From the Ashes

How fire and innovation are reshaping the Australian country home

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When Aditya sold his company in 2013, his family decided to move to the country. He and his wife Sara had been living in Melbourne for years and they felt it was time for a sea change. 'We had been on holiday in Wye River more than once,' he says 'and we've always loved the perfect combination of national parks and stunning beaches along the Great Ocean Road.' So in 2014 they moved their family to Wye River, purchasing a property set back amongst the trees, but still a stone's throw away from the beach. Aditya and Sara are keen bushwalkers, often hiking in the nearby Great Otway National Park, with its beautiful forests and waterfalls. Like many Australians, they have traded the noisy, crowded city lifestyle for the best of the country. But even though they still live in Wye River, they don't live in that house anymore.

'Of course we know that bushfires are a reality if you live in the country, but we never could have imagined what happened.' On Christmas Day 2015, Aditya's family home was one of the 109 houses in Wye River and nearby Separation Creek that was completely burned down in a bushfire. The fire, which was started by lightning on December 23rd, broke out of containment and spread through the forest to the surrounding towns. Luckily nobody was killed in the fire, but the effect on the community was devastating, with 80% of buildings destroyed. Sadly, entire towns being wiped out in bushfires is not uncommon in Victoria. In the infamous 2009 Black Saturday bushfires, Marysville was totally destroyed. Thirty-four people were killed and only 14 buildings were left standing.

Clearly, traditional ways of building homes are not effective at withstanding bushfires. So Aditya and his family faced the question that anyone rebuilding after a fire, or looking to build a new house in a bushfire-prone region, should consider – Is it possible to build a home that can survive these frequent and destructive weather events?

Answering this question requires an understanding of the reasons why homes burn down during bushfires. In fact, contrary to what you might think, most homes are not destroyed by contact with the main fire. Rather, most houses are destroyed by a process known as 'ember attack', which leads to spot fires that can destroy houses and further spread the bushfire. Ember attack occurs when burning parts of trees, such as leaves, are carried away by strong winds. These burning pieces, or embers, are often thrown into the air by exploding trees and can form large flying balls. Embers from the Stringybark, which is a species of eucalyptus tree, have even been known to travel for several kilometres before landing. These embers can then create spot fires when they land on flammable items around the home, such as roof gutters or garden plants.

Wye River

The destruction caused by bushfires has created an opportunity for architects to rethink the designs of homes to make them more likely to survive ember attack. After Black Saturday, architectural companies offered free design advice and ready-to-use house designs, which were sustainable and met the higher building standards of bushfire resistance. These designs take innovative approaches to building beautiful homes that allow residents to enjoy nature, while also avoiding the worst dangers of ember attack. These homes are built using fire-resistant materials, such as concrete. They also use unconventional approaches like 'earth sheltered' houses that are half buried in the ground.

But for Aditya and Sara, the idea of living in a strange 'concrete bunker' didn't appeal to them. They wanted a home that was bushfire resistant and environmentally friendly, of course, but they wanted to build something that looked and functioned more like a traditional home: 'We started researching, looking around for other ways of thinking about home design.'

A traditional Australian country home

They soon discovered the ideas of Dr Ian Weir, who is a prominent research architect and advocate of bushfire resistant and sustainable homes. His Karri Fire House, which was built in Western Australia, was exactly the kind of design they were looking for. The house cost around $500,000 to build, and meets the highest level of bushfire resistance in Australian building standards. It features a steel structural frame, which is fireproof and allows the house to be built more easily on a hill. It has concrete floors and walls, which also helps keep the house warm in winter by storing heat. It uses metal sheets for the walls and roof, which are cheap and highly resistant to ember attack. Finally, it has specially designed 'ember screens' on the doors and windows that serve two purposes. Firstly, they act as insect screens, which are an essential feature of any Australian home, and secondly, they are made of stainless steel instead of the traditional plastic, which makes them ember proof.

Wye River has mostly recovered from the fire in 2015. Aditya and his family now live in a home they built that follows the principles outlined by Dr Weir, using similar materials and design. Their favourite part of the house, which was finished in 2017, is the large front deck that allows the family to take full advantage of the spectacular sea views available from their property. The 35 square metre deck is made from fire-retardant treated wood and equipped with automatic sprinklers.

Even though the threat of bushfire is always present, Aditya and his family wouldn't live anywhere else: 'This is home. Even after the fire, we never considered moving away.' Luckily, with the innovative approaches to materials and architectural design that are now available, they don't have to.