



# At home in the sun

---

An 8 Star house delights in the abundant light of the Sunshine Coast, delivering shelter to a family committed to living sustainably.

---

WORDS Sasha Shtargot  
PHOTOGRAPHY Yanni van Zijl

**NOT MANY HOMEOWNERS CAN SAY THEIR HOUSE** exports to the grid six times the amount of electricity it consumes. But then, few homes are fitted with a 10-kilowatt solar photovoltaic system and achieve an 8 Star energy rating like that of Joe and Karen Shlegeris.

The solar array on the roof of the house in Noosaville, Queensland, has allowed the couple to earn more than \$2000 every quarter since the home was built in June 2012. Taking advantage of their electricity retailer's generous 52 cent per kilowatt-hour feed-in tariff (8 cents above the old Queensland tariff)\*, they and their 14-year-old son James have been using an average 8 kilowatt-hours a day while exporting over 48 kilowatt-hours to the grid. They paid \$25,000 for the solar system but it and their high-performing home will eventually allow them to go off-grid or power an electric car should they buy one in the future.

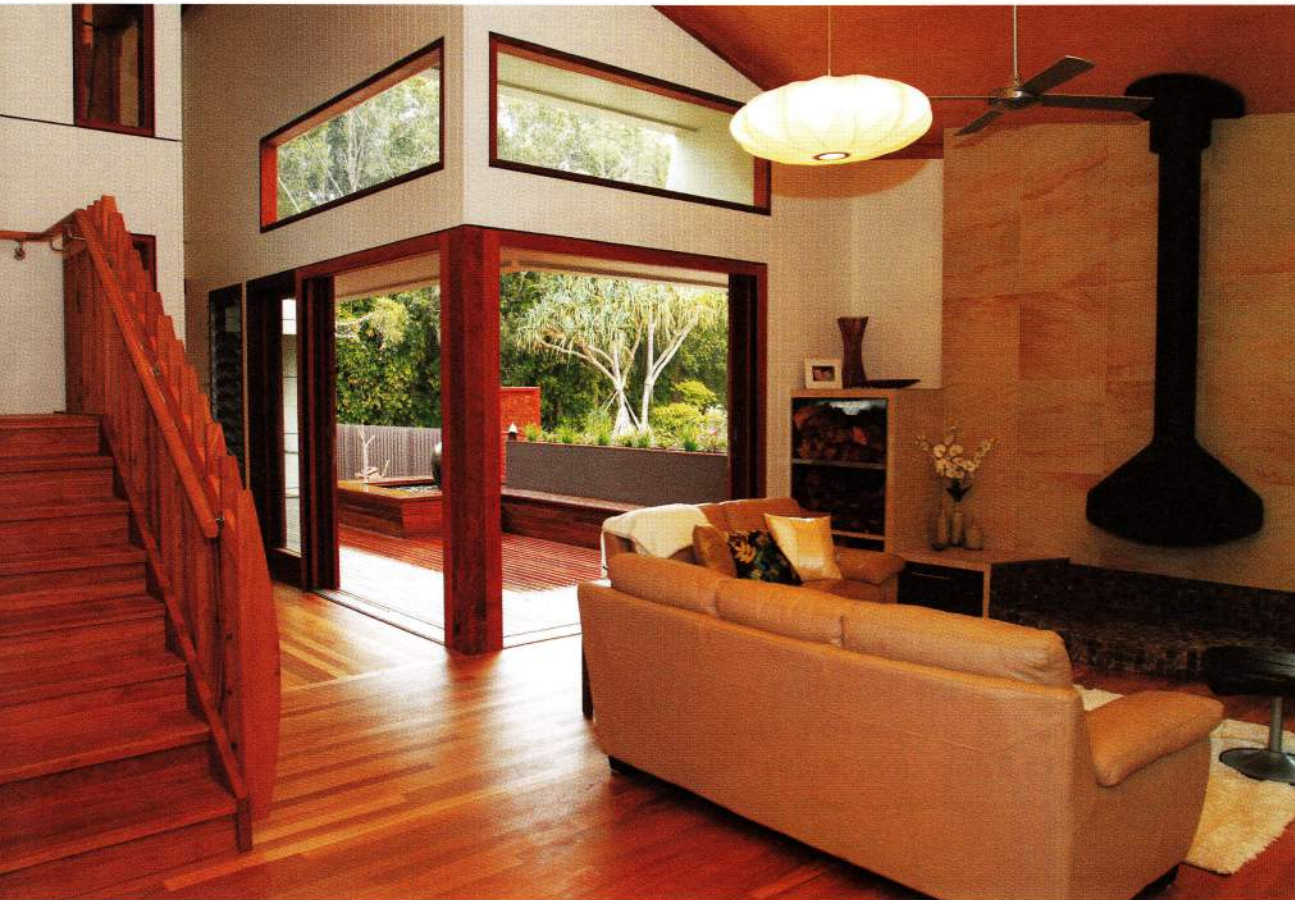
The roof is perhaps the home's most prominent feature. Architect Andrew Webb of WD Architects explains that it is oriented to true north, for maximum

efficiency of the solar array, even though the block is 28 degrees from true north.

The design also ensured that all appliances and other sources of residual power could be turned off at the wall to eliminate sources of standby power. Joe, a retired stockbroker, has measured in great detail the performance of the house. "I've always treated the house and garden as a machine which delivers a bundle of services: shelter, heat, light, electricity, hot water, storage space and waste disposal," says Joe.

Entering through the front verandah, the home opens to an expansive kitchen, dining and living area. There is a central stairway and a study, while a hallway with a timber feature wall on one side leads past a deck prominently framed by eye-level and clerestory windows. A bedroom and bathroom are at the end of the hall. Upstairs there are two more bedrooms, a second study, bathroom and a large rumpus room that Karen, a yoga teacher specialising in pregnancy yoga, uses to hold her classes. →





Ⓢ Poor site orientation and ground conditions made passive solar design a challenge for architect Andrew Webb – thermal mass was structurally impractical. Nevertheless a high energy rating was achieved through careful design including cross-ventilation, sun shading, appropriate insulation levels, and an enclosed and insulated subfloor perimeter to benefit from stable earth temperature.

Timber plays a key part in the home's overall look and sustainable appeal. In addition to the cypress pine timber structure, the flooring, stairs and feature walls are made from recycled timber. Plasterboard has been minimised in favour of durable FSC-certified plywood, while screw piers have been employed in the home's foundations to limit the use of concrete.

Designed for the Sunshine Coast's sub-tropical climate, internal and external windows, with the help of ceiling fans, create ample breeze paths for passive cooling. All fixed lighting is LED. An evacuated tube solar hot water system with electric booster provides virtually all the family's hot water. "Generally we have abundant hot water and never have to think about it," says Joe. Non-toxic finishes, water-efficient fixtures and energy efficient appliances add to the home's sustainability credentials.

Water saving, by Joe's own admission, is a work in progress. The family balked at a proposed 25,000-litre rainwater tank under the driveway, primarily due to the expense associated with installing it. Instead they put in a 5000-litre Colorbond steel tank that feeds the outdoor taps, toilets and washing machine and are exploring options for more water storage.

Passionate for years about reducing energy and waste, the

family moved to Noosaville after 17 years in Townsville for the agreeable climate and because of the area's bicycle-friendliness. There is good bike access to most places they visit; Joe takes his bike on most errands and James rides to school. The family looked for two years for an existing house they could buy, but settled on building their own. "We found that the vast majority of houses have massive energy waste built into their very design," Joe says. "In most cases there's simply no way to amend this guaranteed and permanent waste short of rebuilding. This led us to decide to build a house to our own specifications."

In September last year Joe and Karen proudly opened their new home to the public as part of Sustainable House Day. "As a flourish, the floorboards in my office run perfectly east-west," Joe adds, pleased with the attention to detail in the design. "It's a fact which brings me joy inexplicable to those who don't understand why that is so great." Ⓢ

\*Ed note: At the time of going to print, the Queensland feed-in tariff had been reduced to 8 cents per kilowatt-hour, but Joe was still receiving 52 cents per kilowatt-hour from his retailer. See specifications on p68 for a comment on solar PV system sizing.



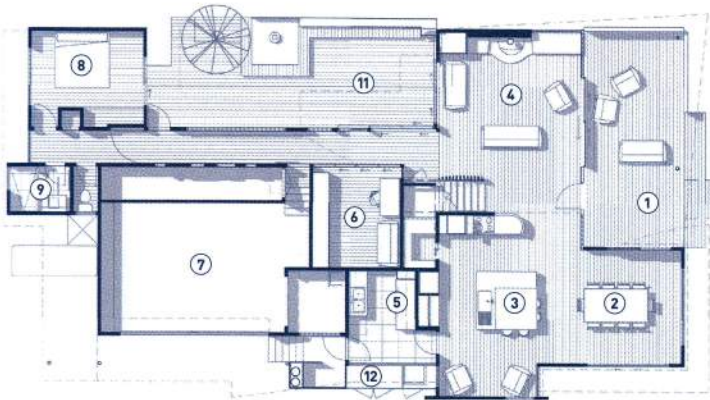


Homeowner Karen uses this light northeast-facing rumpus room to run yoga classes. FSC plywood lines the floor and louvre windows vent hot air from the space.



"I've always treated the house and garden as a machine which delivers a bundle of services: shelter, heat, light, electricity, hot water, storage space and waste disposal," says homeowner Joe.

FLOOR PLAN

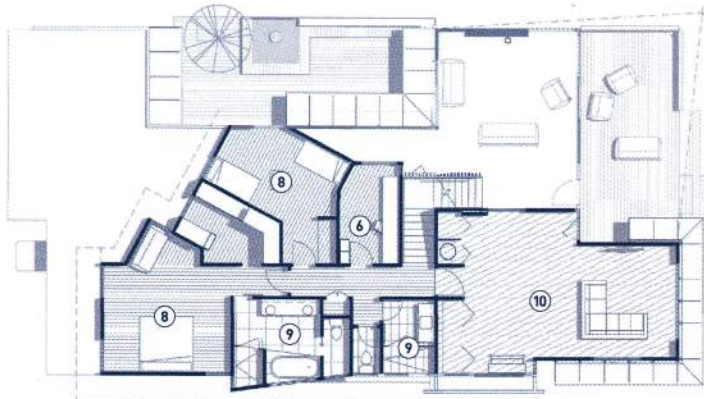


GROUND FLOOR



LEGEND

- ① Verandah
- ② Dining
- ③ Kitchen
- ④ Lounge
- ⑤ Laundry
- ⑥ Study
- ⑦ Garage & workshop
- ⑧ Bedroom
- ⑨ Bathroom
- ⑩ Rumpus
- ⑪ Deck
- ⑫ Clothes drying area



FIRST FLOOR





① The roof of this 8 Star (as built) energy rated Sunshine Coast home is its most prominent feature, oriented to true north to maximise the efficiency of a large 10kW solar system. At a slope of 18 degrees, the distinctive shape informed the design of much of the house.