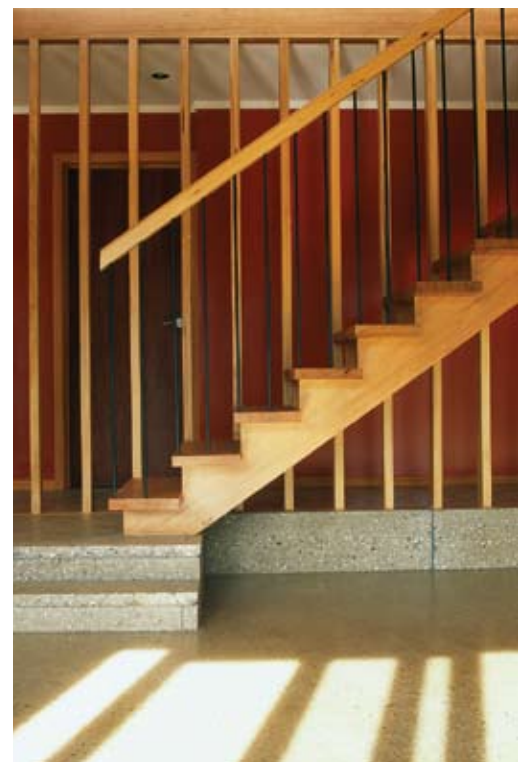


# From the earth

Rammed earth walls  
makes this home in the  
Victoria's Indigo Valley  
a stunner



← The hallway, a dark and neglected space in most houses, is connected in a permeable way to the adjacent living room with slender beams made from a local hardwood substituting for a solid wall.



The grey and brown colours of the eucalypt bush dominate the landscape in Indigo Valley, halfway between Wangaratta and Albury in northern Victoria. Travelling down a gravel road, your senses are lulled by the tonal repetition until you glimpse a surprising flash of orange through the trees. The orange shape turns out to be a house and its startling hue is due to the use of rammed earth for its walls. This is the family home of Ann Eagle, Shelly Morphy and their three children.

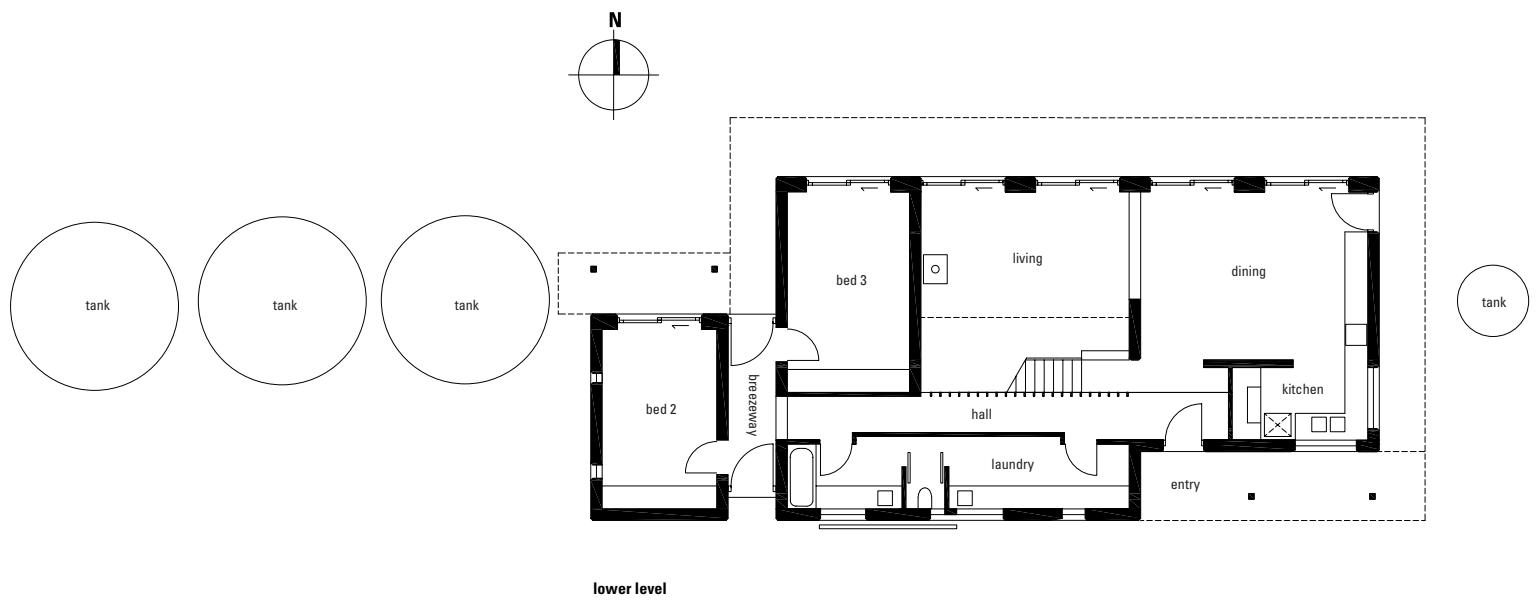
Ann and her husband bought a vacant 40 hectare block across the road from the Chiltern State Park almost 12 years ago but it wasn't until 2005 that they began building. Ann contacted architect Steffen

Welsch, a family friend who had recently gone into business on his own, to design the house.

"The design brief was developed by sitting around the kitchen table discussing how the family wanted to live," Steffen explains. "It was a given that they would build a sensible house with a low environmental impact. By sharing and sorting through our different ideas, we came up with the idea of a rammed earth structure designed according to passive solar principles."

The Eagles' initial idea had been to build with mudbrick using soil from their own land, but preliminary attempts at brick making proved to be unfeasibly time consuming. As an alternative,





Steffen suggested using rammed earth for its good thermal properties and aesthetic quality. After seeing the rammed earth buildings at nearby Charles Sturt University in Albury, the Eagles were won over.

As the clay content of their soil was too high for use in the rammed earth wall, **the earth was sourced from a nearby quarry in a deliberate consideration to use local materials where possible.** The sourced earth was a deep red, so it was mixed with a pale coloured earth to create a colour that closely matches the ground colour on site. To counter the low insulation value of the material, the panels were made 400mm thick, to

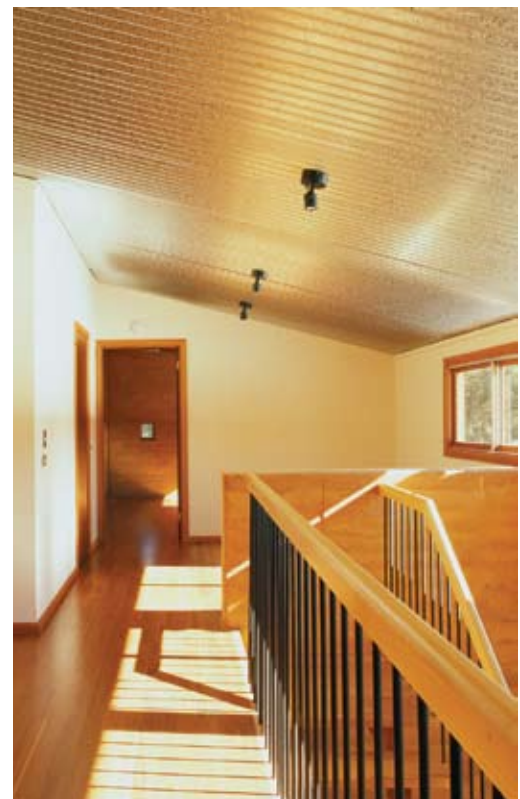
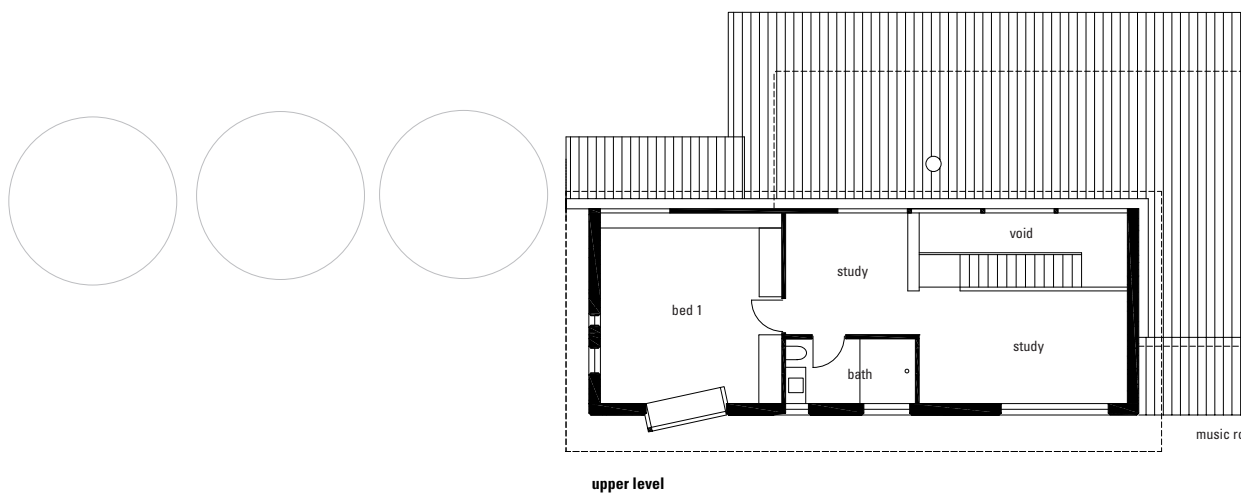
create walls that are twice as thick as average. Every wall in the house is made of rammed earth except for internal walls in small spaces or where water is used. The external surfaces of the walls have been coated in a water-resistant sealant but the interior surfaces remain untreated.

“The rammed earth changes colour with the light,” Ann says, admiringly. “I love the variation of tone within each individual panel. When the sun glints off the quartz fragments in the earth, it’s quite luminescent.” The day of my visit was overcast and the house was already radiant.

By zoning rooms according to passive solar principles the house takes full advantage of

available sunlight. Service areas such as the laundry and bathrooms face south, while living areas and the childrens’ bedrooms face north. Rooms facing east and west have only small windows to reduce the intake of light and heat. All north-facing rooms have large (virtually floor-to-ceiling length) double-glazed windows that are overshadowed by the roof eaves to block the high summer sun. In winter, the sun’s heat collects during the day in the concrete floors and rammed earth walls, both of which have a high thermal mass, and radiates into the internal spaces to warm the house when the temperature drops at night.

A wood heater is the sole heating source in winter



(other than the sun), and ceiling fans efficiently disperse its heat through the house. Excellent insulation, afforded by the ceiling and the thick earthen walls, ensures that the heat doesn't escape outside. **"On a winter's day the kids walk around in bare feet! It's only when you step outside that you realise it's cold"**, Ann says. "And in summer, because of the angle of the eaves, the floor's in total shade so it's cool underfoot. The floor temperature doesn't fluctuate." The floor is a design feature in its own right, with slivers of pale stones mixed into the concrete and offset with a polished finish.

The ceilings are made from prefabricated galvanised iron panels that were put up in a

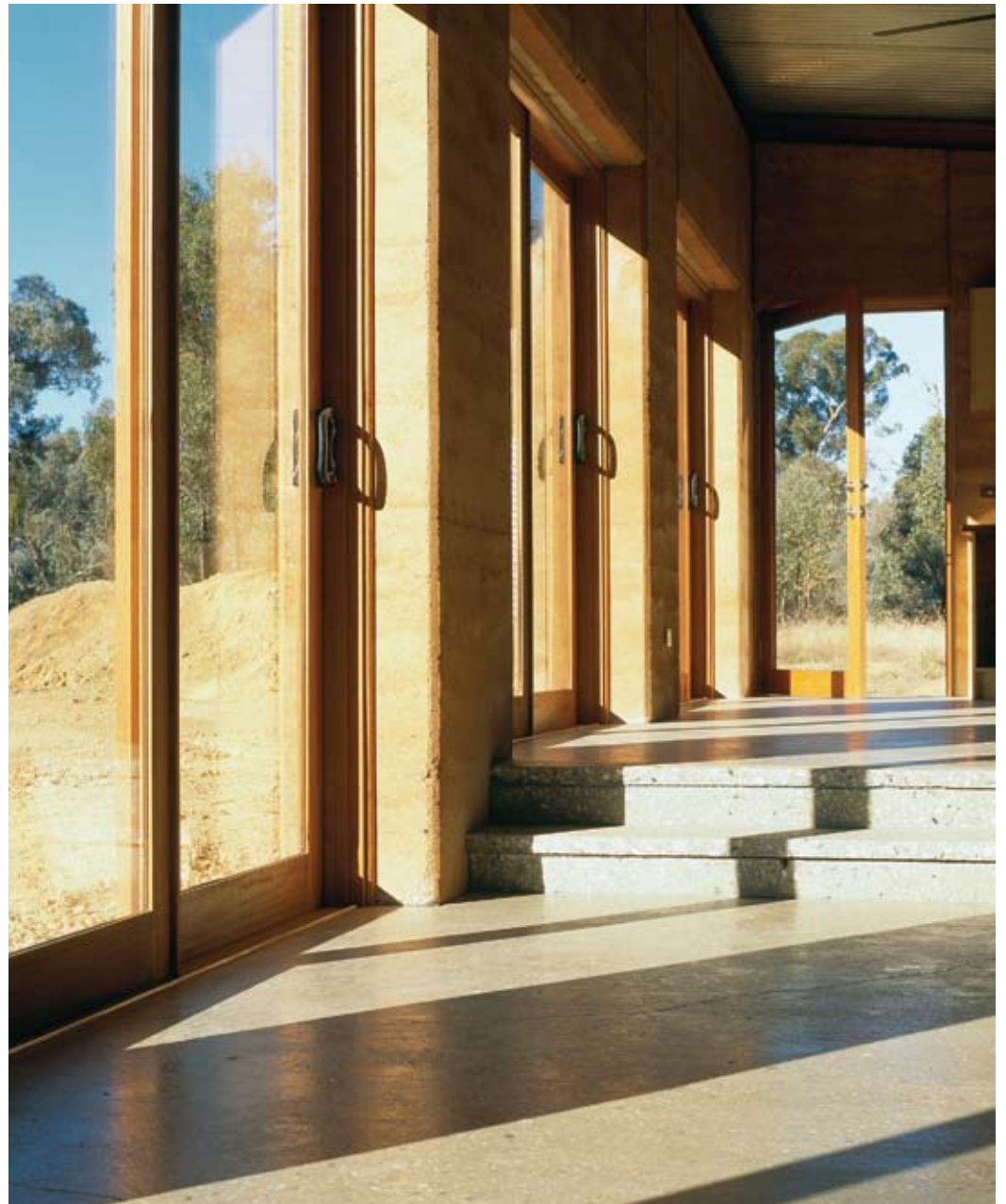
single day. The roof is made of the same material and between the ceiling and roof is a layer of polystyrene acting as insulation. Ann chose 'gal' for its textural profile and evocation of the farm where she grew up. The ceilings throughout the house slope at angles that subtly augment the functions of the rooms. Work areas and private spaces, such as the study and the kitchen, have low ceilings to foster comfort and concentration, while the ceiling in the living area uses the entire double height of the house to create a sense of expansiveness and freedom to move.

The sense of spaciousness within the house owes much to its design. "We wanted big open spaces",



“And what I really like is that wherever you are, you’re looking out”

The ramed earth walls, sourced from a local quarry, change colour with the light.



says Ann. “We prefer that to closed-off, separate rooms. The central living spaces are connected; even if you’re cooking dinner, you’re not cut off from everything else.” The hallway, a dark and neglected space in most houses, is connected in a permeable way to the adjacent living room with slender beams made from a local hardwood substituting for a solid wall. The advantage of the beams is not only to diminish the separation between hallway and living space, but also to allow northern light to filter into the hallway.

**Rainwater harvesting and water recycling were high priorities as the house isn’t connected to the town water supply.** Four rainwater tanks are

conspicuously located on one side of the house and three on the other. Steffen had the idea of visually expressing the water collection and making it an explicit part of the architectural composition. “The roof is slightly enlarged to hold water and also to exaggerate its water-capturing quality for visual effect,” he explains. Rainwater collects in the gutter and is fed via downpipes into the tanks, which have a total holding capacity of 110,000 litres. A catcher in the gutter traps debris before the water is fed to the house taps for drinking and other uses. Grey and black water is aerated and filtered in a septic tank before being discharged into the garden via underground pipes.



The kitchen cupboards are made of hoop pine harvested from sustainable plantations.

Using locally-sourced and sustainably-harvested materials to reduce the embodied energy of the house was important to the Eagles. **The stairs, window frames and hallway beams are made from local hardwood.** The kitchen cupboards are made of hoop pine harvested from sustainable plantations. The earth for the walls was quarried from a site within 25 kilometres of the house. A structural pillar in the living area was salvaged from a bridge in Howlong and still bears the marks of old bolt holes.

The family had initially considered installing solar panels for power but a combination of factors prompted them to reassess. Ann recounts that at

the time of drafting the house plans, the cost of photovoltaic panels was high. Because of this, as well as the inconvenience of acquiring associated necessities like battery backup and a generator, as well as needing a shed to store it all, the Eagles felt that the environmental impact of using panels would be greater than connecting to the grid and simply minimising their electricity usage instead. Ann says she'd consider going solar if they were building now.

Ann laughs off suggestions that a house without artificial temperature regulation might be uncomfortable to live in. "Oh, people say, 'It can't possibly be OK if you don't have reverse cycle



“The kids love it, we’ve had positive responses from locals, and people passing by in their cars still pull over to have a look”



airconditioning’. But the temperature variations here are less than in a conventional house! It’s outrageously comfortable to live in. The kids love it, we’ve had positive responses from locals, and people passing by in their cars still pull over to have a look.” She pauses to add, “And what I really like is that wherever you are, you’re looking out. Whether it’s out to the bush or out to the paddock, you never feel like you’re boxed in.”

- Designer:** Steffen Welsch Architects, (Design team Damien Thackray, Pulina Darshan Ponnamparuma, Steffen Welsch) [www.steffenwelsch.com.au](http://www.steffenwelsch.com.au)
- Builder:** R J Crosse
- Location:** Indigo Valley, VIC
- Photographer:** Derek Swalwell & Dan Stansby
- Features:**
- 400mm external and 300mm internal rammed earth walls
  - 250 litre Solahart solar hot water
  - Double-glazed windows custom made locally
  - 110,000 litre capacity galvanised steel rainwater tanks custom made locally and Davey pump
  - Taylex domestic wastewater treatment system
  - Recycled red gum and re-used timbers
  - Materials with low embodied energy
  - Eaves for shading
  - Cross ventilation, heat shaft and fans for cooling
  - Ritek roof panels
  - Polystyrene roof insulation R-value 3.5
  - Habitable rooms oriented north and wet areas oriented south