

Strawbale

in the

suburbs

Cosy and gas-free! This Adelaide household even runs its electric car from a solar + battery system, plus has roofspace set aside for future neighbourhood energy projects.

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Appropriately designed shading on the north contributes to this rendered strawbale house's passive solar performance. There are no windows on the west, and the house is shaded on that side by the garage and a large pine tree.

WORDS Anna Cumming
PHOTOGRAPHY Peter Hoare

FOR COMMITTED 'GREENIES'

Margaret and Charles Madden, building an eco-house had been on the bucket list for a long time. Their opportunity came with the purchase of a terraced hillside block in the Adelaide suburb of Lynton, with good solar access to the north and views of the sea. A chance encounter with local sustainable designer Bohdan Dorniak led to a fruitful partnership that resulted in the Maddens' cosy and energy efficient strawbale home.

"I mentioned strawbale kind of as a joke when we first met," laughs Bohdan, "but it quickly turned into a serious option – Charles and Margaret warmed to the idea straight away, they liked the idea of its comfort, warmth and acoustic properties." Margaret explains: "We didn't know exactly what we wanted, but having lived in a house with lots and lots of windows that was always cold, we knew what we didn't want. Strawbale provides terrific insulation."



Bohdan and his team have a solid track record with the building material, having designed over 100 strawbale homes. “It has an organic feel about it,” he says. “The minute you step into a strawbale walled place you just notice the softness of the walls and the feeling of being enclosed by something that is quite warming. It’s non-toxic, and it absorbs moisture – it’s a healthier wall than a plasterboard wall that’s been painted.” And although it’s most often associated with rural builds, it’s certainly possible to use this material in the suburbs. “Strawbale walls are about 500mm thick, as opposed to 300mm for double brick, so the external footprint does increase,” says Bohdan. “But small is beautiful. By building a house only as big as it needs to be, you can have space for strawbale walls even on a suburban block.”

Bohdan’s design for Margaret and Charles features rendered strawbale

external walls, an internal stone wall and concrete slab floor for thermal mass, and a long narrow plan allowing north-facing windows in every room. With the help of double-glazed windows, appropriately designed shading, and R6 insulation in the ceiling, the house achieves an impressive 8.5 Star energy rating.

Modest in size at 157 square metres, the house features a central room containing a kitchen, a dining area, a sunny sitting spot and a lounge. To one side is the bedroom and bathroom, and to the other is a pair of studies and a laundry. Outside, a covered terrace wraps around the north-west corner of the house, and a pergola to the north will one day be covered with deciduous greenery for summer shade.

There is no gas connection to the house – a decision made for both environmental and health reasons. “We have lived all-electric for many years, so it wasn’t

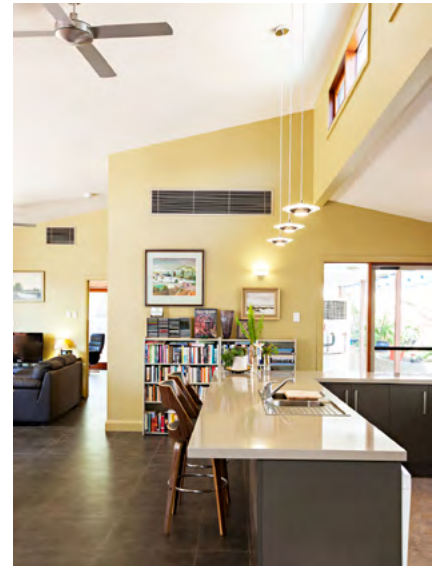
difficult,” says Margaret. The 5kW solar PV system helps power the house and charge the couple’s electric car, and they are in the process of installing four Enphase batteries to make the most of their solar bounty. “The roof was designed to maximise exposure to north sun – space for our solar panels plus extra for other possible future solar uses, like renting space to a neighbourhood micro-electricity grid.”

The finished house is lovely to live in. When it comes to internal temperature, “it keeps itself in the low 20s most of the time in winter, with only occasional use of the heater,” says Margaret, “and on the hottest days in summer it often maintains 10 to twelve degrees cooler than outside. It’s changed my life, it’s so much easier to be happy and peaceful in a house that maintains the right temperature.” 5

Windows and doors are cedar-framed double-glazed units with a Viridian coating to improve their thermal performance. “The deep reveals in a strawbale house give a feeling of solidity and security,” says Bohdan.

Along with the tiled concrete slab floor, a feature stone wall in the main central room acts as thermal mass to help regulate the internal temperature.

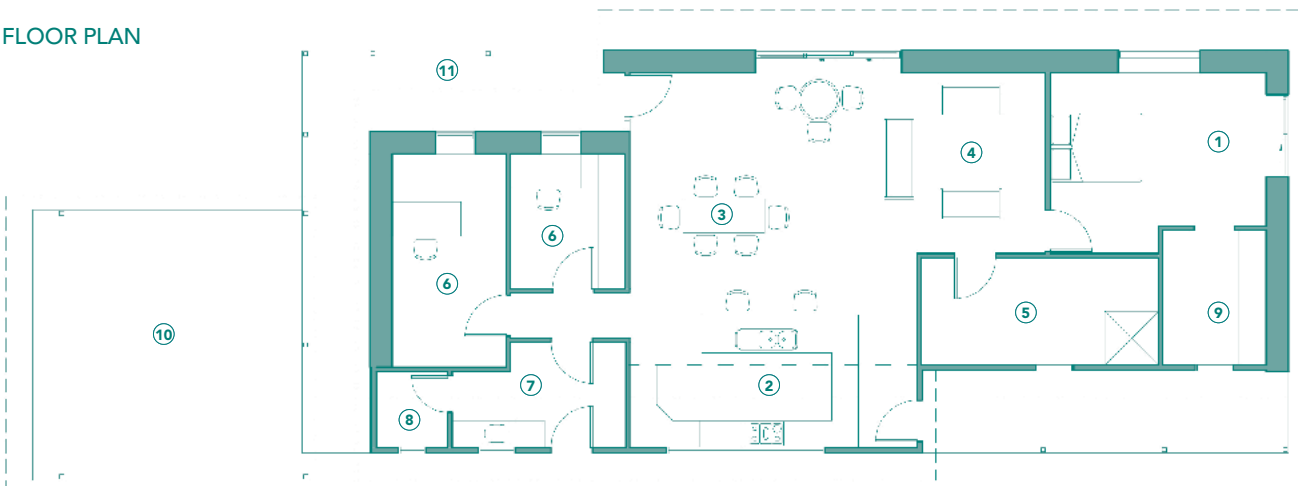




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The big central room is Margaret’s favourite thing about the house. “The room just works so well. It has a cosy little lounge space that invites people to talk. It has a stacking sliding door – we have a little breakfast table by it where the sun streams in. I love the elegant kitchen that faces out into the room, and the great big wooden table that we can have meetings or dinner parties around.” To bring in more natural light, Charles and Margaret opted for a splashback of glass blocks on the south wall of their kitchen. Overhead, clerestory windows are operable to provide ventilation and night purging.

FLOOR PLAN



LEGEND

- | | | |
|-----------|------------|----------------|
| ① bedroom | ⑤ bathroom | ⑨ walk in robe |
| ② kitchen | ⑥ study | ⑩ carport |
| ③ dining | ⑦ laundry | ⑪ verandah |
| ④ living | ⑧ store | |

Urban straw bale

DESIGNER

Bohdan Dorniak & Co
Architects

BUILDER

Happy Valley Homes

PROJECT TYPE

New build

PROJECT LOCATION

Lynton, South Australia

COST

\$608,000

SIZE

House 157 m²

Land 1140 m²

BUILDING STAR RATING

8.5 Star

HOT WATER

– Stiebel Eltron 300 litre heat pump supplied by Happy Valley Homes.

RENEWABLE ENERGY

– 5kW solar PV system with KACO Powador inverter, supplied by Newman Mundy Electrical;
4 x Enphase solar batteries
– 15 amp power point in carport to charge the Mitsubishi iMiev electric vehicle.

WATER SAVING

– Rainwater tanks 2 x 5000L, 1 x 14,000L, plumbed to the house and garden
– Grey Flow greywater pump and greywater irrigation pipes throughout upper garden, supplied by Eco Building supplies
– Clivus Multrum Ecolet composting toilet used most of the time (there is also an ordinary dual-flush toilet).

PASSIVE DESIGN / HEATING & COOLING

– Land selected for its east-west orientation to enable good northern orientation
– Correctly calculated eave width enables direct sunlight entry in winter, but not in summer
– Northern glazing with considered shading design. No windows on western side, and west wall shaded by large pine tree and carport
– Roof designed to maximise exposure to northern aspect and to create a large area for solar panels and any other solar equipment in future (for example, renting space to a neighbourhood micro-electricity grid)
– Concrete slab for thermal mass
– Natural cross ventilation designed for effective night purging of heat in summer,

particularly with the high windows

– High quality door sealing – no leaks!

ACTIVE HEATING & COOLING

– 2 x ducted reverse-cycle Fujitsu air conditioners
– Electrical in-slab floor heating from Classic Floor Heating
– Ceiling fans in all rooms.

BUILDING MATERIALS

– Rendered strawbale walls built by Lance Kairl of House of Bales
– Corrugated Colorbond roof with R6 insulation batts
– Timber-framed walls, lined externally with fibre-cement sheet, insulated with R3.5 batts (in the wet areas, on the south side of the house)
– Internal stone walls provide additional thermal mass, from Alex Feijen Stonework.

WINDOWS & GLAZING

– Double-glazed cedar windows with internal Viridian coating to improve thermal insulation, supplied by Woodlite Joinery
– Clerestory operable windows above kitchen, mechanism by Mingardi (Italian).

LIGHTING

– Wall and pendant LED lights, not downlights, to preserve the integrity of the ceiling insulation
– Glass blocks used as splashback on south wall to allow more daylighting.

PAINTS, FINISHES & FLOOR COVERINGS

– Ceramic floor tiles in a charcoal colour to absorb as much heat as possible in winter
– Lighter-coloured ceramic tiles on south side to encourage reflected light, and Marmoleum in kitchen and dressing room for softness and warmth
– No carpet or curtains to minimise dust accumulation.

APPLIANCES

– Reused washing machine, fridge, dishwasher from previous house
– Induction cooktop.

OTHER ESD FEATURES

– Reuse of site features, for example retaining walls, garden beds
– Food-producing garden.

