

HOLDING COURT

COURTYARD HOUSING IS A STAR STARTER



AUCKLAND
DESIGN MANUAL
TE PUKA WHAKATAIRANGA I A TĀMAKI NAKAUARAU

BUILDINGS + SITES // HOUSING CASE STUDY

Preston Starter Home
Otara, Auckland

OVERVIEW

Competition winner of NZ Department of Building and Housing 'Starter Home Design Competition' – a demonstration project showing good quality, sustainable, cost efficient construction.

PROJECT SUMMARY

S3 Architects was the overall winner of the 'Starter Home Design Competition' run by the New Zealand Department of Building and Housing (DBH). The competition brief was to design an affordable home with a habitable floor area of 120m² a cost of no more than \$1,400 per square metre, and the design was to be repeated in a variety of configurations over 160 homes

The winning house design was built as a demonstration project – and the cost to build one house ranges from \$1,600 - \$1,700 per square metre depending on various specifications and materials.

The house was built by the Housing New Zealand Corporation in Preston Road, Otara, Auckland to demonstrate that innovative design can result in good quality, energy efficient, affordable housing.

The scheme explores ways in which existing, low cost, familiar construction methods and materials can be reconfigured to produce a better spatial and environmental experience without increasing costs. Improvements in affordability were possible by exploring new innovative technologies.

The competition brief asked for a house plan that can easily be adapted to work on a range of orientations, is expandable, and can have a garage or carport added to the building. This case study plan is for a west approach but works equally well when mirrored on a north – south axis.

This home achieves an excellent rating using the Green Home Scheme. Without optional environmentally sustainable design (ESD) features this house achieves 5 star HERS rating of 95MJ/sqm pa Auckland. (172MJ/sqm pa Wellington and 296 MJ/sqm pa Christchurch).



View from Preston Road.

KEY PROJECT INFORMATION

HOUSING TYPE DETACHED	DENSITY 21 DW/HA	ARCHITECT & DESIGN TEAM S3 ARCHITECTS LTD Stephen Smith & Martin King	YEAR COMPLETED 2011
SITE AREA 474 M² Relatively flat site with no topographical challenges.	PROJECT TYPE SINGLE STOREY COURTYARD DESIGN 120m ² 3 bedroom house with 2 bathrooms and space for 2 cars to park onsite.	CLIENT/DEVELOPER DEPARTMENT OF BUILDING & HOUSING / HNZC	PRICE BAND LOW-RANGE A low-range project would typically have a current build cost of \$1500 - \$2000 per m ² , exclusive of land costs, professional services and regulatory fees Construction cost approx \$210,000.00 + GST Consultant fees – not released
PARKING FRONT ACCESS 2 x car parking spaces			

UNDERSTANDING THE NEIGHBOURHOOD

1. The building is on a flat site with frontage to Preston Road. Bus services are good, and the site is close to a range of schools and open spaces.
2. The area is a low density suburb of one and two storey houses, with a long history of social housing that is largely unchanged form when it was constructed in the 1960's. The design and uses some traditional materials and colour, but is a very contemporary update on the classic NZ 3 bed state house.



Overhead shot looking towards the southern boundary of the site.

GETTING IT RIGHT STREET TO FRONT DOOR

1. The house has a clearly defined front entry and path that connects directly to the street and is separate from the driveway – an important feature for child safety because it helps to keep children away from reversing cars.
2. The setback from the street is similar to the neighboring houses, which continues the wider street context of relatively deep landscaped gardens.
3. Permeable (see-through) pool fencing has been used to allow a clear view of the street, ease of maintenance and reduce any opportunities for tagging. The planting provides a buffer between the street and the house.
4. Kitchen facing the street provides for passive surveillance by occupants. Increased glazing would have improved the overlooking of the street.
5. The house directly addresses and overlooks the street, making it safe and attractive.



North - East elevation of the House.

GETTING IT RIGHT THE BUILDING

1. Small windows on the south minimise heat loss but provide natural cross ventilation to the main living area.
2. Although no space heating is required by the brief, an energy efficient inverter heat pump could be fitted in the main living space with outdoor unit located in service zone. This would be capable of heating the whole house to save costs in the long term.
3. The building plan is designed to be easily adapted to work on a range of orientations – increasing flexibility, and decreasing costs. A carport or garage can also be added at a later date.
4. The front elevation uses a range of materials and colours to define the different elements of the house, and the deep eave and wrap over roof form provides a strong containing element to the house.



North - West elevation the house when looking from Preston Road.

GETTING IT RIGHT THE BUILDING

1. Wide door openings and level floors (no internal steps) provide for ease of internal mobility and the design can be easily amended for accessible requirements.
2. The house plan has been set out on a grid based on the industry standard sheet size module of 2.4m x 1.2m to reduce on-site cutting and wastage of materials.
3. Low energy light fittings and low water-use sanitary fixtures have been used to make the living conditions affordable as possible for occupants.
4. High level windows have been provided for cross ventilation and obtaining natural light into main living areas of the house.
5. The concrete slab ground floor provides thermal mass to even out temperature fluctuations throughout the year.
6. All living areas are orientated to the north to maximise passive solar heating for the house.



Internal shot showing the open plan living conditions.

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GETTING IT RIGHT OUTDOOR SPACES

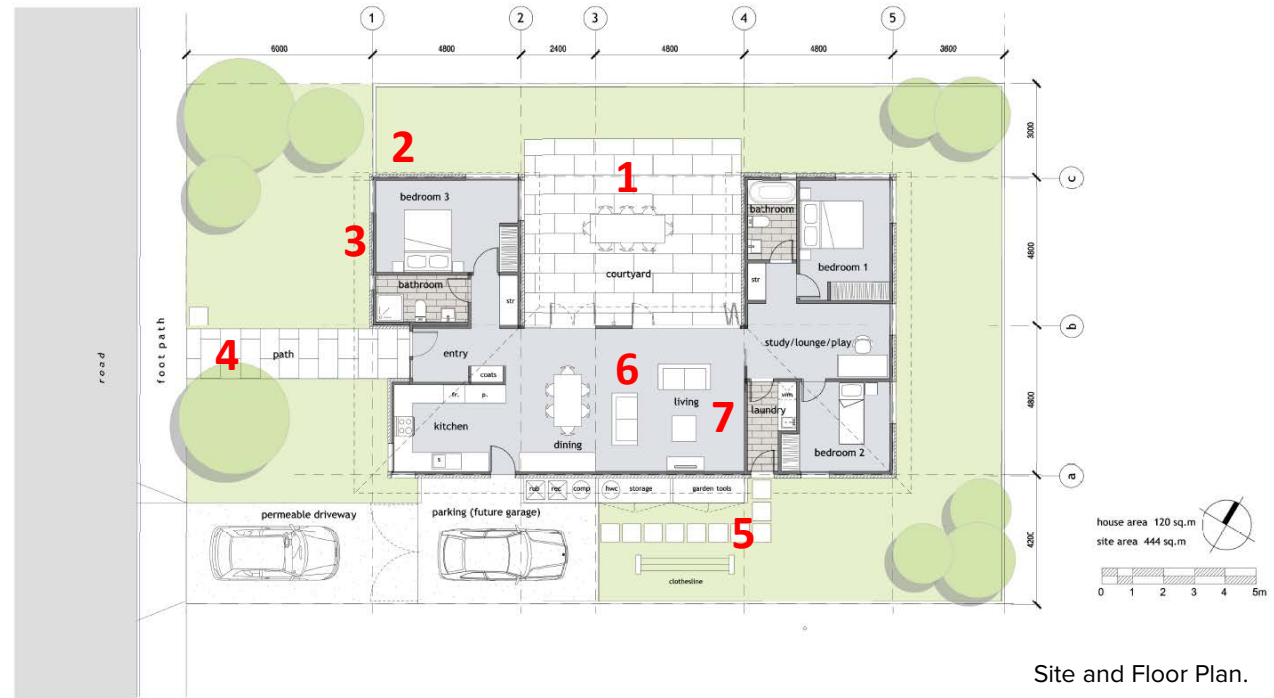
1. The courtyard provides a sunny, sheltered and very private outdoor space. The house wraps around this space, and the increased wall area and shallow plan allows for lots of windows and more sunlight penetration. The sliding doors allow for easy access between the living/dining areas and the outdoor patio.
2. All bedrooms and living areas receive all day sun due to northern aspect and floor to ceiling height windows. Blinds are provided to control sunlight admission
3. A relatively simple design change would allow for wheelchair access to the patio without the need to add ramps.



Looking towards the outdoor courtyard space which opens out from the main living area of the house.

GETTING IT RIGHT SITE AND FLOOR PLAN – ENVIRONMENTAL FEATURES

1. Courtyard form maximises northerly aspect to living and bedroom spaces and passive solar design techniques.
2. Low VOC (volatile organic compound) indoor paints and low formaldehyde timber board products have been used.
3. In addition to open-able windows, bathroom and kitchen extract fans will minimise spread moisture, pollutants and odours. Low flow sanitary fixtures such as 4 star WC's, 5 star taps and 4 star showers (WELS – Water Efficient Labelling Scheme) have been used.
4. Permeable paving to pathways, drive and courtyard reduces stormwater run-off.
5. Storage location for home re-cycling, worm composting facility.
6. Cork and Marmoleum covered floor in living spaces to maximise thermal mass – the concrete heats up during the day and releases heat at night. The cork and Marmoleum provide a softer surface than concrete, that still allows for heat transfer (unlike carpet)
7. Highly insulated building fabric (R3.2 roof, R2.2 walls and R1.5 insulated floor) with thermally broken double glazing – overall a much higher standard than the building code. This means a more comfortable house that is cheaper to heat and cool, all at an affordable price.



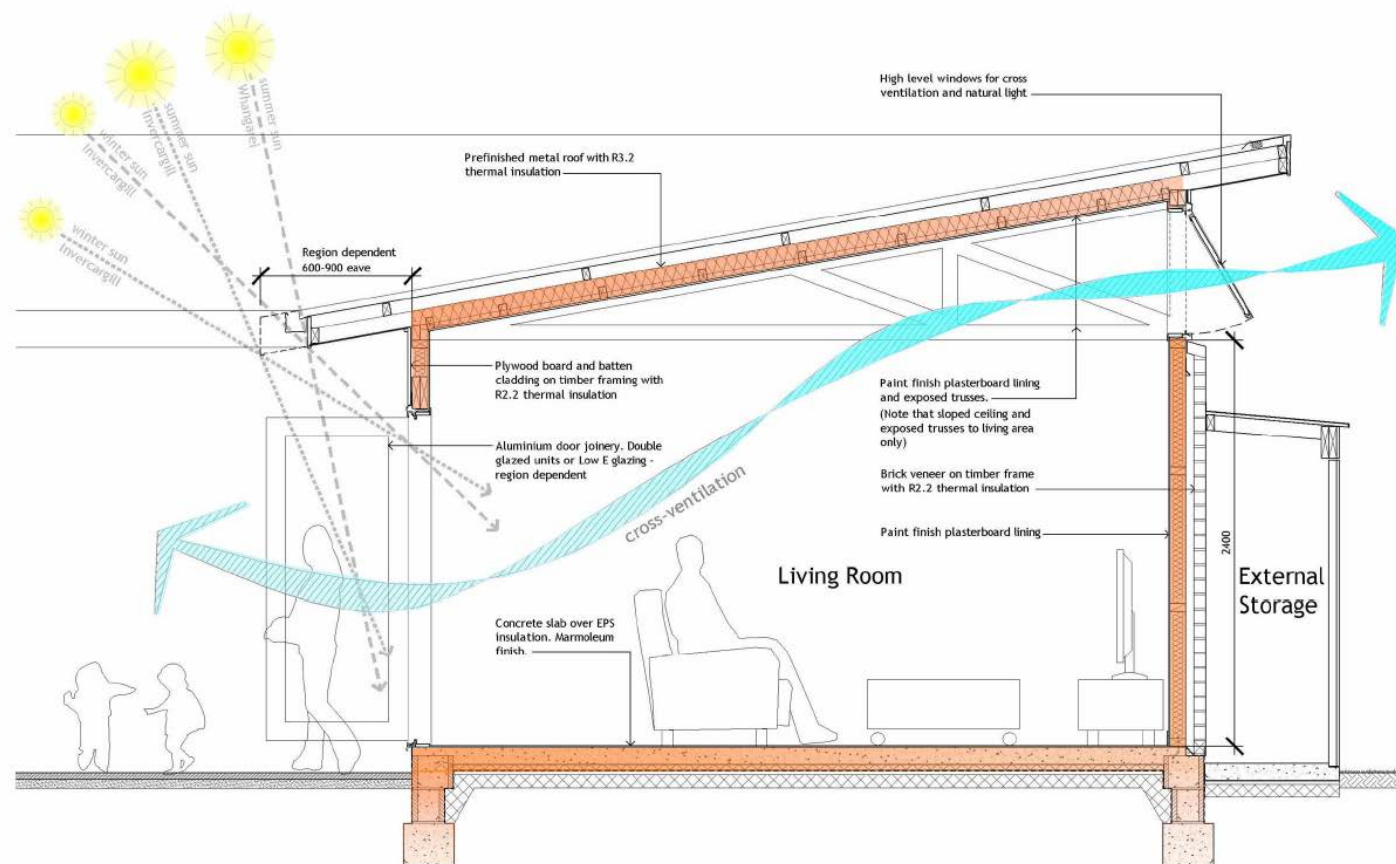
Site and Floor Plan.

GETTING IT RIGHT ELEVATIONS



Elevations.

GETTING IT RIGHT CROSS-SECTION - PASSIVE DESIGN



Cross-section.

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The Auckland Design Manual provides practical advice, best practice processes and detailed design guidance to enable us to design and build the world's most liveable city. The manual will enable us all to make informed choices, to build houses and develop our streets and neighbourhoods to not only look good but to ensure they are built to last, sustainable and give the best return on investment.

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