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Miranda's design for her owner-built family home includes strawbale walls rendered with cob and finished with lime render. Other materials used are recycled tyres filled with site soil, timber framing from trees felled and milled on site, and dry-stone walls. The kitchen features a floating floor of sealed cork boards.



# Future focused

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Made of strawbale, recycled tyres and earth, this owner-builder project has paved the way to a whole new career.

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## **IF YOU'VE RUN A SUCCESSFUL**

Wellness Retreat for 10 years, managing a business, property and clients year-round, how hard can building your own home be?

“Unbelievably hard”, laughs Miranda Corkin, owner-builder and designer of her own home in the Blue Mountains.

Several years ago, Miranda and her husband Mike had swapped their business for the dream of building their own home. Through running the eight-bedroom cypress-log retreat they'd learnt a lot about the importance of a building to health and happiness, and they wanted to build their own sustainable home for the same or smaller budget than a typical new Australian home.

But the transformation from owner-builder – an ambitious undertaking by anyone's measure – to owner-builder and designer took root while Miranda was sketching out initial ideas for the home. “I'd dreamt about building the house, but never imagined I was creative enough to design it, too,” she explains. That confidence she built over time.

Miranda's design conceived a two-level, four-bedroom family home made of strawbale, recycled tyres, earth and five-metre-high cob walls. But bringing the home to life for the couple with no building experience was a challenge. Mike was “handy”, explains Miranda, but she wasn't. Nonetheless, labour for the project was provided by the couple, both fulltime over two years, plus specialist trades and craftspeople, the “small community of sustainably minded and happy-to-help friends and family”, and around a dozen travellers over the build period, she explains.

Sourced through the HelpX website ([www.helpx.net](http://www.helpx.net)), international travellers stayed with the couple in their nearby rental accommodation in return for helping with the build. Their invaluable labour was largely “lugging” wheelbarrows of soil here and there, says Miranda, with the exception of the Scottish bagpipe playing professional dry-stone waller who happened to turn up at just the right time to build a beautiful dry-stone wall that runs the breadth of the house. →





↑ Nestled on a large bush block in the Blue Mountains, the house was largely built with materials sourced on site or locally, reducing transport, packaging and waste.

A key innovation for the home was the couple's intention to use local building materials wherever possible. Needing to clear 15 to 20 trees from the bush block for the access and the house, the couple milled and stored the timber onsite. This approach has furnished the home with delightful touches such as the main timber beam in the living room that was once the trunk of a tree less than 20 metres from where it originally stood.

The foundations of the home are made from an innovative suspended slab, supported by a tyre wall rammed with site soil and reinforced with recycled concrete piers. The 600 plus used tyres, estimates Miranda, were collected, trailer load by trailer load, from local garages. "The garage owners were absolutely delighted to get them off their hands (at no cost) and we needed the material, so it was win-win."

For others considering following in their

footsteps, Miranda outlines some of the highs, lows, and lessons from the project. "We were flagging about three quarters of the way through with all that daily physical work." But what kept them going, she says, was the community that formed around the project, and the build stages of the home itself. Using different sustainable building materials for the home created ongoing variety for the team: one month installing hydronic heating coils, the next applying lime sand render, for example.

If she had her time again, there are a couple of things she'd do differently. "Even though it's economical to run, it's too big," she states emphatically of the 300-square-metre home that required additional labour hours for the build and impacted 'buildability'. "We had to do a lot of the work up on scaffolding. Strawbaling and rendering on scaffolding is really hard. I would now only ever use strawbale and



↑ High clerestory windows assist with ventilation. All lighting in the house is efficient LED.

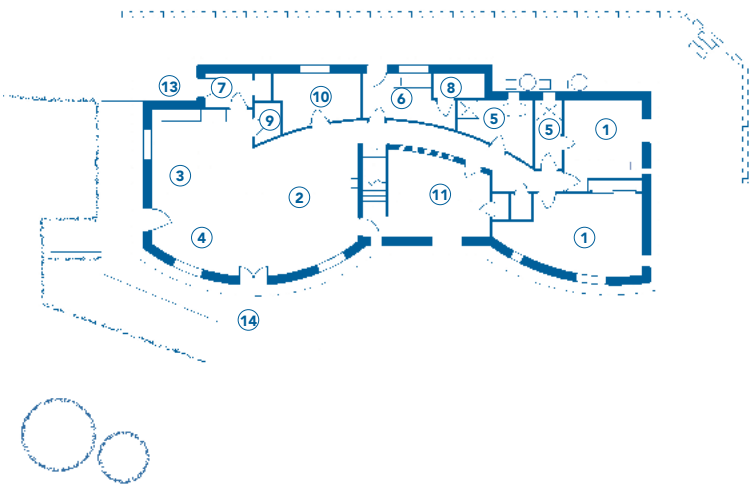
heavy building materials where you can easily reach them." Of the size, Miranda notes that although the home is large for her current needs, it was designed for adaptive reuse and the whole downstairs can function as fully self-contained accommodation. "Grand designs are always going to be the starting point of new house dreams, but I've learnt, of course, smaller and simpler are always going to be easier to achieve," she says.

These have been great takeaways for Miranda's next big project. She recently studied building design, entering the project in the profession's national awards where it won the 'Residential Sustainable Building Design' category. "The overall achievement and joy of living in this special house has led to a new career," she says, "where I can do it all again for others." 📌

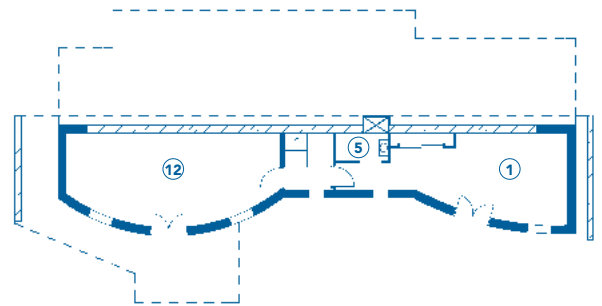


Two curved walls cradle the main living space. The concrete slab floor contains an in-slab hydronic heating system powered by two Sanden heat pumps.

GROUND FLOOR PLAN



LOWER FLOOR PLAN



- |           |               |                                  |              |
|-----------|---------------|----------------------------------|--------------|
| ① Bedroom | ⑤ Bathroom    | ⑨ Pantry                         | ⑫ Games room |
| ② Living  | ⑥ Laundry     | ⑩ Office (storage bove)          | ⑬ Porch      |
| ③ Kitchen | ⑦ Entry       | ⑪ TV room/guest room (loft over) | ⑭ Deck       |
| ④ Dining  | ⑧ Drying room |                                  |              |

# Strawbale house, Blackheath

## —Specifications

### Credits

#### DESIGNER

Miranda Corkin

#### BUILDER

Owner-builder

#### PROJECT TYPE

New build

#### PROJECT LOCATION

Blackheath, NSW

#### COST

\$500,000

#### SIZE

House 310 m<sup>2</sup>

Land 2,400 m<sup>2</sup>

#### BUSHFIRE RATING

BAL-29

### Sustainable Features

#### HOT WATER

- Sanden Heat pump with 315L storage.

#### RENEWABLE ENERGY

- 4.7kW solar energy system: 18 x REC 260W poly solar modules; Sunlock flush mount system; inverter supplied by Selectronic Australia.

#### WATER SAVING

- 75,000-rainwater tank collecting from roof for toilets, laundry and all garden outlets. Tank water connected to sprinkler system and fire hoses for bushfire protection
- Greywater diversion pipe can be operated manually to divert to underground watering system to orchard
- All taps, toilets, showers min 4-star WELS rating
- Bosch dishwasher and Samsung laundry products chosen for low water usage (rated 4.5-star).

#### PASSIVE DESIGN / HEATING & COOLING

- North-facing living rooms with eaves to shade summer sun
- Concrete slab floor (and wide cob window sills) warmed with winter sun
- Windows designed to allow through ventilation and exit through high clerestory windows
- Underfloor cooling vent from below slab space
- Thermal mass of internal central cob walls acts as a heat bank through centre of house
- All windows have ‘top down/ bottom up’ blinds to regulate sun falling onto concrete.

#### ACTIVE HEATING & COOLING

- Underfloor hydronic heating in slab floor, heated by two Sanden heat pumps
- Gourmet slow combustion fire and oven
- Two Mercator ceiling fans with LED light in main lounge room.

#### BUILDING MATERIALS

- Timber framing from trees felled, milled and cut on site
- Recycled car tyres, collected free from local mechanics, rammed with site soil
- Strawbale external walls, rendered with cob and finished with lime render
- Soil from the site excavation used in tyres, cob and renders
- Concrete made with recycled crushed concrete, site soil and cement
- Internal walls sound insulated with Greenstuf 100 per cent polyester batts
- Stone from site excavation used extensively in landscaping and dry-stone walls
- Colorbond roof insulated underneath with Icynene spray foam to seal all gaps.

#### WINDOWS & GLAZING

- Plustec double-glazed UPVC windows and doors
- Main front and back doors are handmade hardwood timber and double glazed, by Georgina Donovan.

#### LIGHTING

- LED throughout.

#### PAINTS, FINISHES & FLOOR COVERINGS

- Most walls: smooth trowel finished cob and lime renders
- Plasterboard walls and ceilings: Taubmans low-VOC water-based paints
- Splashback and stairway walls rendered with Rockcote natural renders
- Concrete floor coated with low-VOC water-based nano acrylic sealer
- Kitchen floor: ReadyCork boards (floating floor of sealed cork)
- Internal timbers, stairs and fittings oiled with natural plant oils: Danish Organoil
- One bedroom has fitted carpet: GH Eco+ (corn polymer) carpet.

#### OTHER ESD FEATURES

- Flexible design to allow for future change in use
- Laundry drying room built around the underfloor heating manifold to use heat for winter clothes drying
- Front and back doors have airlock/lobby to maintain heat
- Majority of building materials were from on site or locally sourced to reduce transport, packaging and waste
- Induction cooktop and downdraft extraction fan built into the back of island bench unit and ducted down through the slab floor and vented outside.