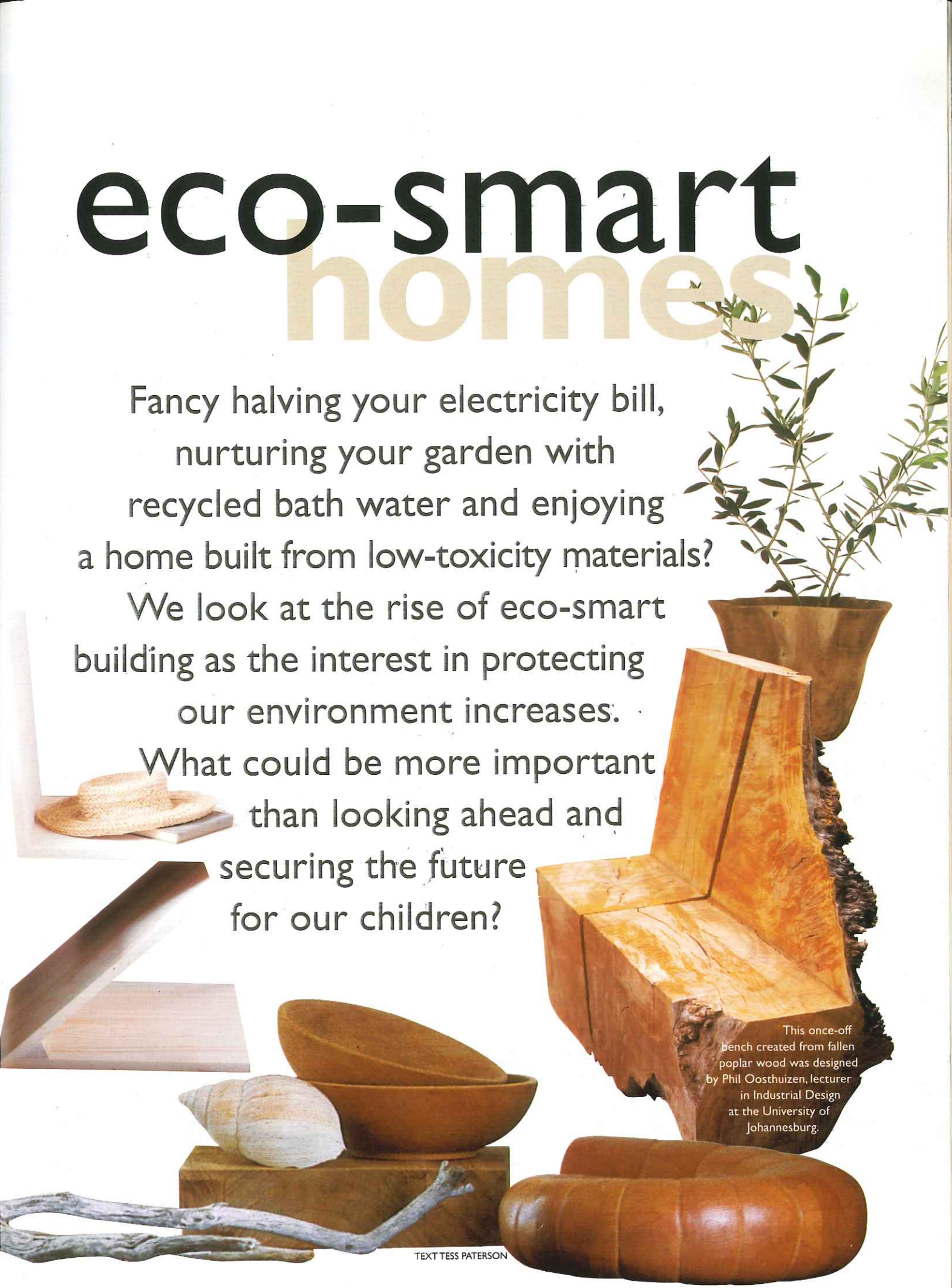
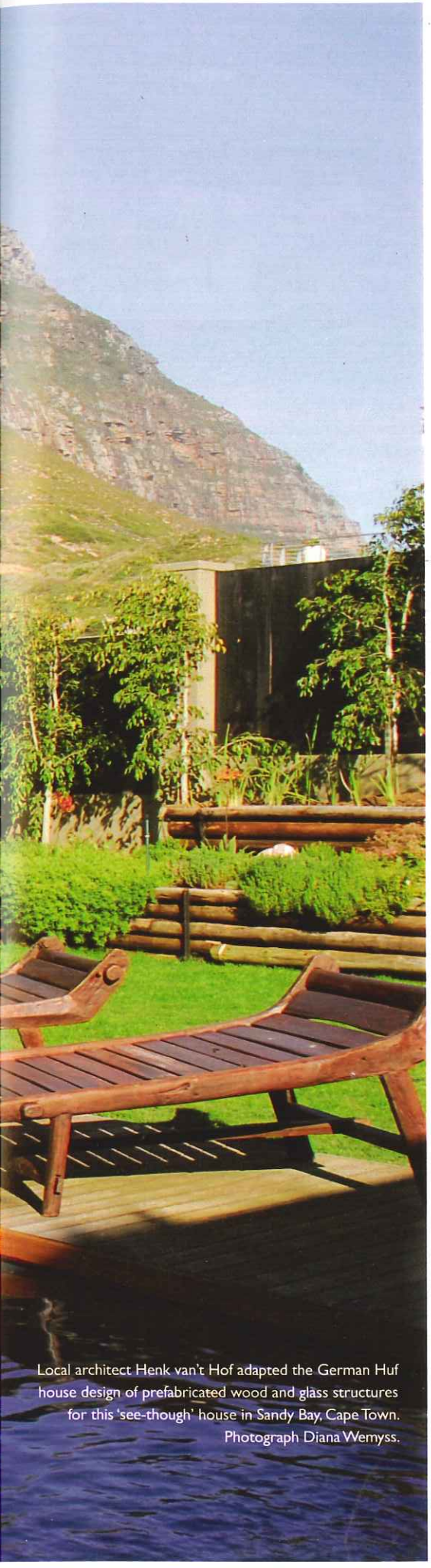
eco-smart homes

Fancy halving your electricity bill, nurturing your garden with recycled bath water and enjoying a home built from low-toxicity materials? We look at the rise of eco-smart building as the interest in protecting our environment increases. What could be more important than looking ahead and securing the future for our children?



This once-off bench created from fallen poplar wood was designed by Phil Oosthuizen, lecturer in Industrial Design at the University of Johannesburg.

TEXT TESS PATERSON



Local architect Henk van't Hof adapted the German Huf house design of prefabricated wood and glass structures for this 'see-though' house in Sandy Bay, Cape Town. Photograph Diana Wemyss.

'Environmentally friendly' is a broad term that's been used to describe everything from organic yoghurt to paper bags. In the 70s, environmentalists were depicted as hippie idealists, all tie-dyed shirts and flowing beards yet without much practical input. Today there's a steadily growing awareness of the need to protect and sustain the environment – not because it's politically correct, but because we have come to appreciate that the planet's resources are finite. Just as you may be questioning the quality of the meat and veggies you're buying, so people are looking for alternative ways to create truly efficient and sustainable homes. The good news is that you can begin right now, whether you get waterwise with a simple tank, or orient your new home to capitalize on the blazing SA sun. We look at eco-inspired new residences and investigate simple, practical ways to go green.

What does sustainability really mean?

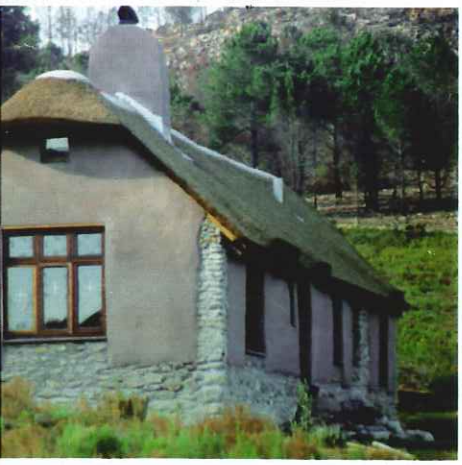
"One of the definitions of sustainability is 'a state in which humankind lives within the earth's carrying capacity,'" says Gerry Joubert, senior lecturer in Architecture at Tshwane University of Technology. "Scientists have developed the concept of the 'ecological footprint' meaning the sum of all the different areas on earth needed to sustain human existence. Currently we require 2,4 ha for each inhabitant of the planet, yet we only have 1,7 ha available. Globally, our houses, malls, offices, factories and hospitals consume some 50 per cent of all energy used on earth, meaning that we're dangerously low on 'natural capital.'" Green buildings are those that use little energy, contain materials from sustainable sources, and have the least possible impact on the earth. ▷

THE BENEFITS OF GOING GREEN

Unlike coal, oil and gas, solar power is a renewable form of energy that won't run out. Once the initial cost of 'green' technologies such as solar water heaters has been met, the energy is free, with substantial savings on electricity. It's also non-polluting, producing no greenhouse gas emissions. "Consumers are starting to look at the fixed-cost nature of the benefits offered by sustainable buildings, such as cooling, heating and lighting," says Glynn Morris, MD of Agama Energy. "These benefits are available for the duration of the building's life at a cost which is reliable, fixed and predictable. 'Green' buildings can be viewed as an insurance policy against the risks of fluctuating and increasingly expensive services."

And not only are cleaner, cheaper sources of energy readily available, but people can choose materials and finishes that substantially reduce toxicity in the home. "Sick-building syndrome is very real," says Gerry Joubert. "It arises from buildings that are poorly ventilated and fitted with products containing volatile organic chemicals. These are found in synthetic paints, finishes and building materials and emit high levels of polluting gases."

Andy Horn, an award-winning architect and founder of Eco Design Architects, is at the forefront of green buildings in South Africa. Author of several titles including *A Manifesto for Green Architecture*, each of Andy's projects is based on the principle of respect for the earth. The company's most recent award is the 2005 Holcim award for Sustainable Construction. The team walked off with the silver medal for the Africa and Middle East region for the Niewoudtville Caravan Site upgrade project, where construction included rubble trench foundations, straw bales, sandstone and a 'living' roof.

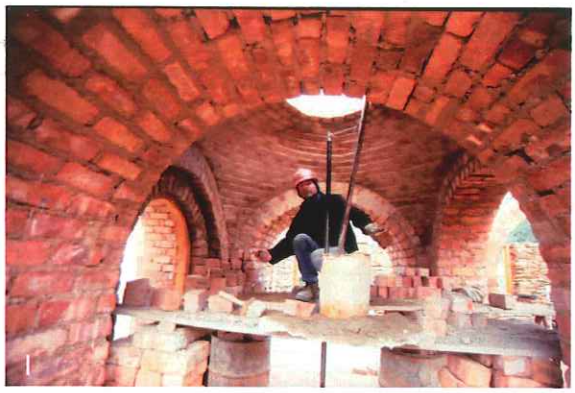


HOUSE OF STRAW

This 'green' house (above) in the town of Teslaarsdal was constructed from natural stone, straw bales and locally harvested timber. The poles were treated on site with non-toxic substances, and the windows and doors are a mixture of recycled Oregon pine and second-hand finds. Water is heated by a solar water panel and for back-up on cloudy days, waste heat is circulated from the fireplace chimney to the geyser via a heat exchanger. Rainwater tanks conserve water, and used bath water nourishes fruit trees via a grey-water recycler. Design: Eco Design Architects

1. Architect Andy Horn in one of the clay brickwork domes, which creates the entrance space to the Mud Gallery in Barrydale.
2. For the Mud Gallery, Eco Design Architects used slate stone found on site, with a lime-stabilised earthen mortar and earth lime plaster.

Photographs Eco Design Architects (021) 462 1614, www.ecodesignarchitects.co.za



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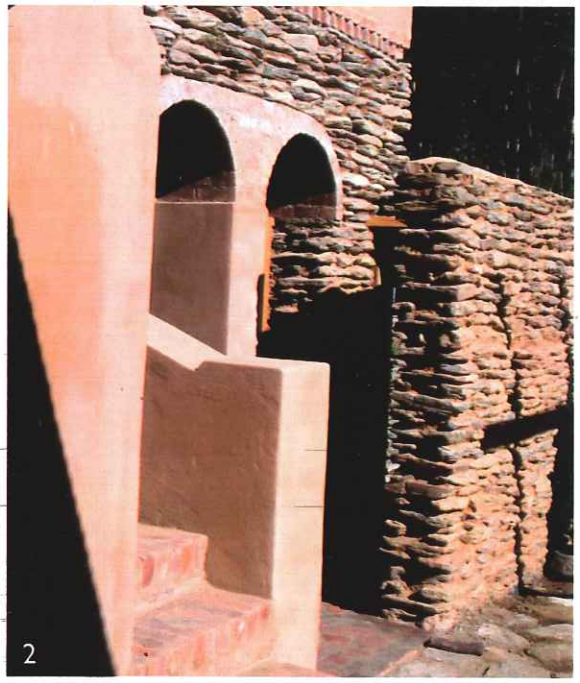

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ECO-FRIENDLY MATERIALS

☐ Timber grown from sustainable forests is a healthy alternative to chipboard and MDF (both of which contain formaldehyde glue). The use of local timber over tropical hardwoods helps counteract deforestation and supports local industries.

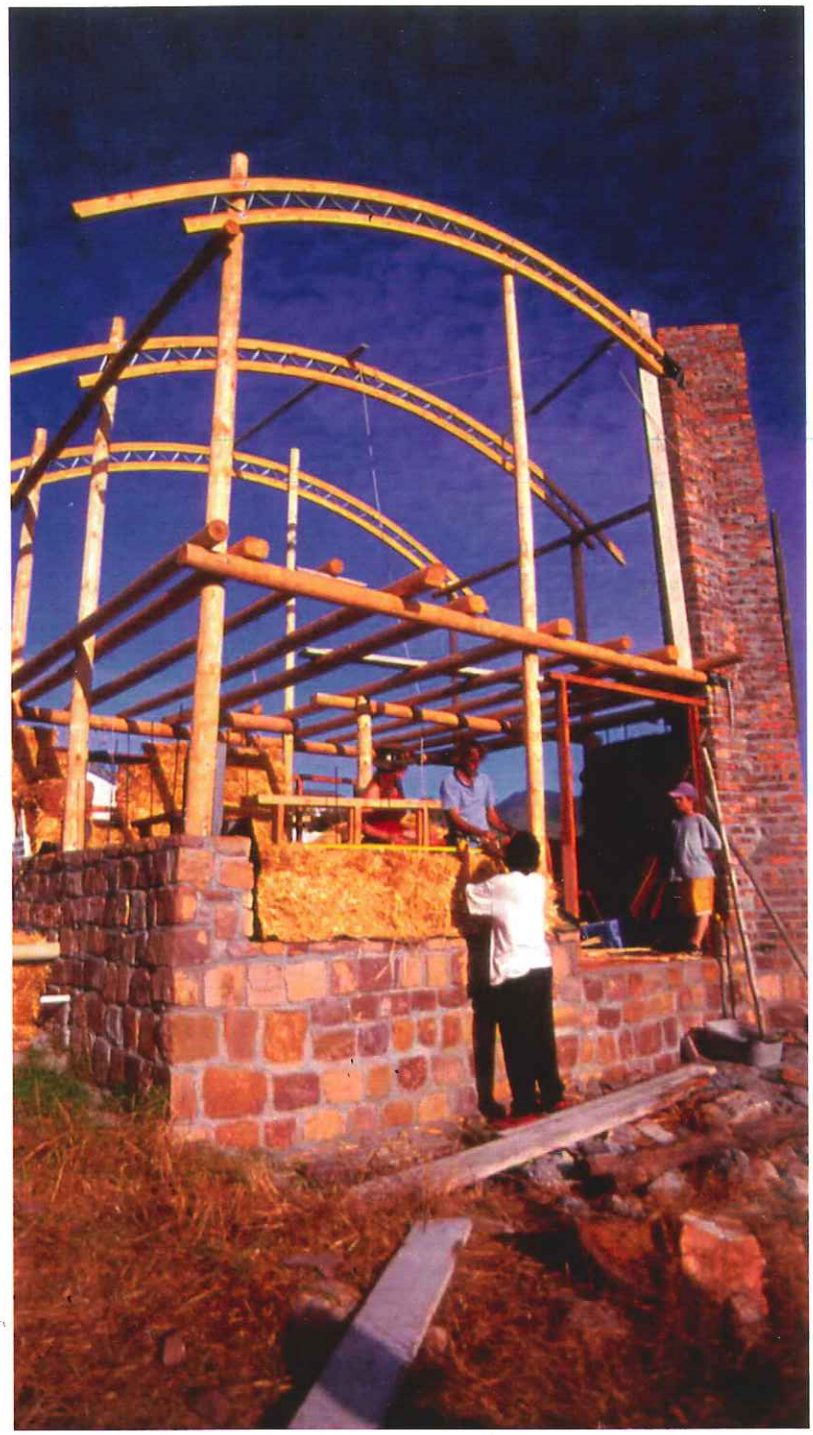
☐ Look for organic paints and sealers which allow buildings to 'breathe'. For retailers of non-toxic wood and stone sealers phone (021) 556 1238 or visit www.envirotouch.com.

☐ Consider bamboo as a sustainable option for flooring and furniture, try Panda Bamboo (0861 114 971), or natural fibre carpets like sisal, hemp and coir.

☐ Recycling building materials such as bricks, timber, doors and window frames further reduces cost and waste.

☐ Ask your supplier for a Safety Data Sheet on all your building products.

"Water demand will exceed supply in Gauteng by 2015, and nationally by 2030. Adjusting our habits to reduce, reuse and recycle is paramount to our survival."
Gerry Joubert



The photographs on this page show a holiday house in Scarborough which features a pole framework with stone walls and straw bale infill. Design: Eco Design Architects

GOING SOLAR

"Solar water heaters are more costly than conventional geysers, but the additional cost can be offset by future reductions in your water heating bills," says Marlett Balmer, partner in PDC, a research and consulting firm specializing in development, energy and education. "Nationally, the potential for solar water heaters to influence the domestic demand profile is significant, which means saving on large amounts of electricity, and reducing pollution and greenhouse gas emissions."

TIP: be sure to invest in the correct size system based on your hot water requirements. For advice and a list of approved suppliers, contact the Sustainable Energy Society (011) 789 1384, or mail info@sessa.org.za.

5 THINGS YOU CAN DO RIGHT NOW

1. Choose water-saving shower heads, taps and twin-flush toilets.
2. Replace thirsty exotic plants with hardy and drought-resistant shrubs and trees.
3. Invest in a tank to harvest rain water for the garden or pool.
4. Use mulch and compost to help keep soil damp.
5. Think about the products you use to wash your dishes, your clothes and yourself – and use greener, biodegradable options where possible.