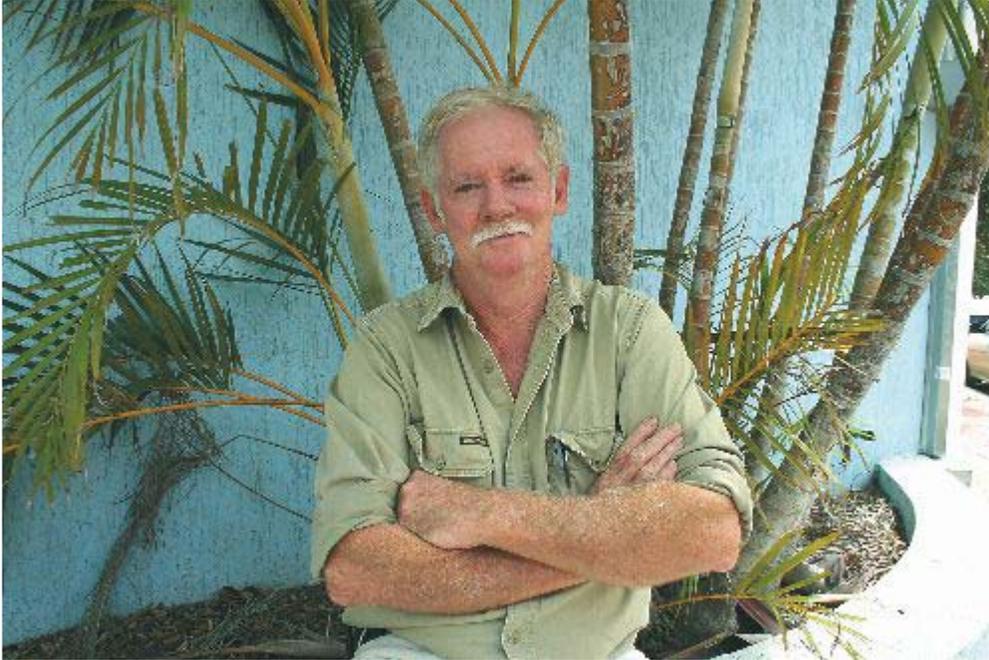


# News

## Digging in the dirt: underground houses

By Andy Parks



*Richard Wells is spruiking the benefits of underground housing.*

Richard Wells speaks at a million miles an hour and has a kind of manic energy about him. He is a man who wants to see a revolution in the building industry and the way we think about houses.

His particular interest is underground houses because he believes they are the most environmentally friendly form of housing available. He lists energy efficiency and cost savings in construction amongst the benefits, and said they also allow native vegetation to be retained in bushland settings whilst simultaneously eliminating fire danger.

"They allow you to retain 95 per cent of native vegetation on your land, so you have almost total biodiversity protection," he said enthusiastically.

In the wake of the devastating Victorian bushfires Richard believes now is the time to challenge some of the conventional wisdom about building in bushland areas before the rebuilding phase begins.

"The fire risk issue is virtually non-existent with underground houses provided they're constructed properly. The main consideration in bushfire prone areas is that you need to have a barrier around you; a hazard reduction zone of some kind. The main consideration you have then is windows and doors. If you don't have quality double glazed or laminated windows, the windows are so fragile that the onset of a major firestorm can cause an air pressure differential between the fire area and the inside of a house. The inside air pressure is greater so it blows the windows out and the fire pours in and destroys the house.... Everyone thinks that by sealing themselves inside a normal house they are safe, but not at all."

But Richard concedes the idea of building underground would need a major education campaign and marketing makeover before it became acceptable to the average home builder.

"The key word is underground and everybody thinks 'wombat burrow'. A better word would be 'earth covered'. Earth covered housing is a much more palatable thing to describe," he said.

The type of housing Richard is talking about involves a concrete slab, concrete walls and a concrete roof. Doors, windows and sun lights are fitted to maximise light into the house.

Kitchens, bathrooms and other fittings can be carried out by regular tradespeople.

"Everybody thinks of underground housing as like the subterranean houses in Coober Pedy, but the main design is a 'cut and fill' type of design... you cut into the side of a hill and backfill

but the main design is a 'cut and fill' type of design... you cut into the side of a hill and backfill around the walls. The roof is completely earth covered so you have to mow the roof or plant gardens on it, or native plants."

He said the design is equally possible to build on a flat block by bringing in soil and backfilling around and on top of the concrete structure.

Richard believes it's not just fire; the effects of other natural disasters would be minimised with earth covered housing.

"What happens now when a single hailstorm hits Lismore? Thirty thousand windows get destroyed and all the roofs. There was hideous destruction in just one day... I've seen Sydney hit with a hailstorm in the 90s that nearly used up the entire supply of glass in Australia in a single day's storm. It took months and months, sometimes years, to repair some structures in Sydney."

He said most modern houses were only built to only last 30 years, whereas an earth covered house should last for "hundreds". With more wild weather predicted in the coming decades it would pay to make some smart decision about how we use our resources now.

"I was in Darwin after Cyclone Tracy and I have been in other areas where cyclones have destroyed large areas of land. I recommended in Darwin they build underground or earth covered housing to withstand cyclones, but no one would listen. Real estate agents just laughed at it. In one particular area of Casuarina they built 600 houses, all identical... It was the most horrendous, boring architecture I've ever seen. But it was done because it was quick. It would have been cheaper to build underground earth covered housing... but the housing industry is locked into design which is dinosaurian."

Richard believes there are around 70,000 underground houses in the United States, but doesn't have any figures for Australia because he said many have been built without council consent. He said he first came across the idea when he was working in concrete construction on large building projects in the 1960s.

"I saw massive destruction of habitat to build houses and it just seemed to me to be insane," he said.

Then during the Cold War, Richard found himself a niche market; installing fallout out shelters under homes in Sydney.

"In the 1970s everyone was starting to get scared about the Russians and the Americans having a big row... it looked pretty bad by the 80s and I thought 'gee wizz' this is a market opportunity! I sounds a bit callous and cruel but the reality of survival (is that people wanted shelters).

"They effectively doubled as a house under the house, but we never designed them as a house, per se. We only ever designed them as a retreat or a shelter. We used to put (the plans) in to council as a wine cellar because if you put them in as a fallout shelter there were issues... council had no DCP (Development Control Plan) to cover fallout shelters under houses, whereas wine cellars, tick," he said.

Richard lived in a house in Cowra that he described as "semi-underground" before he separated from his wife and moved to Lismore about two years ago.

He plans to build three earth covered display homes around Lismore that he hopes will help to turn around the image problem and generate some sales.

"People won't have any real understanding and appreciation until they walk in one," he said.

"In contrast to the impression of them being like a wombat burrow, underground houses are spectacularly well lit..."

Under Australian standards, virtually every room has to have natural light coming in and you can do that with skylights or you can do that with an atria structure. You can create atriums where a number of rooms come off a common area. That area feeds light through windows into the interior of the house."

When I asked him if there were any examples of underground houses in the area he told me a story I had heard before, but had filed under 'apocalyptic hippie rambling'.

"There was a guy who built one at Mount Warning, a massive complex. He feared the end of the world and he built one there. He was part of the US military intelligence network... and when he got out he decided the Mount Warning area of northern NSW was the safest place on the planet in case of a global nuclear war, based on his intelligence assessments... When the world didn't end I think he went back home to California and died," Richard said laughing.

He said he saw the house from a distance, but not surprisingly, he couldn't get inside.

Richard currently works as an environmental consultant and it is his passion for the planet and its people that is driving him.

"Complex problems defy simplistic explanations or solutions. The problem of human survival in

"Complex problems defy simplistic explanations or solutions. The problem of human survival in large-scale urban environments is so complex it is not going to be solved by one thing like building underground houses, but it is part of the solution. It's all about resource use and availability...

The main problem is population; there is just too many people. But even if we can control population we are still going to come up against the issue of resource use. Conventional housing requires greater resources than this because they are short lived house structures. We have to build for the future, for hundreds of years into the future, and that's not just houses, it's roads and infrastructure for providing essential energy and water supplies. We have to build infrastructure so that it's not having to be continuously repaired and maintained because the resources are just not there to be able to do it.

"We are facing a population explosion up here (on the North Coast) in the next 10 years... The development pressure on this area will be vast and they won't be able to keep people from living in rural environments and my argument is to build appropriately. You can have your biodiversity protection, which is a major consideration for rural occupation, and you can have safety. You won't have to worry about evacuating hundreds of people when they've got houses that are fire proof."

