Nine years ago Nick and Brooke purchased a rundown, 120 year old Victorian semi-detached house with heritage overlay in Northcote. They rented out the property, knowing they would renovate and move in when the time was right for their young family.

Seven years later, children Indigo and Ned needed more living space, and after building their Venus Bay holiday home the couple decided they had sufficient experience to embark on a renovation.

Apart from ceiling insulation and a shared double brick wall with the property next door, the house was energy inefficient and costly to run. “It was a two bedroom, rundown shack that had not been touched for 40 years so there was quite a lot to be done,” says Nick. “We wanted to build a really liveable house for our young family and keep as many of the original features of the home as we could. We also wanted it to be stylish, sustainable and within budget.”

Modern heritage

Repositioning windows and doors to face only north or south, along with fitting a heap of insulation, help this heritage Northcote home retain a comfortable temperature year round.
In winter, large glass doors allow sunlight to warm the large living area and concrete slab – a modern addition to the new rear section of the house. In summer, the eaves protect the slab and the living room from direct sunlight. South facing windows are double hung to allow for maximum airflow from cooling southerly winds, and north facing windows and doors can be opened to allow unobstructed flow of air. A double-hung double glazed window at the top of the stairwell provides for a thermal tunnel effect.

An important consideration was balancing window performance throughout the seasons. “We didn’t want to go the full way with the windows,” says Nick. “We didn’t want to get UV-protective windows because in the winter we wanted the sun to be able to come in and heat the slab.”

The couple made significant changes to the building envelope to improve its thermal performance. “The insulation is a massive part of it,” says Nick. A combination of batts and sarking give the walls an R value of R3.9 and the ceiling is rated R6.3.

All windows and doors are double glazed with kiln-dried hardwood frames and have been repositioned to face north or south – there isn’t an east or west-facing window or door in the house – to maximise winter sun and block out summer heat.
Nick and Brooke were keen to retain the heritage feel of the old front section of the home and explain that post renovation “there’s no denying that it’s the original part of the house.” When they ripped off the old plaster they discovered well-preserved bricks, which they’ve retained and continued in the new section of the now three bedroom house – which is also double brick. “It’s still quite traditional in the old part,” says Nick. “We tried to keep its heritage feeling. The link is that exposed brick that goes the whole way through the house.”

Two reverse cycle air conditioners were fitted to heat and cool the home, but Nick says they’re used sparingly as the house — which now has an energy rating of 7.2 — maintains a comfortable temperature year round. “On a 12 degree day in Melbourne, we have the heater on for 15 minutes to heat the entire living area and because of the fantastic insulation it stays warm for two hours,” he says. “It’s the same with upstairs. You’d expect upstairs to be hot and cold but with the great insulation we haven’t turned on the heater all winter.”

The house is also fitted with a seven panel 1.75 KW solar electrical system, a 2,000 litre water tank linked to the toilets and garden and the majority of lights are LED. The old roof was removed and replaced with a lightweight reflective Colorbond roof.
Nick believes an energy efficient renovation can cost the same as a typical renovation if renovators make clever decisions. "There’s a perception that if you’re going to build for energy efficiency it’s going to cost you a lot more money, but I don’t think that’s necessarily the case, especially when you take into consideration passive design and using less materials in the build. Being energy efficient is not just about buying solar panels or having a whiz bang heating system."

The couple believe owner building is very compatible with constructing a more energy efficient house because “you can take your time, you don’t have to make decisions early on, you can scavenge and you can look around”. Nick would often arrive at the house before the trades people to monitor the position of the sun and ponder the work ahead. “It was a creative process the entire way,” he says. “That was very conducive to building an energy efficient house.”

Specifications

**Ceiling Insulation**
Total R6.3 insulation batts and foil-backed roof blanket.

**Wall Insulation**
R3.9 insulation and foil sarking.

**Windows & Doors**
All new double-glazed windows and doors orientated to north or south.

**Solar**
1.75 kW system.

**Materials**
Recycled bricks, recycled timber from Northcote Bowl.

**Water Tank**
2000 litres.