TROPICAL SUSTAINABLE DESIGN CASE STUDIES

The Glass House

Project type: Residential

Location: Edge Hill, Cairns QLD, Australia
Year completed: 2013

- **An iconic modernist pavilion within a wet tropical setting**
- **The main living areas and circulation zones are literally open, outdoor conditions under cover**

OVERVIEW

This project is a re-presentation of Phillip Johnson's Glass House in New Canaan, Connecticut, USA – less the glass – making it a perfectly adaptable modernist prototype for contemporary living in tropical latitudes. This residence is a new housing prototype and a re-think of the possibilities of a typical suburban context within our tropical cities.

PLANNING AND MANAGEMENT

In contrast to the typical condensed street frontage, the home was setback deep into the block, providing for an expansive front garden and rear outlook onto a freshwater creek. This provided an opportunity to successfully re-present an iconic modernist pavilion within a wet tropical setting, visible from the street as a distinct alternative and new suburban typology.

The process strives for innovation and new solutions to the problems of living with climate change in the 21st century. Integration of allied disciplines was critical to the successful delivery of the vision for the project, in particular the hydraulic and structural engineering which not only facilitated the advanced sustainability initiatives but also the practical requirements for withstanding annual cyclonic weather events.

The project budget was clearly defined at the outset, not to be exceeded. The project was delivered on time and on-budget through positive management of the functional requirements meeting with the architectural intent. Finishing trades were minimised where possible, in the spirit of the great modernist houses of the 20th Century: the house is intentionally raw yet elegant.

SITE

The lot is situated in the inner city suburb of Cairns, a few minutes away from Cairns Botanical Gardens and close to city centre amenities. The building area was flat and cleared of vegetation.

DESIGN

The main living areas and circulation zones are literally open, outdoor conditions under cover. Functional 'pods' figure in plan to enclose bedrooms, bathrooms, a lounge / music room and an e-glazed office – all secure by way of sliding glass panels and individually air-conditioned.

A central dappled-light filled 'internal' courtyard features the swimming pool as a feature garden within the main living and dining spaces.

Open to the sky, this central garden provides a regular spectacle in tropical downpours as a 'rain curtain'.

The office 'pod' features glazed walls that double as transparent bookshelves, conceptually as display case featuring a 'field' of bookends.

The client requested that the house be exemplar as best practice for universal access. Careful consideration was taken in the development of all details such that the entire house is independently accessible via wheelchair.

MATERIALS

Materials are all honestly expressed and the detailing and junction between surfaces is absolutely clean, requiring genuine attention to detail by the building contractor.

ENERGY

The home is carbon neutral in operation. All energy is renewable, provided by the large 4.8 kWh photovoltaic and inverter array with feed-back to the power grid, off-setting the use of air-conditioning and LED lighting.

WATER AND WASTE

The entire roof area is harvested into a 45,000 litre in-ground water tank integrated with the hydraulic systems for user control over diversion between irrigation and other non-potable operations.

OWNERS/USERS STATEMENT

"The Glass House is a complex idea of exceptional execution. It melds program requirements for accessibility and sustainability with modern design principles in a challenging tropical environment. The experience of the house is simple and beautiful and belies the complexity of thought, design and construction that made it. It makes you ask yourself 'How much house do we really need to live comfortably in the Tropics'?" Dr Shaneen Fantin

More information on the house can be found at:
http://architectureau.com/articles/-glass-house/

PROJECT TEAM

Base building architect/ designer: Charles Wright Architects
Structural engineer: G & A Consultants
Services Engineer: Gilboy Hydraulic Solutions
Builder: La Spina Homes

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

The project has been funded by the JCU Sustainability Fund and supported by the TGBN powered by GreenBuild.com.au.