

SNUG CONCEPT



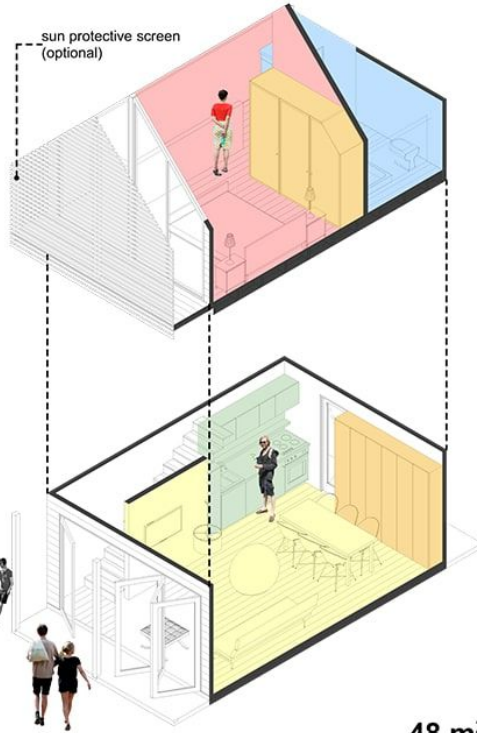
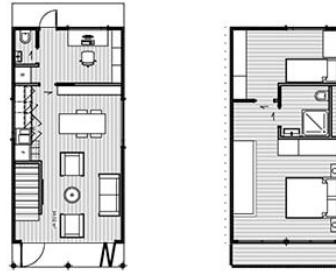
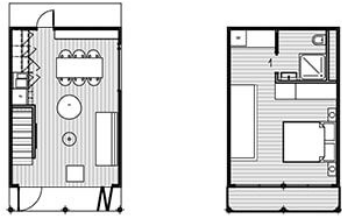
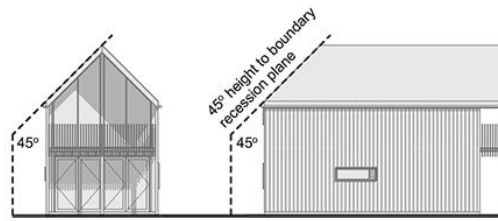
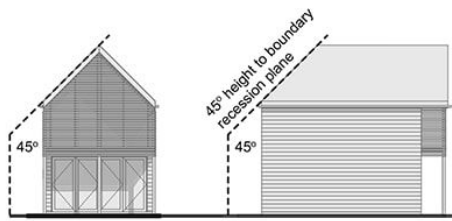
45 DEGREES

The original design concept was based on the need to provide extra space for three growing boys as they transition from home to independence. It was envisaged the separate dwelling would first just provide additional play space on wet winter days, then separate semi-independent living and sleeping during later teenage years and later more independent living as young adults. In the future it could be home to the aging parents if any of the boys had a family and moved back in to the main house.

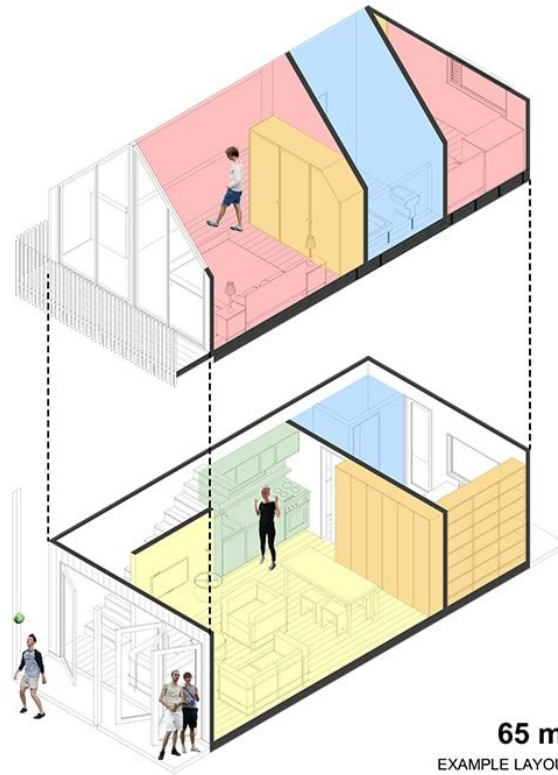
The original 110m² house was built on a cross leased ex Housing New Zealand property about 18 years ago and would be typical of many sections in and around Auckland.

A mezzanine or upper level floor area fitting snugly under a 45 degree pitch gable and hip roof allows more spaces to be accommodated within a smaller footprint that will more easily conform to site coverage and height to boundary requirements of the Auckland Unitary Plan rules. In Mixed Housing Urban and Suburban Zones in particular the size and location of an existing dwelling may otherwise limit the ability to maximise existing sections by adding an accessory dwelling unit.





48 m²
EXAMPLE LAYOUT



65 m²
EXAMPLE LAYOUT

Construction costs will vary depending on final cladding choices, the area of glazing at the gable end of the dwelling and whether a privacy screen and deck is added to the upper level.

Costs will also vary depending on the level of "sustainability" materials selected have. Strand board for example which can be used for flooring and wall lining has a "Declare" environmental certification under the "Living Building Challenge" framework which arguably defines the most advanced measure of sustainability in the built environment today. The panel construction system also provides the opportunity to maximise insulation levels and minimise thermal bridging. Panels could be insulated with Terra Lana wool insulation installed continuously between the vertical studs and all services installed within the internal strapping. An airtight control membrane could be installed between the panels and internal strapping for further thermal efficiency.

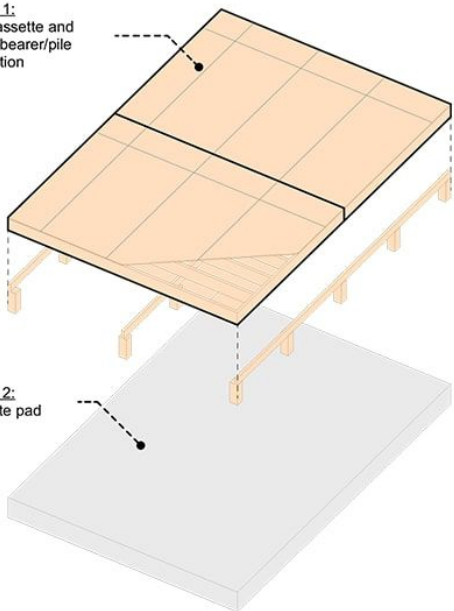
If a concrete ground floor was preferred Firth Declare certified "Ecoconcrete" in a prefabricated highly insulated foundation system such as "MAXraft" could be considered.

The dwelling would connect to site services in a conventional manner however a rain water tank could mitigate peak storm water discharges and water supply demand. Photovoltaic panel power generation systems can be considered as these become more and more affordable to install.

- SLEEPING
- BATHROOM / LAUNDRY
- STORAGE SPACES
- KITCHEN
- LIVING

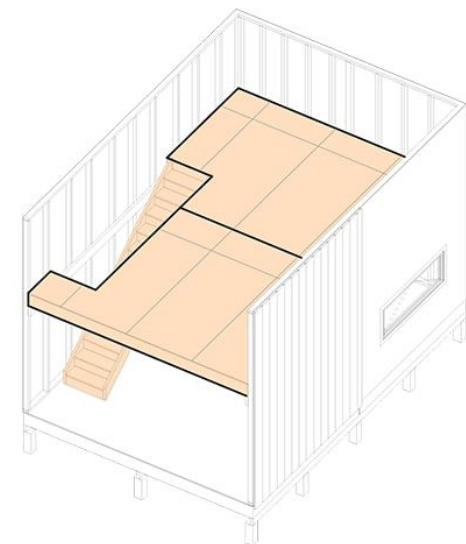


Option 1:
floor cassette and
timber bearer/pile
foundation

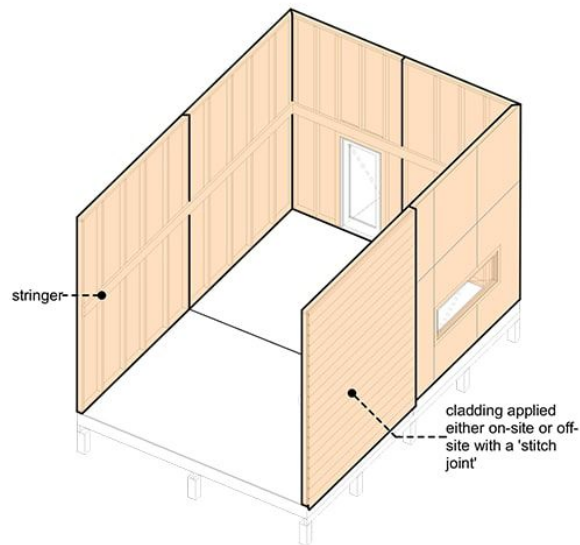


Option 2:
concrete pad

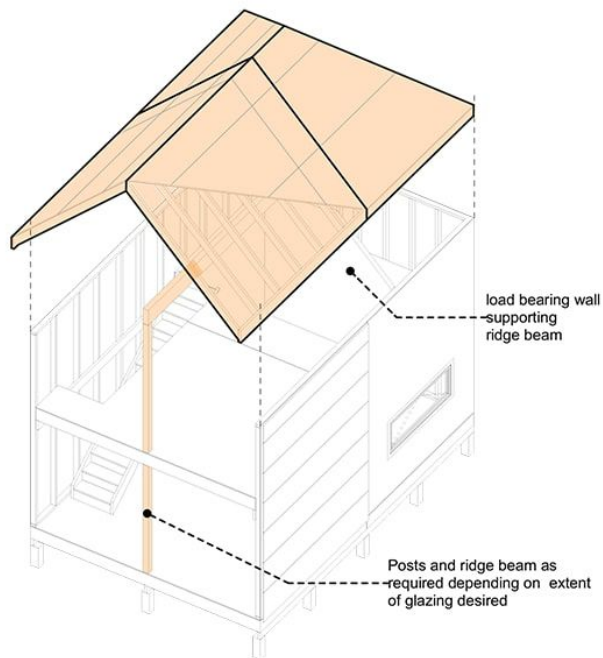
1 FOUNDATION AND GROUND FLOOR CASSETTES



3 MID-FLOOR CASSETTES



2 WALL CASSETTES



4 ROOF CASSETTES

CONSTRUCTION

A series of ground floor, mid floor, full height wall and roof panel "cassettes" are proposed for offsite construction. Cassettes are constructed from conventional timber floor joist, wall stud and roof rafter framing and then sheathed in either flooring sheet material for the floor panels, rigid air barrier material for the wall panels and a similar rigid air barrier material for the roof panels.

A sheet material such as strand board can be used in most of these applications. Aluminium windows can be inserted off site in to wall or roof panels as desired.

Panels up to 3 metres in width can be reasonably easily transported to and lifted around a site by a hiab. Panels are bolted together on site (and later if required disassembled similarly).

This off site prefabricated "cassette" approach is simply a refinement of what has been done before and so is not unfamiliar with many contractors. This facilitates a greater potential uptake of off-site prefabrication without limiting the supply chain to a select few manufacturers who in turn might require very unique and bespoke assembly skills on site.

1 FOUNDATION AND GROUND FLOOR CASSETTES

Floor cassettes are lifted in to place over a traditional timber bearer and pile foundation system. Alternatively a concrete floor and foundation system can be used if that is more suitable to site topography or height to boundary constraints.

2 WALL CASSETTES

Full height two storey wall cassettes are lifted in to place and bolted together. Cassettes can either be clad on site using conventional acceptable solution weather tightness details or clad off site with just a final "stitch" type cladding joint detail required at panel edges once installed on site. This allows a large number of controlled design cladding choices available for people to suit individual preferences or complement existing dwellings. A stringer is then screwed to the wall cassettes to support the mid-floor cassettes.

3 MID-FLOOR CASSETTES

Mid-floor cassettes are lifted on to the stringer supports. The cassettes act as diaphragms that strengthen the vertical studs of the wall cassettes and facilitate a greater timber economy of thinner timber wall framing.

4 ROOF CASSETTES

A ridge beam supported on timber posts or wall cassettes (depending on the extent of glazing desired on the gable wall) is installed to support the roof cassettes. Again cassettes can either have roofing applied on site to conventional acceptable solution weather tightness details or roofed off site with "stitch" type flashing details required at panel edges and hip junctions once installed on site

Wall cassettes are then strapped on the inside to the same thickness as the stringer supporting the mid floor cassettes. This mitigates the thermal bridging you would otherwise get in solid nogging wall framing in the traditional manner. Internal lining such as strand board can then be screw fixed to the strapping or a more traditional plastered gib board applied if that is preferred.

