

Castle Mountain

One couple's owner builder adventure from one-bedroom cottage to family home

We married in 1978 and started building our first home, a small pioneer style cottage, on borrowed land. By 1985 we had three children and it was time to find our own property to build a family home in north-west NSW.

Choosing the site

Our main criteria was a quiet bush setting at the end of a road. We settled on 120 hectares, eight kilometres from a main road, 16 kilometres from town with the nearest neighbour five kilometres away. An ideal house site on a gentle ridge was located near a gully with a permanent running spring. The gullies and bush abounded with native animals and colourful birds, clear night skies and beautiful sunsets. Apart from a boundary fence there were no improvements so the obvious thing was to take our little cottage with us.

With the help of friends we jacked it up, put some wheels under it and hired a truck to tow it to the property. With no running water, power or phone, and with just a second-hand battery and a small solar panel, we set up camp and began to draw plans for our homestead.

BY LYNDA & PETER HATFIELD

The house

We planned a mezzanine floor with three bedrooms, bathroom and rumpus room. The ground floor would have the main bedroom, with walk-in-robe and ensuite, and another bedroom with access to the ensuite (to cater for ageing relatives), with the main feature being a very large living/dining/kitchen and a sunken lounge area. Off the kitchen was to be a walk-in pantry with access to a large cellar, laundry, bathroom and separate toilet.

We planned to build as environmentally sustainable as possible using raw materials from the property on a concrete slab. Cypress pine and stone were in abundance on the adjoining property, Castle Mountain,

which we subsequently purchased, so we decided on a pole framed structure with stone infill downstairs and timber upstairs, metal roof, solar power, solar hot water and wood fire heating.

The footings

Using our backhoe we dug a trench down to solid rock for the perimeter of the house and two trenches equally spaced the full length of the house. We then pot holed in between so that the maximum span for the slab at any one point would be two metres. The depth of the footings in some areas was a few millimetres and other places nearly two metres deep with the exception of the cellar where we blasted out the rock to accommodate a 2.4 x 2.4 x 6m room. The trenches and pot holes were then filled with mix of local creek gravel and concrete. This gave the slab a solid base on which to rest and allowed us to lay a perimeter of 100 x 100 x 400mm concrete blocks as formwork for the slab. We also formed up the stepped sunken lounge area. The entire area of 240m² was levelled with local road base material, covered in orange plastic and

Below left: Main living area was designed to be extremely spacious.

Below right: Main entry and verandah.





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reinforcement mesh ready for the six truck loads of concrete and professional concreters to complete the slab.

Sawmilling

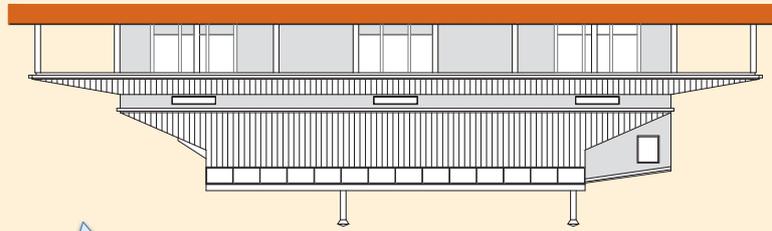
Again with the help of friends we built a two-man bench sawmill, using a spotting board to take off the first flitch. The first job we completed was a roof for the mill, a workshop and a timber jinker. We were then ready to start bringing the timber down from the mountain.

For many weeks Peter and Alf (a local jack-of-all-trades) would leave early each morning in the forward-control Landrover with chainsaws, axes, pulleys and cables, snig chains, chain dogs and timber jinker in tow. Trees were selected for their overall straightness as well as straightness of grain; because many of the trees would be used in their natural state i.e. not milled, they were often selected in their standing state for a

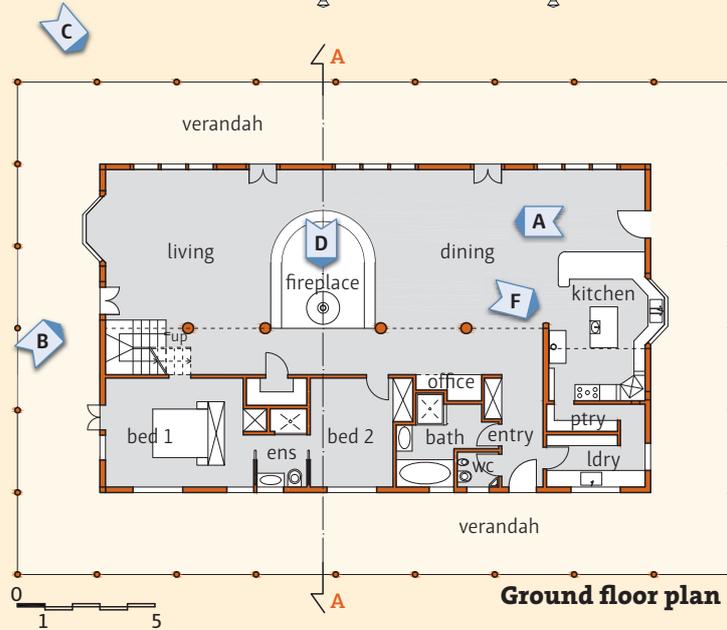
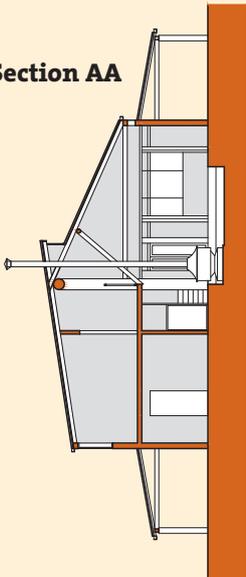


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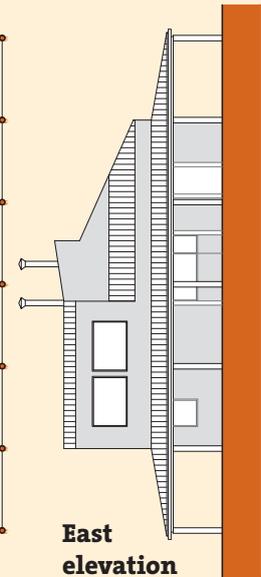
North elevation



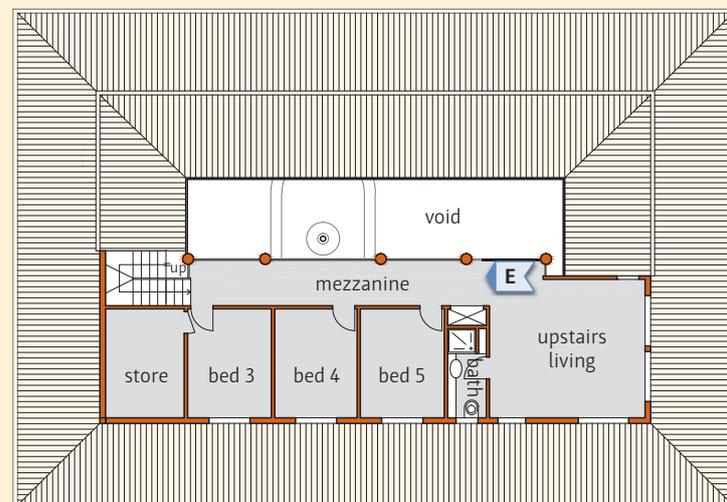
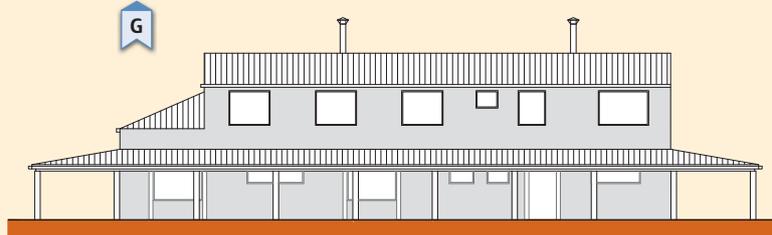
Section AA



East elevation



South elevation



Arrow letters refer to photos



specific place in the house. They were then felled, trimmed and snigged to a loading area, often with a system of pulleys and cables if the logs were in very steep gullies.

After lunch they would load the Landrover and jinker and secure the logs with chains and dogs, before setting out on the long, slow, steep trip home arriving late in the afternoon with two tonnes of logs on the Landrover and 6–10 x 10m logs on the jinker. The logs to be used in their round state would be debarked that evening with the help of the children who all became quite competent debarkers. All other logs were stacked ready to go through the mill.

Construction

After reading articles, many in *The Owner Builder*, we decided on single backboard slip formwork between poles for the stonework. The local stone is very irregular, heavy and extremely difficult to cut or reshape in any way. Rocks were laid against the backboard on a bed of coarse sand and cement mix (about 7:1). The slurry ran down the back and small stones were pushed in as fill as well as to support the heavy rocks while the mix set.

The sides of the poles were fitted with a 25 x 25mm timber cleat from the floor to the top plate to give the rock work something to bind onto and to eliminate any direct air flow due to shrinkage. The face of the rock was kept clean and exposed with extra pointing carried out later. Lynda, with occasional help from friends, was the stonemason.

Internal ground floor wall frames were erected using 100 x 50mm x 2.5m studs along with the external poles. The 5 x 6m centre poles were erected and braced to this structure. The base of each pole was cut off as squarely as possible with a chainsaw. Being irregular in shape

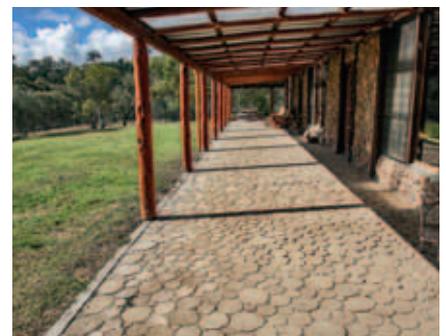


Clockwise from above left: The first home was their previous cottage transported; logs sourced from the property were milled with a bench saw; frame takes shape one pole at a time; Lynda did most of the stonework; verandahs were paved using cypress blocks set in road base material, cordwood style.

and tapered they had to be positioned perpendicular by sight with two plumb bobs. Then in the standing position the base was scribed around and a second cut made with the saw. That cut was angled to the centre of the pole leaving the outer edge the only part to touch the concrete. This enabled a narrow keyhole saw, with all its teeth set in the same direction, to be laid flat on the concrete allowing a saw blade thickness to be removed from part of the base of the pole. This corrected fine adjustments to the plumb of the pole.

Each pole had to be raised and lowered at least four times. They were then glued and bolted to the cement floor with short metal brackets. The mezzanine floor joists were 150 x 50mm, with flooring initially laid upside down for drying. The 75 x 25mm offcuts from the studs and joists were taken to the local sawmill and turned into tongue and groove flooring, nailed, sanded and oiled with tung oil.

The ridge poles and rafter poles could now be craned up using a three metre tram track extension on the bucket of the front end loader (there were no injuries during the whole project despite it being prior to OH&S!). The rafter poles had a flitch taken off the top face and two half flitches off the sides at the thick end. The rafters in the three upstairs bedrooms, rumpus room and the main living area then had a flat surface for the plasterboard and *Solomit* to be laid onto. Roof battens 75 x 40mm were laid on top, plus pink batts over the bedrooms and sisal over the lot. We used *Solomit* for its appearance, acoustics, insulation and no painting!



Fitting out

Internal walls and other ceilings were sheathed with plasterboard, with fibre cement sheet in the wet areas. The rooms were plastered and painted except for the rock walls, which were professionally cement rendered internally. All cypress pine weatherboards, fascias, barge boards, window frames, door frames, architraves, skirtings, stairs, and balustrade were milled, planed and sanded on site.

Built-in cupboards were framed in cypress and the kitchen cupboards faced with cypress lining boards. The cupboard door handles were fashioned out of small cypress branches. With cypress, of course, there was no need for termite protection. Wet areas were tiled and the living area



tilled with large 450 x 450mm hard wearing ceramic tiles. Downstairs bedrooms and the sunken lounge were carpeted.

Because our kitchen was going to be used commercially we were not allowed to have cavities under the kitchen cupboards behind the kickboard. We formed up the area and with a mix of 1 cement : 2 sand : 3 cypress sawdust (from our own milling), created a raised hob that felt soft and warm like cork flooring. We faced the edge with floor tile offcuts and were able to screw the cupboards to the base with normal soft board screws. We think this mix has potential for many other uses.

Windows and doors

After much consideration we decided on 900mm wide louvre windows for all rooms with six floor-to-ceiling banks in the main living area, each pair with a centre fixed pane. Clerestory windows run the full length of the ridge with a number of these being louvres. The louvres give 100% opening, good directional airflow and are surprisingly air tight and sound proof.

Bay windows each end of the main living room, with the kitchen sink set

into the eastern end, give views to the paddocks and wildlife. For extra airflow three louvres are positioned above the upstairs bedroom doors and in conjunction with the clerestory windows give good extraction of hot air in summer.

Apart from standard doors internally, two restored bevelled glass doors from a local café and three sets of restored French doors from a local auction are used externally. These were purchased long before we even had formed plans; we just knew we'd use them one day!

Living

We put down a footing that would take a very large stone fireplace and chimney but discovered an all glass second-hand freestanding *Spin-A-Fire* fireplace that, although heavier on wood than a tile fire, gives a lovely atmosphere. Children love playing in the 'pit,' it's good for containing babies and toys as well as reading, playing board games, chatting or, in winter, just gazing at the hypnotising flames.

A verandah of 3.3m was erected on the east, west and north sides and 2.5m on the southern side using round posts

and rafters, sawn battens and corrugated iron roof. During winter we replace the metal roofing adjacent to the three large windows in the north wall with transparent sheeting, allowing the sun to heat the inside tile floor as a heat bank for the evenings.

For the floor of the verandah we used a cordwood technique (as seen in the stables at the historic Hill End hospital in NSW) using small cypress pine trees cut into 75mm blocks and laid like pavers on their ends then infilling with a local road base material.

We installed two stoves: an *Everhot* slow combustion and a large gas stove. The slow combustion goes most of the winter months for cooking, warmth and boosting the solar hot water system, while the gas is mainly used during summer.

Solar system

The solar system has grown over the years, giving uninterrupted power now with 15 x 100 watt panels and a huge bank of second-hand batteries. The 15 panels are divided into 3 sets of five





to power each of the three strings of batteries; each panel has its own isolating switch. Due to the size of the battery banks, we have never used a regulator and will only reduce the charge manually (turn off a number of panels per set) if we are away for extended periods.

We use two banks of 12 x 2200 amp-hour 2 volt (V) batteries in parallel supplying 24V DC for most of the lighting, two fridges, freezer, and small cool room. The 250kg batteries, still going strong, were about 15 years old when we purchased them and are coming up for their 30th birthday this August. It is an environmental crime that so many ex-Telecom batteries are not made available for private solar users as there are many years of service remaining in them.

A third bank of 12 x 500 amp-hour 2V batteries through a 12V x 1200 watt old Silver Series inverter powers all our electrical tools, kitchen appliances, TV and computers. We also have a small 12V DC line into the house for a couple of 9V radios that run happily on the reduced voltage that occurs over the length of the thin cabling.

The batteries, panels, inverter and control board are all in, or attached to, the workshop. 150mm cables carry the 24V DC power to the house switchboard and 2 x 4 x 16mm cables run the full length of the house (like buzz bars) to disperse the power to the various rooms and power outlets. The system also supplies our original cottage and two standalone family bedrooms with an ablution block. We have nothing that requires the inverter to run 24/7 so it remains in standby mode most of the night.

We don't go without but try to plan our usage of power (washing machine or wood working tools) when the sun is shining. That way we are using power direct from the panels through the batteries but not affecting the batteries. A good standalone solar system does

not require a large solar array but a big battery bank; otherwise you are continually burning off electricity through a regulator. We have volt meters in the house that give an indication of the batteries' condition and I do little else other than top them up with fresh water about every two years.

We have not had an electricity bill or a blackout in 29 plus years. We were greatly assisted in developing the system by a friend, John Kerr, an electrician from Sydney. We also had a 1000 watt *Dunlite* wind generator but find the solar panels sufficient and have had it turned off for many years.

Water

The combined roof area of all our buildings catches 600 litres for every 1mm of rain we receive. In an annual rainfall of 700mm, just like electricity, the key is storage and pipe size.

All water is piped through 100mm PVC to two 20,000-litre concrete tanks located 80m from the house in a gully well out of sight. Every month or two we transfer water (using a petrol-driven firefighter pump) to another 20,000-litre tank on a hill providing good pressure through gravity to the house for everyday use. An old Southern Cross diesel motor fitted with a 3 x 3 Ajax piston pump transfers water from the gully to another 20,000-litre tank on top of a higher hill, giving fire fighting water pressure through a 50mm pipe.

Life at Castle Mountain

For a number of years we survived with medium/fine merino sheep and beef cattle. Then later, following our introduction to backpackers through wonderful WWOOFers, we ran a successful budget farm-stay for 12 years for international backpackers and Australian families, which included art and church groups and retreats. Because of the spaciousness of the living area we have also entertained groups for luncheons, weddings, parties as well as our extended family including grandchildren. Now with a view to retiring and moving on we have only a small herd of cattle remaining.

Together with our three children we have learnt many new skills, led by Peter who is a trained builder. Having moved from a one-bedroom cottage with a loft to

the 'big' house, we all greatly valued each step along the way. We had invaluable help from many friends especially Megan and Michael Jones, architects from Sydney, who shared many family holidays with us in very cramped conditions in the early days. They were great sounding boards, offering technical and product advice as well as giving much appreciated practical help and encouragement.

Although the journey has been long we are heartened to have come to the end. Would we do any thing differently? Not really, it is a practical and enjoyable house to live in and raise a family. Peter would like to design a small totally sustainable retirement cottage... but have someone else build it! ♦

If you are interested in speaking to Peter and Lynda about purchasing Castle Mountain, contact them on 02 6746 2102, peter@castlemountain.com.au or visit the website: www.castlemountain.com.au



Links & resources

♦ Solomit

Solomit Strawboards cuts, mills and manufactures straw ceiling panels and brush fence panels in Australia using 100% Australian grown broombush and wheat stubble straw.

03 9793 3088, www.solomit.com.au

♦ Spin-a-fire

Freestanding wood and gas appliances, manufactured in USA.

www.malmfireplaces.com

♦ WWOOFers

WWOOFing gives you the opportunity to work on Australian Organic Farms, exchanging 4 – 6 hours work per day for your meals and accommodation, usually in the family home.

03 5155 0218, www.wwooof.com.au

