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The Accidental House

Setting up for a sustainable life in retirement

BY PAULINE OSMOND

We call our house 'the accidental house' as it was never intended to be our permanent home in the first place. If we had have intended this, we would have done things a whole lot differently! However, we want to stress that, building it was more about setting ourselves up for a sustainable lifestyle in retirement.

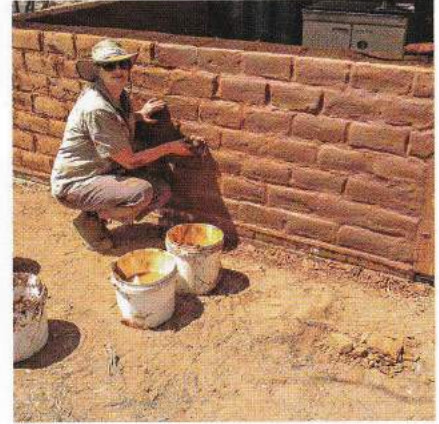
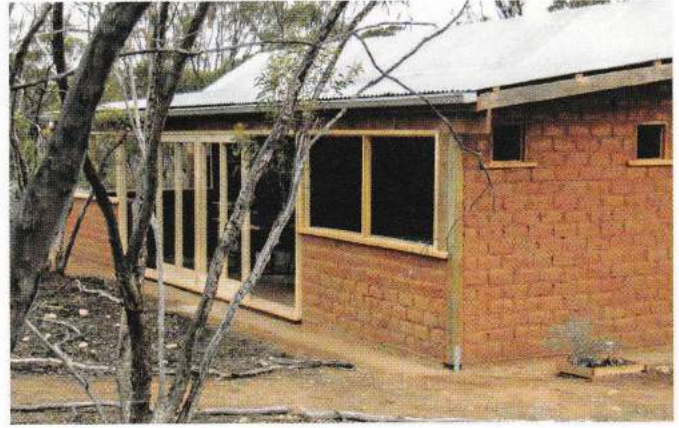
Kevin and I had been travelling around the remote parts of Australia for a few years and had fallen in love with the deserts, so when we found this block of 32 hectares of Mallee in the drylands of South Australia, 160km north east of Adelaide, we knew this was the place! Friends immediately gave it the name 'emubush,' because of the many species of *Eremophila* growing here.

We purchased the block in March 2012 and moved a 12m shipping container into place, for storing tools and camping equipment. The first job was to put down concrete footings for the shipping container, which was positioned running west to east, because that was the easiest way to get it off the truck.

After that, we realised that we needed water catchment, so a roof was pitched

over the container with a 3m verandah on each of the long sides. The verandahs were created as somewhere to shelter and tack firewood; at this stage we had no idea of turning it into a dwelling.

Once the roof was up, we made the decision to enclose the north and south sides with mud brick, cut into the shipping container and make it our permanent home.



We applied for development plan consent and building approval of the home, which we got, along with other buildings we intended to build in the future. These included the swimming pool house, guest cottage, composting toilet and workshop.

Kevin drew up the plans himself and we submitted them to a private building certifying firm in Adelaide. We expected all sorts of queries about the mud bricks, but surprisingly these weren't an issue. We also got the energy star rating, mainly because we are off grid.

We had to get the plans passed by a structural engineer, who came out to inspect. Then the plans were stamped, passed and sent to council.

Mud bricks and building

We decided to make mud bricks, as the soil was ideal on a small part of our property; it contained just enough clay to make it easy to mix and not need straw, and we loved the rich red desert colour! We were confident and excited about making mud bricks again. We had built a mud brick home for ourselves in NSW

in the 1970s and Kevin had been involved with several other mud brick projects.

We made 3000 mud bricks, the total needed for the non-loadbearing walls. Kevin mixed the mud in the trailer and I made the bricks, about 50 in each batch.

Two 4m openings were cut into each side of the container, which gave an open plan living and bedroom area. A doorway was cut into the container from the kitchen end for the pantry, and another at the end of the south side for the off-grid electrical service room.

The mud brick walls were then laid with window and door frames built in as we went. Kevin made the joinery and insect screens from recycled timber.

We don't have the large eaves that would be ideal to protect the mud brick walls from rain. However our average annual rainfall is 250mm, so it isn't such a problem here. We have protected the exterior with two coats of sprayed on *Tech-Dry Earth Shield* for weather protection. On internal mud brick surfaces, we sprayed one coat of *Tech-Dry Earth Binder* to reduce dusting.

The ceilings of the mud brick wings are recycled corrugated sheeting, which

we have painted, with the container retaining the original ceiling. All are very well insulated, especially between the container and the roof. All the electric wiring was put in at this stage, and the lights were fitted.

We laid a recycled jarrah floor in the middle of the building over the old shipping container floor and built in wardrobes and book shelving from recycled timber. The mud brick wing floor areas were dug out and filled with layers of gravel and paving sand with a waterproof membrane in between. Pavers were then laid, fitted tightly between the strip footings and sealed with two coats of a concrete sealing product, using a sheepskin wool mop to apply.

No specific termite protection measures have been adopted; we are just vigilant. The shipping container has a steel base and is settled on a continuous concrete strip footing. All structural timber posts have a steel foot with a clearance underneath.

We repainted all walls of the container, treating with anti-rust paint first and keeping the original dark green colour for what were the exterior walls.



Kitchen and pantry

We were lucky to find a second-hand Rayburn combustion stove in very good condition with the wetback hot water jacket still intact. A concrete pad was laid and the stove was moved in place at the very beginning, before the mud brick walls were built.

A stainless steel tank for hot water storage sits up on the top of the container and provides gravity-fed hot water to the kitchen and bathroom.

The kitchen bench tops are made from recycled jarrah and were finished with KUNOS Countertop Oil from *Livos*. The kitchen itself has very few cupboards, which gives it a more streamlined feel.

The pantry has been built in the container section; it houses two 12 volt fridges (there is also a freezer in the service room) as well as lots of shelving and drawers. Because it is well insulated and has air vents coming from under the container floor, it is very cool and ideal for storing fruit, vegetables and bulk food.

We also have an outside sink, stainless steel bench and pizza oven.



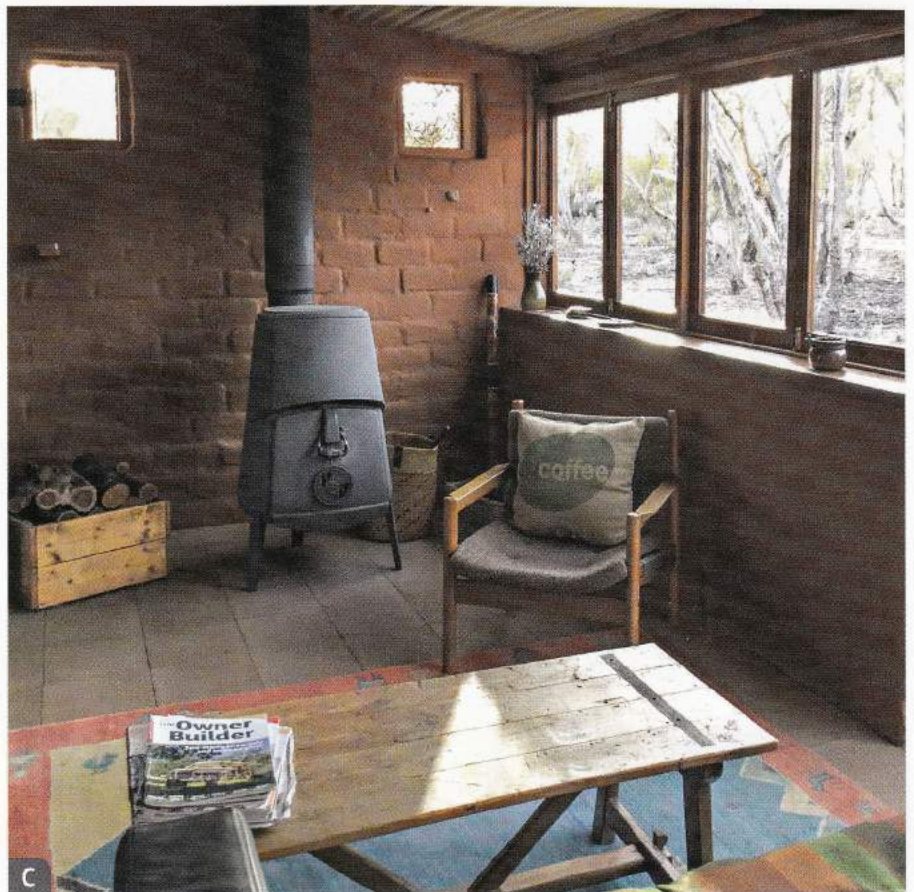
Heating and cooling

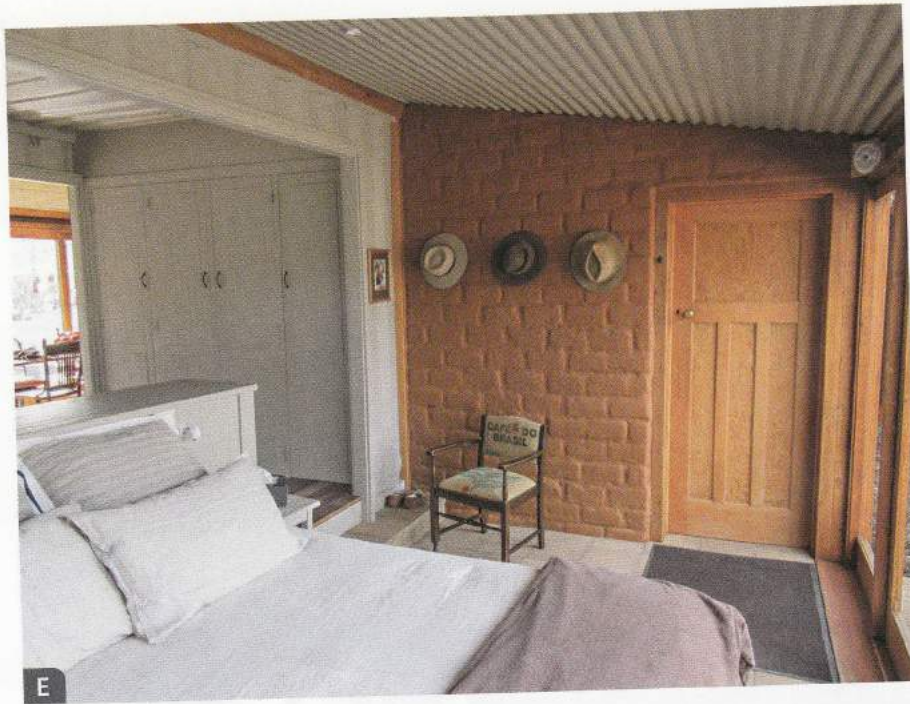
Well, there is no cooling! Our saving grace during summer is our plunge pool.

At night in summer our bedroom area is cool, being on the south side. The floor level is lower in the bedroom, giving more height between the ceiling and floor. We also use 12V marine fans for air circulation. For six months of the year, large sails of 90% shade are fitted to the north side of the building, giving protection to the glass and floor down this side. There are sets of French doors and windows at opposite sides of the building, which are open for most of summer for good ventilation. They are closed on windy and extreme heat days.

We tend not to use the *Rayburn* stove for cooking over summer, using gas and our outdoor wood fired oven except on total fire ban days.

During winter, when the shade sails are down and the sun is lower, the floor acts as a heat bank, giving out heat at night. We have the combustion stove at the kitchen end and a *Jotul* combustion fire at the living room end for heating.





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Wet areas

The bathroom and laundry is on the south side of the house; it is more like a verandah and has been screened in to make it insect proof. The large shower has *Zincalume* walls and shutters that can be opened to enjoy the view. Where the bath once stood has now been taken over by Kevin's bicycle trainer; we are developing another area with an outside bath.

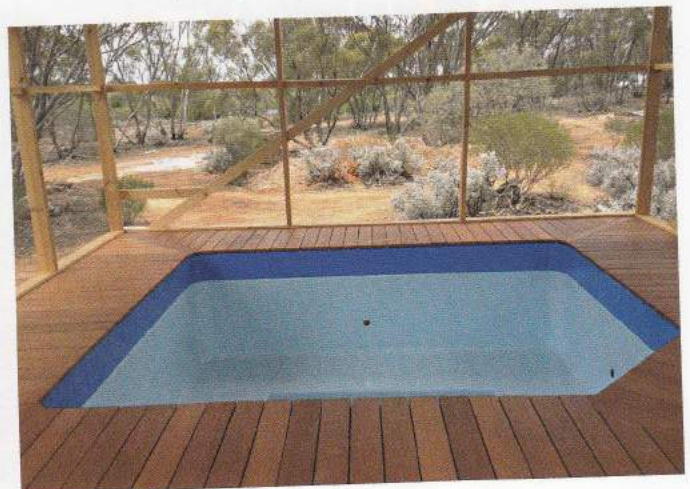
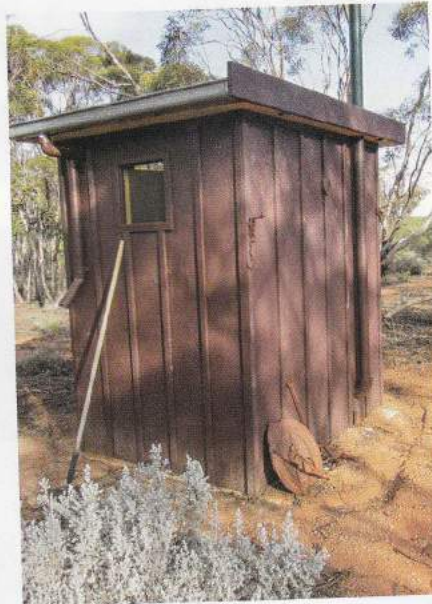
As a flushing toilet is not viable in this environment, we studied the internet and came up with a design for a 'self-contained' composting toilet. A 1600x900mm and 2400mm deep hole was dug and a 100mm slab poured over the top with a 300mm diameter stainless steel tube inserted into the slab. The toilet cabinet and seat was built over that, making it a sealed unit.

Air is drawn from the vents under the seat and expelled via two 12V fans and a 3m high 100mm pipe above the toilet. The fans are used continuously, for aeration and maintaining optimum temperature. This hastens the composting process and the evaporation of liquid.

A small amount of coconut coir is added periodically, to create aerobic processing. Red worms have been added to enhance the composting process. The compost is not removed or used.



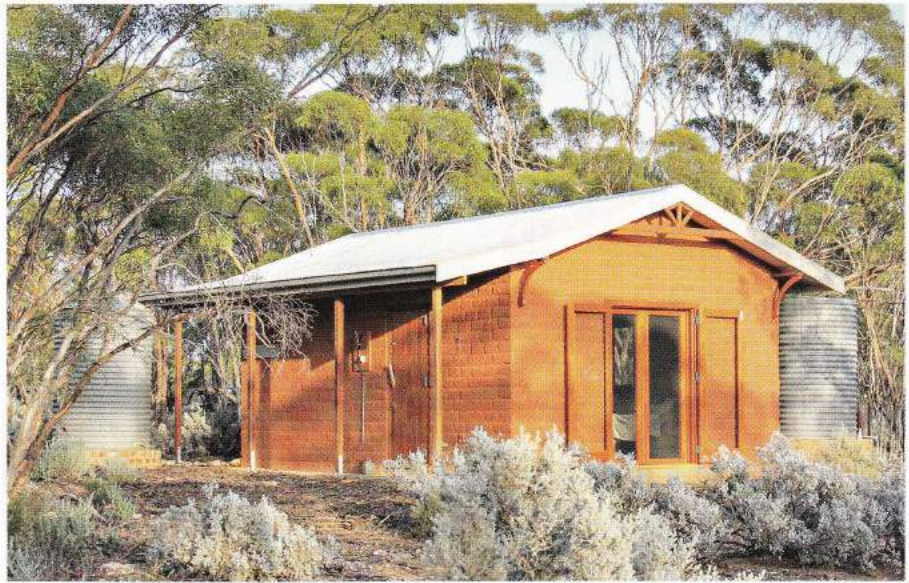
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Plunge pool

We found an old fibreglass spa pool advertised on *Gumtree* for \$100. After much work, sanding it back and filling in the jet holes, we dug a hole and settled half of the pool into this, just behind our three large water tanks to protect the pool from the hot afternoon sun. The pool was finished with a special marine paint.

We then built a shade house around it, with an insulated roof, a decking floor and shade cloth walls. The roof gives us extra water catchment into the nearby tanks. A water truck came to fill the 5,000-litre pool, which is chlorinated and filtered. It is so refreshing on our hot days, as the water temperature stays between 18-24°C over summer.



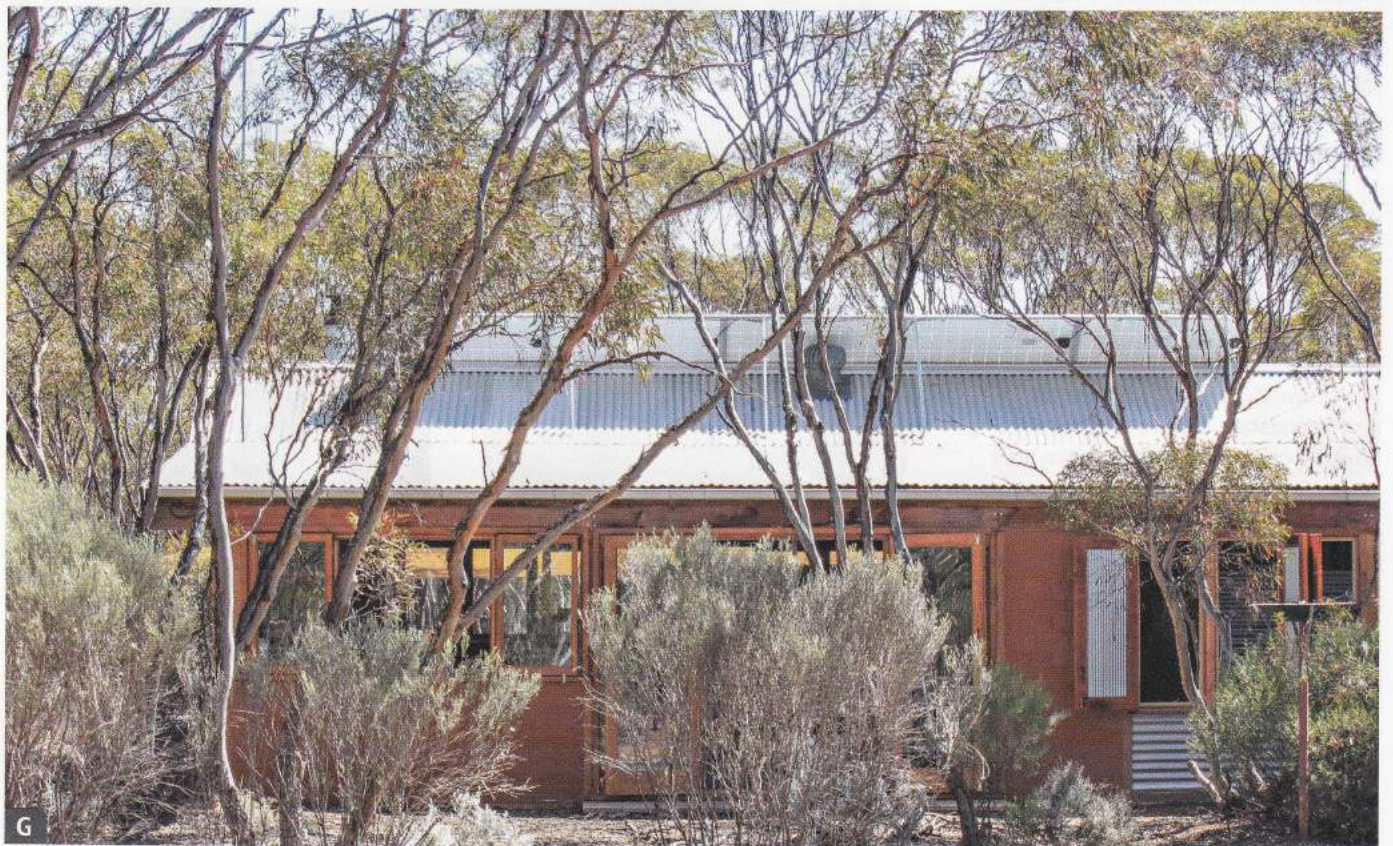
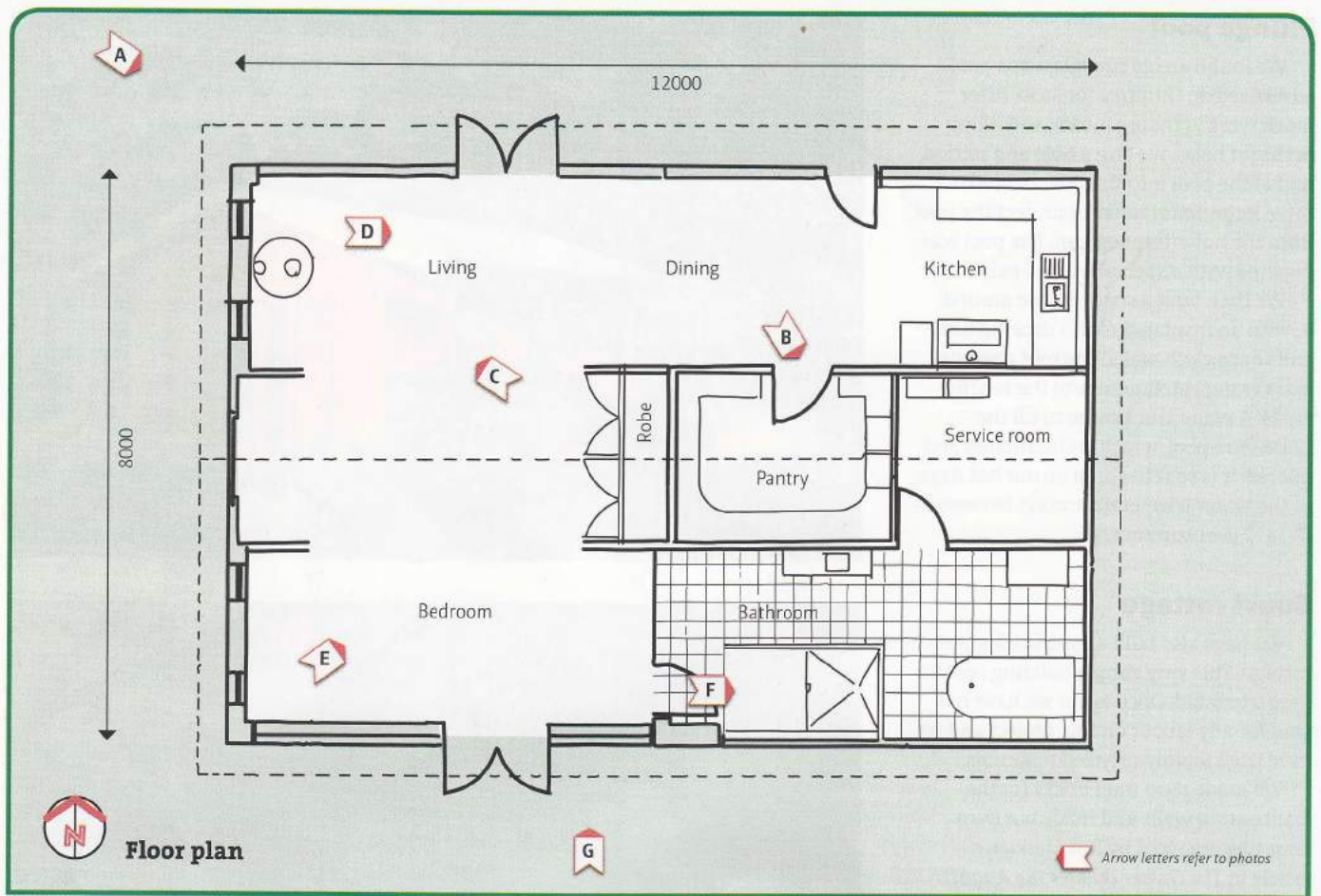
Guest cottage

We have also built a mud brick guest cottage. This very simple building cost us \$7000 to build. Once again we have not paid for any labour on this project and we have used mainly recycled materials.

We made 1800 mud bricks for the loadbearing walls and made our own floor tiles, inspired by Rob Hadden's article in *The Owner Builder* 184 August/September 2014. Once again, we used *Livos* products for the floor finish, which we are thrilled with. First coat was the LINUS Wood and Cotto Oil and then the KUNOS Natural Oil Sealer. We made a few phone calls to *Livos* in Melbourne during the process and found them very helpful.

For this building we have pitched a high roof and have good eaves to protect the mud brick walls. The ceiling is well insulated and is lined with old floorboards from a local shearing shed, with a rubbed back paint finish. Kevin made the doors and windows from recycled materials. It is just sleeping accommodation, but we are now starting an outdoor bathroom and kitchen area.





Off the grid

Our 1.2 kW off-grid solar power system was set up for us by our neighbour, who has an electrical background, using a barter agreement. We have five solar panels fixed on the roof and another panel on a swivel stand that we can move to catch the first rays of the sun.

The solar power is stored in two deep cycle 6V batteries, which are connected in series to make 12V; they store 1200 Ah. We convert through a 1500 watt inverter to 240V, the whole lot being regulated by a *Dingo* solar charge regulator. The total cost for purchasing all the components was about \$3000.

Our fridges, freezer, lighting, TV, phone chargers, composting toilet fan, marine fans, pool filter and radio are all 12V. The lights are 4.5W LED, recessed into the ceilings into a piece of plumbing pipe.

For appliances that run off 240V, we need to make sure they don't exceed 1500W; we use a vacuum cleaner, twin tub washing machine, sewing machine, food processor, toaster, hairdryer and water pump that all fit into this category. The generator is used for all power tools.

We have learnt to manage our power, not burning unnecessary lights, turning off one fridge and turning up the deep freezer if not much power has gone in.

The only water supply is roof catchment from our low annual rainfall. We can store 50,000 litres. We pump up from the main tanks to a header tank five metres high, this gravity feeds to the house system.

As we are 30km from Morgan on the Murray, we do purchase water from the pipeline for \$5 per thousand litres. We cart this back ourselves in an IBC (intermediate bulk container) tank.

Gardening

Because of the thirsty fibrous roots of the Mallee, everything has to be grown in containers. The first garden we built was from recycled filing drawers arranged in a small courtyard outside the kitchen window. We painted these in Mediterranean colours to remind us of Italy. In these we grow herbs and smaller green vegetables and we have a flourishing passionfruit in there as well. There are three dwarf citrus trees in containers, with plans to plant couple of dwarf fruit trees soon.

We are currently creating more wicking beds, using IBC tanks cut in half, to add to the one we built last summer from a raised timber bed with a sealed based. We were inspired by Sophie Thomson from ABC Gardening; check out her video on how to make them.

During summer we erect 50% white shade cloth sail over the gardens.

In the early 1900s the Mallee was all cut down for firewood and sent to Adelaide by train, so it has taken many years to recover. There is no undergrowth and the tree crowns are not very large. There is no record of a fire through here and it is not considered to be a high bushfire risk area. However, we are always fire ready and have a plan, with a fire fighting pump for use with the water from the plunge pool in case the house is in danger.

We love our 'accidental house' and the lifestyle we have made here. Using recycled materials and not paying for any labour, we estimate that the house cost about \$60,000 to build.

However if starting again, we would do things differently. Kevin wouldn't build around a shipping container again, saying he isn't a 'steel' man; he would build completely out of mud brick. We would pitch the roof higher with good eaves, have less glass, maybe include another bedroom/study and dig out a cellar underneath. ♦



Links & resources

♦ Livos Australia

Plant based non-toxic products for various surfaces; biologically degradable, sustainable and are harmless, even in direct contact with humans, animals and plants.

03 9762 9181, www.livos.com.au

♦ Tech-Dry

Innovative concrete, masonry and earth building penetrating sealers, dust binders and water repellent admixtures

03 9699 8202, www.techdry.com.au

♦ Wicking beds

Sophie Thomson from ABC Gardening demonstrates how to make a wicking bed from a recycled IBC.

www.abc.net.au/gardening/stories/s4632696.htm

Emu Bush Open Days

A few months into our retirement, Kevin suddenly became unwell and noticed that he didn't have the energy he normally had. Tests confirmed that he had chronic lymphocytic leukaemia. After having chemotherapy for most of 2015, he is now in remission and enthusiastic as ever about building and cycling. In January this year he rode the Bupa Challenge Tour as part of the Santos Tour Down Under, he plans to ride it again in January 2018, for Cancer Council SA 'Ride for a reason.'

As part of the fund raising, we are holding two sustainable living open days, on **Saturday 21 October** and **28 October 2017**, from 10.30am to 3pm. These days will include aspects of alternate building including mud brick making, setting up wicking beds, building a wood fired oven and making your own floor pavers.

We are a two hour drive from Adelaide and one hour from Renmark, Barossa and Clare Valleys. Cost will be \$60 p.p. with lunch included, and proceeds going to Cancer Council SA 'Ride for a reason.'

To book and get further information on directions, nearby camping and accommodation options, email us: emubushlifeinfo@mail.com

♦ Sustainable Living at Emu Bush

Pauline and Kevin share how they have gone about setting up a sustainable lifestyle in the Mallee

Facebook – [@emubushlife](https://www.facebook.com/emubushlife)

emubushlife.wixsite.com/emubush

