

insidestory

Beyond the fringe

Sustainable building products are no longer just for hippies, ALISON APRHYS reports.

NOT SO long ago, the building blocks of your average home came down to a simple choice: timber, steel or brick. Then "sustainable housing" became the buzzword, inspiring a new generation of materials and design practices, and a return to some of the old building styles once relegated to the hippie fringe.

Along with bricks made from cellulose or foam, age-old methods such as mud brick construction and straw bale houses are making their way into mainstream design, creating highly contemporary and, importantly, energy-efficient houses. There's been a welcome return to roofs with wide eaves, breeze-catching verandas, water tanks, and houses cleverly designed to make the most of sun and natural light.

Caroline Pidcock is one of the leaders of the new generation of architects championing the sustainable building revolution.

"You don't have to use weird and wacky materials to be sustainable," Pidcock insists. "Some people think sustainable means just mud brick, straw bale or yurts, but it's not that at all - there's no such thing as a sustainable material, it's just a sustainable way to use materials."

An unsustainable use of material, suggests Pidcock, would be building an untreated steel home by the beach as it would quickly rust.

Once Pidcock understands what kind of lifestyle the client leads and the sort of building that will work best, she is then able to consider the right mix of materials.

"I don't have one palette of materials in mind; I am open to using a variety, as every client, home and site is different," she says.

"Some are deeply into sustainable homes and are prepared to spend more on photovoltaics, which collect solar power, and water recycling, than on a three-car garage or expensive benchtops."

Straw bale

Unlike the first little pig's experience, straw bale has proven to be a durable and sustainable material, removing the need for



It all stacks up
Purpose-made straw bale infill panels by Huff 'n Puff, constructed on site, are used on a house designed by Caroline Pidcock.

paints and solvents that can adversely affect the atmosphere and human health.

Susan and John Glassford run Huff 'n Puff Strawbale Constructions, and hold around four straw bale construction workshops a year, attracting everyone from architects to owner builders and those who are looking for a different, more personal building option. The five-day workshops, at a modest \$550, take novices through the basics of straw bale construction, combining theory with hands-on experience working on a straw bale structure. Participants also learn about bale wall finishes, such as plaster and types of render.

A recent Huff 'n Puff innovation currently in prototype is SITUPS - the Super Insulated Tilt Up Panel System, which the couple hopes will be on the market by the end of the year.

"Made from wheat straw, SITUPS will offer architects, builders and owner builders a ready-made wall system that is easy to build, looks good, has excellent thermal properties, and is sustainable as long as we grow wheat in this country," says John Glassford. "They are being tested for load bearing, wind resistance and thermal rating at the University of Western Sydney."

As well as running workshops, Huff 'n Puff also provides home and building designs, organises engineering certificates, drafts plans for council approval and arranges the BASIX rating. An added bonus of straw bale

construction, says the Glassfords, is the fact it reduces the demand for native timber in the building industry.

Bohdan Domiak, an architect with over nine years' experience designing straw bale buildings, is the president of AUSBAL (the Australasian Straw Bale Association). The association has over 60 members in Australia and New Zealand, and affiliations with other straw bale associations in the US, Canada and Europe.

Domiak's architectural practice has designed over 50 buildings in South Australia, Victoria and Tasmania using straw bales, with a \$2 million house currently under construction.

The buildings the firm has designed range from housing additions, art studios, wineries and a pilates studio, to re-fits of existing buildings. Not surprisingly, Domiak is keen to promote the benefits of this natural product.

"As people become aware of the problems of using standard building construction methods - the lack of insulation, the polluting qualities of high-energy embodied materials and recurring energy costs - they are turning to straw bale construction," he says.

"Here in Australia, all our straw bale builders are flat chat."

Mud brick

"I have always been fascinated by mud bricks because they give a home a wonderful ambience," says Steve Dodd, of Bellingen

Bricks. A convert for 30 years, Steve and his family live in a mud brick home he designed and built himself.

"Mud bricks have excellent thermal and acoustic properties," he says.

Also known as "adobe", mud brick is one of the world's oldest building methods and has definitely shed its purely alternative image.

"Our bricks are four to six times the size of a normal house brick," he says, adding they are "a thousand times nicer for the environment". Since 1980, Dodd and his team have made hundreds of thousands of bricks from the red clay of the Dorrigo Plateau and the Bellingen river flats. The bricks take about two weeks to make and another four to dry.

"We mix the mud brick brew using a locally obtained red sandstone and add that to the red clay with some cement," says Dodd, whose company supplies the finished product to builders and owner builders, and can lay them as well.

Local architect Steve Gorrell agrees that mud bricks are an excellent option.

"Of all the alternative building materials available, mud brick is the one of primary interest to most people," he says.

As an architect working in the Bellingen region for over 30 years, Gorrell was one of the first to incorporate mud bricks into his designs.

"Historically they had been used in drier climates, such as down in Victoria, before I and one or two others started experimenting to see if they would suit a wetter climate," he says.

It's obviously paid off, as he has used mud bricks and timber to build everything from bed and breakfasts to national park lookout platforms and visitor centres.

Eco-Block

If you are after a speedy option, then Eco-Blocks may be the way to go.

"It's like using Lego; we can put up all the walls of a single-storey home, internal and external, in just seven days," says Steve Fava, who manages Eco-Block in NSW and the ACT.

The insulating concrete forms (ICF) are comprised of panels of expanded polystyrene that are snapped together with plastic connectors to form the exterior and interior walls. The gap between the panels is then filled with reinforced steel and concrete. This combination of concrete, steel and foam creates a robust and energy-efficient structure. After the concrete has hardened, the forms stay in place, providing highly insulated walls that can simply be rendered over.

One of the key advantages of Eco-Blocks is that they significantly reduce the need for timber in the construction. In fact, Fava claims one ICF home saves at least 10 trees.

"They are also highly energy-efficient by providing superior insulation, reducing heating/cooling costs and creating a virtual air/vapour barrier," he says



Feat of clay Rammed earth, poured into formwork, gives this house designed by Caroline Pidcock a warmly textured finish. The contemporary style demonstrates why architects are embracing these age-old methods.

Eco-Blocks are resistant to mould and moisture, and - importantly for areas prone to bushfires - are fire-resistant, "with up to a four-hour fire resistive rating".

Timbercrete

"Timbercrete resembles sandstone, but is composed of cellulose, cement, sand and binders to enhance block strength and prevent excessive water penetration," says Ian Lucas, principal of Timbercrete in Sydney.

Timbercrete homes were finalists in two categories of the 2004 Housing Industry Association awards. The masonry has a CSIRO fire resistance level of 240-240-240.

"The highest score possible; no other brick or block manufactured or sold in Australia

has achieved this standard," says Lucas.

A firm believer that homes need to be designed and built in harmony with the environment, he says the bricks combine beauty with practicality.

"We need to break the 'cookie-cutter McMansion' approach to housing because building for status and ego is not practical or efficient," says Lucas.

"Due to single skin, load-bearing construction, there is no need for roof supports, wall frames, gyprock, insulation, painting, skirtings or architraves."

He estimates for an average home using single-skin Timbercrete blocks, the block costs would be around \$15,000 to \$20,000.

Who to contact

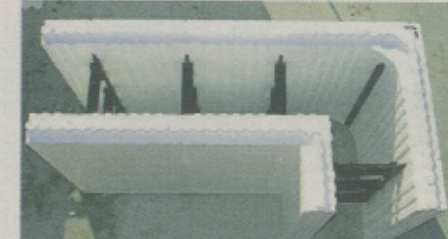
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- Huff 'n Puff: 6927 6027, www.glassford.com.au.
- Timbercrete: 4577 6100, www.timbercrete.com.au.
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More information

- Australasian Straw Bale Building Association: www.ausbale.org.
- Building Sustainability Index: www.basix.nsw.gov.au.
- Earth Building Association of Australia: www.ebaa.asn.au



Straw bale Once the bales are up, it's an easy matter of rendering to the desired look.



Eco-Block These walls comprise panels of polystyrene that are clipped together onsite, then filled with concrete.



Mud brick Bellingen Bricks' product, made from red sandstone, clay and cement, is four to six times the size of a house brick.

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FURNITURE



Beauty on a budget At first glance it looks like sandstone, but this house is in fact made of the highly fire-resistant and practical Timbercrete blocks.