

VELUX®

VELUX skylights keep
GREENSMART
DREAM ALIVE...



A DREAM with obstacles



Grandparents Peter and Vicky took 48 hours to warm to the idea of living in the bush.



The McCoullough's closest neighbours are a friendly bunch.

Building a home for two families in the bush with no road access and no electricity sounds like the type of challenge you could live without. But challenges that are fuelled by dreams tend to be overcome. The McCoullough's had a dream...

Lived in the country as a child

"I grew up in Alice Springs and always wished my children could enjoy the same simple lifestyle as I did," says Heidi McCoullough. "So when I saw this piece of land 30 minutes from Canberra, I knew that's where I wanted to live. There were a couple of minor issues, though: it was

almost 750 acres of bushland and we couldn't afford to build on it."

Grandparents ready to move at the same time

At first Heidi's husband Brendan wasn't thrilled with the idea. "Being a builder I could imagine the challenges we would face – technical as well as financial. But lucky for us, my parents Peter and Vicky were considering moving at the same time. When we suggested that we did the project together, they said we were crazy. But within 48 hours they were ready to go ahead."

No infrastructure – need to be self sufficient

"No road, no power, no water – building in the bush is quite different to building in the city. Connecting to the mains power grid would cost almost \$500,000 so we soon realised the need to be self sufficient. Solar and wind power could be installed for a third of the cost and we would achieve ongoing savings. But we'd have to build the most energy efficient home we'd ever built."

Brendan and Heidi McCoullough with their children Harry and Molly.

VELUX skylights make **PROJECT POSSIBLE**

No need for air conditioning

"We soon realised we'd have to build a home with no need for air conditioning – which is easier said than done when the outside temperature ranges from minus 10°C to plus 40°C. Design and choice of materials were of course crucial. But without VELUX skylights it just couldn't be done. The skylights work like a solar chimney, sucking out hot air when you leave the skylights and a door open. Thanks to VELUX, we've never had to use our ceiling fans. On a 40°C day we have 27°C inside."



22 VELUX skylights provide ventilation and free natural daylight throughout the home.

VELUX skylights save energy – and money

"Another big advantage of the VELUX skylights is that we never have lights on during the day," adds Brendan's dad Peter. "Natural daylight not only saves money, it also increases the general ambience. The VELUX skylights have helped us build a much nicer home and saved us money in the process. Air conditioning would require us to double the size of the solar system – the cost would easily run into six digits. If it wasn't for VELUX there's no way we could have built the house without air conditioning."

Bushfire tested

"The property is in a bushfire zone so our design had to meet the Australian Standards for construction in bushfire prone areas. Our fire risk was assessed as medium so the building had to meet the Bushfire Attack Level 12.5 requirements. We decided to go two levels up and design the house to meet the tough BAL 29 requirements. We could even have taken it a step further – as the only skylight I know of, VELUX has passed the extreme BAL 40 test."



Without VELUX skylights the McCoullough's would need to double the capacity of the solar and wind energy systems.

Vicky and Harry enjoy three generations living under one roof.

THE DREAM comes true...





VELUX skylights
make energy
savings look good...



Almost every room has
VELUX SKYLIGHTS

Openable skylights with
blinds are cool in summer
and warm during winter.



The home office and
the laundry have
skylights as well.



VELUX®

Mornings seem
brighter with VELUX
in the bathroom.

FUTURE living?



The McCoullough's believe their new home reflects some interesting trends in modern housing...

Energy efficiency

"Most of the ideas behind our new home will be mainstream in the future," says Peter. "Even today no house can be built without regard to

energy efficiency. Cooling and heating is just getting too expensive and that's not going to change any time soon. In ACT, where we build the majority of our homes, the minimum requirement for new homes is 6-star energy efficiency."

Self sufficiency

"Our house is of course self sufficient to the extreme, but self sufficiency is a strong trend even for more traditional homes today," adds Brendan. "Every other house has a solar system and water tanks – this trend will become even more evident in the future. Access to free energy and free water will be a huge asset in future housing."

Three generations

Will three generation/two family living also become more common in the future? To Heidi and Vicky there is no doubt: "living two families – separately – under one roof is the ultimate lifestyle. We see each other when we feel like it and help each other when we need it. Grandparents and children get a much closer relationship and parents get a more relaxed lifestyle – there's always someone to look after the children. Sharing facilities like the pool, a large pizza/bbq area, a tennis court...and having space for hobbies like 4WD and motor bikes adds to the attraction."

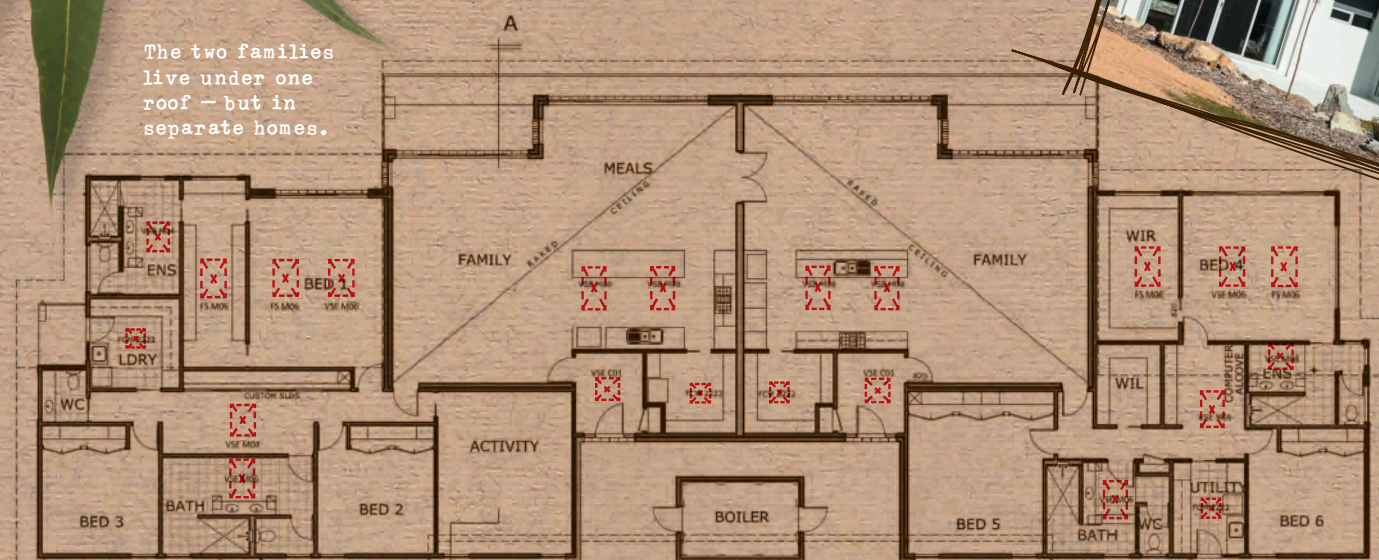


The pool has room for visitors as well.

Space is no issue when you live in the bush.

GreenSmart SOLUTIONS

The two families live under one roof – but in separate homes.



Floor plan

Design

The main daytime living areas have highlight windows facing north for maximum sunlight exposure. The main bedrooms also face north, while all secondary rooms and wet areas face east, west or south. Windows and openings have been designed to capture prevailing breezes. Cross flow ventilation is achieved by openable highlight windows, double sliding doors, dual airlock entry and the openable skylights.



Skylights are now one of the Leading Practice Criteria for energy management in the HIA GreenSmart House Protocol.



Vicky can control all skylights and blinds with one remote control. Rain sensors close the skylights automatically.

Construction

All materials were selected for their thermal properties. The outer walls are a reverse brick veneer system with light weight EPS foam. Tiled floors throughout and brick walls in the central living areas store heat during the day and radiate heat during the night. Roof, ceilings, skylight shafts, walls and floors are insulated. 22 VELUX skylights reduce the need for artificial lighting. Blockout blinds on each skylight control the light and add an additional layer of insulation.



The McCoullough's have taken self sufficiency to a new level.

Power

The house is fully self sufficient. It produces 100% of its electricity through a 10kW solar panel system and a 6kW wind turbine, with a total of 24 batteries for power storage. The system is backed up by a 16KVA diesel generator. The property is not connected to the mains power grid.

Water

100% of the water used for living, irrigation and pool top up is harvested from the roof space of the homes and sheds. The property is not connected to the mains water supply.



Heating

The house is heated via an in-slab hydronic wood boiler system. All wood used to run the boiler is sourced from the property. Two hydronic radiator wall panels in the living areas and tiled floors throughout feed from the wood boiler. The average year round temperature within the home is maintained between 18-24°C. All hot water is produced via independent instantaneous solar-gas boosted systems.

Cooling

There is no artificial cooling system in the home. The only mechanical cooling systems are ceiling fans (never been used) and openable VELUX skylights. The home has 22 skylights in total, 14 of which are openable. All skylights have block out blinds installed. All other cooling is 'passive cooling' achieved through cross flow ventilation – helped by the openable skylights, which act as solar chimneys.

Power production, storage and consumption is measured and controlled.



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VELUX Australia Pty Ltd

78 Henderson Road

Alexandria NSW 2015

Telephone: 1300 859 856

Fax: (02) 9550 3289

Email: customer.service@VELUX.com.au

Website: www.VELUX.com.au

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