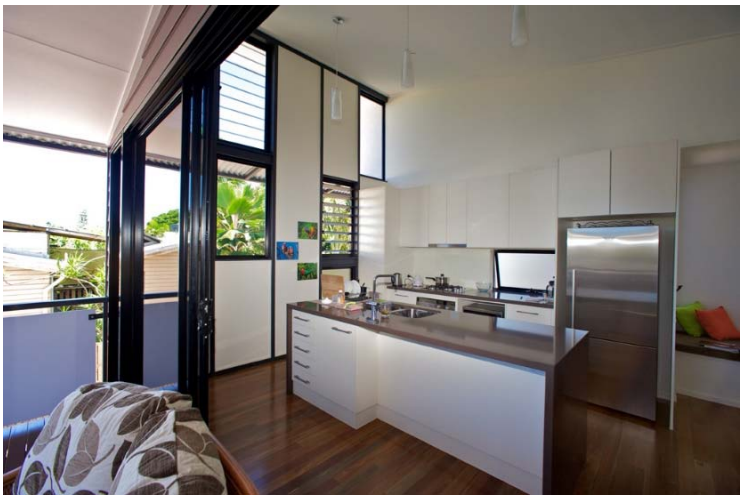
The three rear residences have views over the entry circulation space, while the front residence looks over the street. The amenity provided by the view corridors facilitates a safe street and safe development, while maintaining privacy between residences.

In addition to the 'safe' urban design response, the streetscape is sympathetic to the remainder of existing Queenslanders in the surrounding area.

The civil and landscaping consultants worked with the architects to delete the council prescribed kerb and channels.

SITE

The land is a suburban lot situated in an older and more traditional inner city area of Cairns. The long boundaries of the lot face the north east and south west, with a shorter street frontage facing the north-west. The project has four buildings positioned on the site at angles; the direct east and west sun especially shielding the longer lengths of wall.



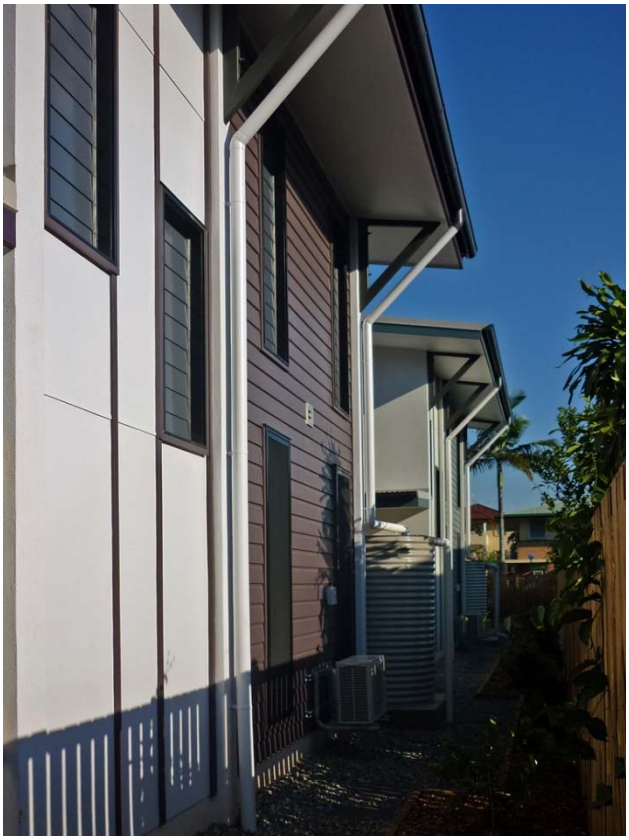
A sewer line traverses the middle of the lot and the two new townhouses are positioned with setbacks. A driveway and circulation space runs down the north-eastern side boundary, providing access to all residences.

DESIGN

Cairns is a tropical environment so any thermal mass has been either kept to a minimum or shaded in the buildings. There aren't big diurnal changes in Cairns' daily temperatures so the primary concern in the environmental design is to repel and dissipate daytime heat.

The original 'Queenslander' that was relocated onsite was stripped back and transformed into a renovated dwelling. Two new double storey residences were slotted between the Queenslander and the shed, which became the fourth dwelling with extensive renovation works.

The Queenslander, once stripped back, was brought back to its former glory. Behind the facelifted Queenslander, the two new dwellings pick up on the old building's cues, in regard to scale and rhythm and utilise these cues with a modern aesthetic approach.



Living spaces are large and open plan, and are situated on the first floor to capture breezes, with raking ceilings and high level venting. Bedrooms are downstairs and use the shaded thermal mass of the slab to keep cool, with landscaping providing privacy buffers.

Rainfall is a key concern in the tropics. Car parking is addressed by providing undercover access directly to each residence. Louvres and awnings are employed to allow ventilation during the steamy rain season.

The buildings are broken up, allowing breezes through the site and gardens between.

MATERIALS

The lightweight construction typology of the Queenslander was referenced in the new townhouses – although adopting new/modern technologies and construction techniques.

Construction is generally lightweight with efficiency in the spans of the materials to maintain an achievable budget. The main structure is steel, a material that is recyclable.

Reuse of the existing structures was also a considerable cost saving.

ENERGY

Passive design considerations have reduced the need to rely on air-conditioning. Cross ventilation with the aide of ceiling fans helps to keep air flowing through the rooms.

WATER AND WASTE

The buildings are positioned in a way that promotes areas for wet season soakage. Paved area runoff is directed to rubble drains to increase the site soakage.

Rainwater tanks collect water which is then reused in the supply to some internal fixtures, as well as for watering the gardens.

5 Star rated plumbing fixtures have been used throughout the project.

OWNERS/USERS STATEMENT

"We were lucky enough to get a long narrow site where we could actually position the dwellings one behind the other, and bring the Queenslander forward in keeping with the streetscape. The configuration benefitted passive design outcomes.
The feeling of privacy and security through the use / control of view corridors was of great importance to the client and they currently enjoy the lifestyle the design affords them." Nicole Ewing, Studio Mango

"Well-crafted and maximizing the use of a very small site, this compact upside down townhouse is an excellent alternative for densification and assists in maintaining the identity of a Cairns character suburb." 2014 AIA Regional Commendation, Jury citation

PROJECT TEAM

Base building architect/ designer: Studio Mango (Nicole Ewing & James Maude)
Other architect/ designer: Suzan Quigg Landscape Design
Civil engineer (Site and traffic): Kel Bruce - KFB Engineers
Structural engineer: CMG Consulting Engineers
Services engineer (mechanical electrical, hydraulic, fire): WSP Electrical, Greg Gilboy of Gilboy Hydraulics
Project manager: Nicole Ewing
Green Star rating consultant: Green at Heart
Other consultants: All Construction Approvals
Builder: Vis Constructions
Photographs courtesy of Robert Gesink

For more information visit: **www.jcu.edu.au/tsd**
www.greenbuild.com.au

JAMES COOK UNIVERSITY AUSTRALIA

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