

GROUND FLOOR PLAN/SITE PLAN
SUSTAINABLE HOUSING FOR LIFE DESIGN COMPETITION 2015



SCENARIO

Location
Suffolk Park, Byron Bay, NSW
28.6833° S, 153.6167° E

Temperature
Yearly Av.Min Temperature: 16.9°C
Yearly Av. Max Temperature: 23.5°C

Winter Averages
Min: 12.7°C
Max: 19.3°C

Summer Averages
Min: 20.7°C
Max: 27.2°C

Prevailing Winds
Winter Averages
Morning: South-West
Afternoon: South & South-East

Summer Averages
Morning: South-East & North
Afternoon: East & South-East

- Life-Course**
- Family with young children
 - Initially accommodates renters and later on accommodates grandparents who come to live with them
 - Children initially sleep in Bedrooms 2 and 3 and use the attic and open floor area upstairs as a play area
 - As the children grow up, they transition to their own bedrooms upstairs

FOOTPRINT
Site area: 760sqm
Internal Footprint: 81.9sqm
External Footprint: 52.4sqm
Total Footprint: 312.8sqm = 41% Site Cover

FIRST FLOOR PLAN

SUSTAINABLE HOUSING FOR LIFE DESIGN COMPETITION 2015



0 1 2 3 4m

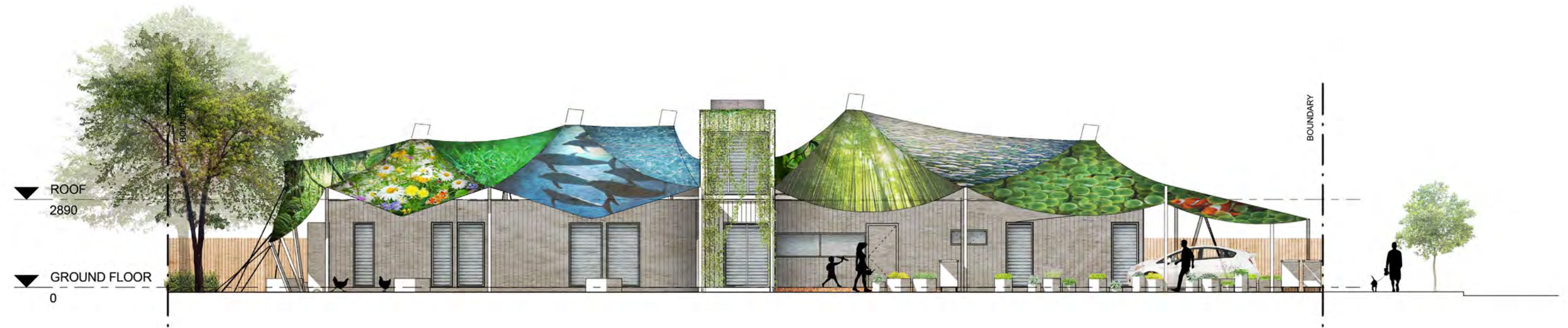


NORTH

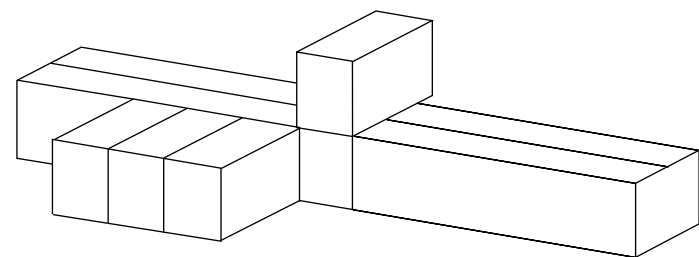
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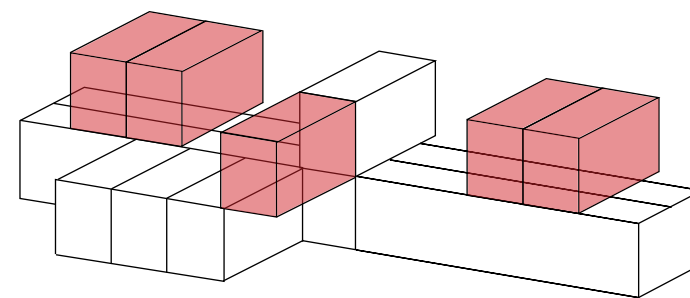
NORTH ELEVATION



SOUTH ELEVATION



EXISTING CONFIGURATION OF SHIPPING CONTAINERS



POTENTIAL ADAPTATION OF CONFIGURATION TO FACILITATE FUTURE GROWTH

ECONOMIC SUSTAINABILITY DESIGN PRINCIPLES

- Use of shipping containers is cost effective and affordable to a wide cross section of society
- Extensive use of recycled materials throughout the design facilitates innovative and effective materials and building systems

SOCIAL SUSTAINABILITY DESIGN PRINCIPLES

- Shipping containers allow for a flexible, modular design that can be adapted to suit different stages in life, as demonstrated in diagram shown on the left.
- Fluidity and flexibility of roof membrane allows for potential adjustments to shipping containers to be efficient.
- Designed for universal access at the ground plane with the use of ramps and multiple point of entries; Bedroom 04 and connected ensuite anticipated to be used as universally accessible room for elderly grandparents.



EAST ELEVATION



WEST ELEVATION



SECTION A-A

ECOLOGICAL SUSTAINABILITY DESIGN PRINCIPLES

- Optimised orientation of building to facilitate summer shade and winter sun access
- Optimised energy efficiency measures include:
 - Plenty of operable windows and louvres to facilitate natural cross ventilation and provide ample natural light
 - Renewable energy source - 3kW Solar energy system
 - Skylights made from recycled Formatubes provide even more natural light
 - R2.5 Insulation to all walls and ceiling
- Extensive sourcing of recycled materials for elements of the house:
 - Recycled billboard skins for the roof membrane
 - Recycled bamboo for the posts
 - Recycled council infrastructure pipes as planters
 - Recycled shipping containers for the house frame
 - Recycled plywood for internal flooring
 - Recycled bricks for external paving for the terrace and carport
- On-site water harvesting and management with the use of various rock gardens placed under pinch points in the roof membrane that collect rainwater into underground water tanks
- On-site composting, vegie gardens and chicken coop facilitate a sustainable ecosystem of edible food and plants