

# Right House Project Profile



## AD ARCHITECTURE – NELSON RESIDENCE – KAPITI COAST

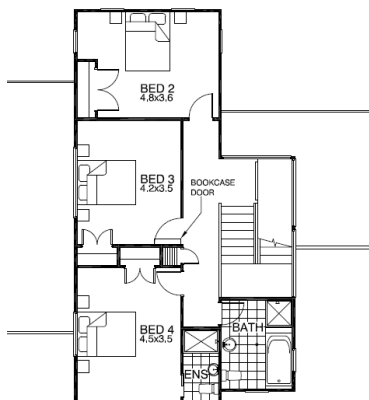
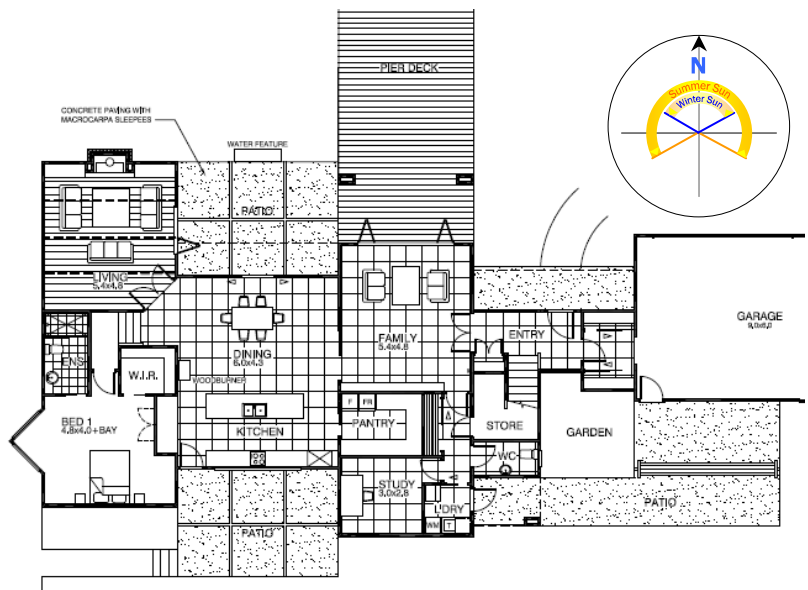


### The Project

Graeme & Jacqui Nelson had previously lived in the Nikau Valley and decided they wanted to return and build a new contemporary house suitable for their busy lifestyle with 3 teenage children.

It was important to them for the appearance of house to acknowledge the rural lifestyle block setting. They also desired an informal family orientated hub with access to a morning court and large openings to a sheltered afternoon/evening outdoor area. The parent's room was purposely located away from the 3 teenagers' rooms, which were located on the second storey.

A special request for a secret room was included by making access to the middle room via an electronically controlled opening bookcase.



A strong 2-storey central gable end form was balanced with smaller gabled wings linked to the central core by low pitch pavilions. Above the entrance, a glazed atrium was incorporated, flooding the spaces with dramatic light and views, and providing exceptional passive solar gain.

The cladding was selected to relate to the country barn vernacular, using locally sourced natural Macrocarpa weatherboards for the bulk of the house, contrasted by corrugated colorsteel for the garage, chimney and kitchen/dining pavilion.

A bright welcoming entry door and a “statement” kitchen joinery colour completed the house.

### The Energy Design Features

#### Layout

The building is facing directly North to let maximum daylight into the main living areas and kitchen. The cantilevered top floor creates shading and a wind break for the main family room. The living room to the West lets afternoon and sun into the room. Large windows on both the East and the West wall together with tiled floors allows the occupants to control any surplus solar gains in summer by creating good natural cross-flow ventilation. Upstairs bedrooms have relatively small windows to reduce winter heat losses and summer overheating risks.

The narrow East and West elevations also ensure that the home is sheltered from prevailing winds. Large tile concrete floors in the entry/family and dining areas provide for passive solar heat storage.

### Insulation

Insulation of the 90mm timber framed walls is R-2.6. Roofs and ceilings have R-2.2 insulation. The concrete slab is insulated with 40mm polystyrene. All windows are double glazed to reduce heat losses. These R-values were significantly exceeding the minimum New Zealand Building Code requirements at the time. Houses designed by AD Architecture today will typically have double layer fibreglass insulation in the roof, 140mm framing with double insulation layers to walls, 50mm polystyrene under the slab with perimeter thermal breaks. Windows would typically be argon filled and have thermally broken frames.

### Space & Water Heating System

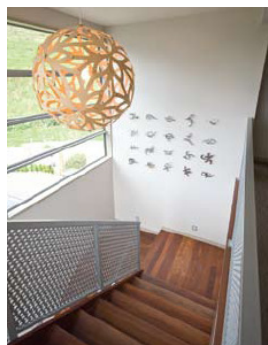
The house features a pumped flat-plate solar system with an electronic controllers and a 315 litre tank. The hot water tank is positioned in the roof space saving internal floor area and guaranteeing short pipe runs from the solar collector, which is critical to achieve best performance. The orientation is the solar collector towards West is a compromise due to the 'barn-style' gable roof design. This will reduce the solar water heater output by about 20%. Orienting it to the West is the preferred option for high morning demand, because the collected evening heat is available in the morning even before sunrise.

As main heating sources, two clean air approved wood burners provide plenty of heat to keep the well insulated house warm. The free and sustainable supply of fire wood on their section makes this heating option ideal solution for a property such as this.

The upstairs bedrooms are heated with heat moving upward from the downstairs rooms with supplementary panel heaters in bedrooms



### Other Energy and Sustainability Features



- The cladding is made of locally sourced Macrocarpa heart wood. This timber does not require treatment and will age naturally over the years creating a silver look matching the rustic overall feel of the design.
- Predominantly surface mounted light fittings mean that heat loss through ceilings is minimised. Long life 'eco' bulbs were specified.
- Rainwater is collected in a 25,000 liter tank for irrigation and feeding toilet cisterns.
- Patios and decks are formed to integrate the house with the rural focused landscape. Raised gardens provided for organic vegetable crops and free range chicken area.
- Kitchen waste is collected for compost to feed gardens.

- A multi chamber effluent system with irrigation drip lines significantly reduces that amount of required fresh water.
- Bottled gas is used for the kitchen hobs.

## The Result

The Nelsons are extremely please with their home. Praise goes to Peter Davis from AD Architects for making the building process an enjoyable experience. The house feels warm in winter and cool in summer while also ticking all the other lifestyle requirements for a busy family. Power bills are low mainly due to the good solar design, good insulation, efficient solid fuel burners and the solar water heater.

## The Designer: AD Architecture Ltd.

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