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building for bushfire

Story: Laura Valic



The 2019–2020 bushfire season was shocking for its ferocity and widespread destruction. It tested our resilience and endurance, strained our firefighting resources and left a devastating rebuilding effort for affected communities.

As the Australian bushfire season began in 2019, little did we realise we would be facing one of the most destructive and heartbreaking fire seasons on record – one that would take many months and huge amounts of resources to bring under control. The widespread devastation and loss will remain in the Australian psyche for a long time to come, our usual regard and respect for the power of bushfire heightened by vivid memories of gigantic flames and red apocalyptic skies.

With the trauma of our last fire season still raw, and communities and the natural environment still on the road to recovery, it is hard to comprehend that we are already in our next fire season. In the aftermath, approximately 12 months on, we reflect on the experiences of those who suffered loss, hear from a HIA member about an amazing story of a project surviving the fires virtually unscathed, look at building products designed for bushfire prone areas and check in on the rebuilding process.

Bearing the brunt

The 2019–2020 fires affected most states and territories, with more than 3500 homes damaged or destroyed, but it was NSW with its vast tracks of bushland that saw the heaviest losses. As of 29 January 2020, 5.3 million hectares had burned, and with it uncountable numbers of animals and birdlife. NSW also had by far the biggest losses of property. While the 2009 Black Saturday fires remains the deadliest bushfire event in Australia's recorded

history (173 people died compared to 33 people last season), the National Bushfire Recovery Agency noted as of April more than 12 million hectares of land had burned. This was greater than the area burned in the 2009 Black Saturday and 1983 Ash Wednesday bushfires combined.

The NSW South Coast in particular saw scenes of chaos. Greg Weller, HIA Executive Director – ACT & Southern NSW says as the fires unfolded, HIA became aware of eight members along the coast who had lost their homes and had ranging impacts on their businesses. 'It was humbling for our team to talk to these members and their families, to hear the stories of what they had been through and to see the incredible resilience and fortitude on display,' he says. 'Where we could offer support to assist even in a small way, it definitely had a lasting impact on HIA staff.'

Greg says the impact was heightened because the region had already had a difficult few years. 'If you start back in March 2018 with the Tathra fires, which destroyed many homes in the town, the people on the coast have since had to contend with drought, the most recent fires in 2020, COVID-19 and even floods,' he says. 'Going from one disaster to the next takes its toll.'

HIA member builder Jimmy Drakos has lived on the NSW South Coast all his life and witnessed first-hand the aftereffects. 'Cobargo [in particular] was shocking, just tragic,' he says. 'A lot of people are still shell shocked by the whole event. I know many of the locals who were affected, and a few people who passed away in the fires. It has been really sad.'

Jimmy, who owns Drakos Brothers Construction, says the business is busy with rebuilds in Cobargo among other towns. It has thrown the reality some victims are currently living into sharp relief. 'One lady went through a personal hardship shortly before the fires, then lost her home and was underinsured to build to new bushfire standards and recent asset protection assessments,' he reveals. 'We completed some pro bono work for her. She is a remarkable survivor and a lovely lady in need of a helping hand.'

Greg says a big concern after any disaster that sees widespread loss of property is how well insurance covers the losses. Where people have an agreed value policy in place, there is always the potential for underinsurance.

'The onus is generally on the consumer to determine what coverage they take out, and they carry the risk if it falls short,' he explains. 'The cost of rebuilding increases naturally over time, homeowners may have undertaken renovations since their policy started, and changes to the Building Code of Australia could mean higher building costs. Not to mention increases due to surge in demand after a significant event.'

'Unfortunately, it is often the builder that is the first point of call for these difficult discussions in what is already an emotional time.'

Before the rebuilding can commence, affected sites must be secured and waste safely disposed of or recycled. Some buildings can contain asbestos, drawing out the process.

'This definitely meant that the clean-up has taken some time, though fortunately it appears we are now past this hurdle now,' Greg says. 'It's good to see that homes are now starting to be rebuilt although this will be a long process.'

Fire protection solution

Since the 2019-2020 bushfire season, Bushfire Control, an Australian manufacturer of bushfire protection products, has been busier than ever. 'Since last year we've seen enquiries jump 15-20 per cent nationally,' says David Grace, Bushfire Control's General Manager. 'There's more awareness and greater education in the market now. People are far more conscious of what they need to protect their home.'

Bushfire Control's local manufacturing facility in Western Sydney supplies residential and commercial projects with fire protection products nation-wide under the Warrior Windows brand. The company's unique offering to builders, designers and homeowners includes the full product range: BAL-FZ Shutters, BAL-FZ Glazing and BAL-40 Windows & Doors.

Warrior FZ Shutters (manual or motorised) offer one of the largest bushfire shutters available on the market. The products have been rigorously and exclusively tested at the CSIRO Mogo Bushfire Field Test Site on a full-size dwelling. They have also been tested in various configurations and wall types without windows, which ensures the largest range of applications possible in addition to the client not being required to replace the existing windows on a premises.

'Our experience has shown that incorporating our Warrior FZ Shutters into your design in the initial stages creates the best results,' David says. 'Contacting us early will also assist with providing the optimal BAL-FZ shutters, BAL-FZ glazing and BAL-40 windows and doors configurations, thus minimising costs.'

Depending on a council's compliance and certification requirements, a house in a high fire zone area may be required to incorporate any combination of BAL-FZ shutters, BAL-FZ glazing and BAL-40 windows and doors. However, builders should note that compliance for bushfire shutters can only be issued upon completion of installation to certify both the product and the installation as a complete system.

'The Certificate of Compliance must state that the shutters supplied have been installed in accordance with the tested system, and therefore meet the requirements of AS3959,' he explains. 'Bushfire Control issues Certificates of Compliance on completion of each and every installation.'

Whether your next project requires bushfire protection systems such as shutters or glazing, Bushfire Control partners with Australian building professionals from design and supply to installation and maintenance to offer the full life cycle of protection. >



'THERE'S MORE AWARENESS AND GREATER EDUCATION IN THE MARKET NOW'



Photos courtesy Bushfire Control

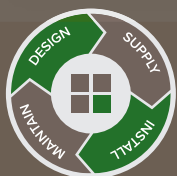




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Photos courtesy Dincel



THE LIGHTWEIGHT PANELS MEAN YOU DON'T NEED SPECIAL CRANAGE, MANUAL HANDLING IS EASY, AND IT'S SIMPLE TO TRIM THEM ONSITE

Structurally sound

When a builder with 40 years' industry experience selects a building product for construction in bushfire-prone country, it's safe to assume it is going to tick the fire safety boxes. Such was the case for Greg Woon, who, as a volunteer firefighter, understands the realities of Australian bushfire and the importance of being prepared. After considering various construction options for his family's new fire shelter, located in the picturesque Yarramalong Valley in the NSW Central Coast Hinterland, he chose Dincel Structural Walling for a number of reasons.

'For a start we needed a four-hour fire rated underground structure and Dincel walling has been tested by the CSIRO and shown to provide four hours fire resistance, so it certainly met that safety requirement,' Greg explains.

With the property's remoteness and a hillside site, Dincel offered other benefits. 'Two big issues everyone faces when building out here are getting tradespeople and materials to site,' Greg says. 'Dincel resolved both issues – and more. The lightweight panels mean you don't need special crantage, manual handling is easy, and it's simple to trim them onsite.'

With the Dincel Construction Manuals, Greg found the construction process went smoothly. 'We actually poured the walls and the roof in one go, so we didn't need to get a pump in at different stages; apart from doing the base slab and the starter bars out of that, the structure was all done in one straight pour.'

The surface also allows a variety of finishes, and for this project, Greg opted for 125mm thick sandstone blocks for the external cladding, and slate, native teak or paint for the internal walls. Since Dincel is waterproof, it is also suitable for above or below ground water storage tanks of any size or shape for potable water or firefighting

purposes, without the need for waterproof membranes on the Dincel wall.

'From Dincel & Associates engineers drawing up the structural designs, through to support and advice on product use and finishes, Dincel were unbelievably helpful; it's not just the product that makes a project much easier,' Greg says.

In accordance with the CSIRO report, Dincel concrete walls can be used in BAL-FZ conditions, which are the most severe bushfire conditions. Assisting with this bushfire resistance is the fact that the system does not require weep holes or crack-control expansion joints, which in turn prevents embers from entering through the wall.

Surviving against the odds

Jimmy Drakos has been building in bushfire prone areas along the NSW South Coast for years. One of his building projects in particular is a survival story worthy of remembrance.

Originally built in 2010 for homeowners Paul Whittington and Kerri-Lee Harris, biologists who wanted to reduce their impact on the natural environment, the home was carefully researched and designed to BAL-40. A decade later it endured a ferocious fire event: on the morning of the 5 January (after the homeowners had evacuated to Canberra) a border fire that had travelled 70km north from Victoria swept through the area – the burnt out shrub layer and blackened trees surrounding the property a lingering testament to its trail of destruction.

'The sight of the virtually unscathed house after the fire has astonished most people,' Paul says. 'We were greatly relieved but not surprised. The house was designed [with the potential to be able] to withstand a [bushfire].'

Jimmy believes the home's simple single-level design – a rectangle shape and extra thick Colorbond hip roof with a 20° slope – was a big >



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factor in its survival. 'It's built on a monolithic concrete slab and doesn't have re-entrant corners or alcoves where embers can gather. Even so, I still think it's miraculous that it survived. Everything surrounding the home was razed.'

The home's onsite treatment system and tank, along with the plastic downpipes 'melted into nothing', while one of the plastic covers on the roof-mounted hot water service caught fire and melted away too. This, Jimmy says, could have led to further building damage.

It was also the combination of carefully chosen products, applied with precision, which made this home more robust. Built with thick autoclaved aerated concrete (AAC) walls from CSR Hebel, the home features non-combustible external materials, double-glazed, aluminium-framed windows and sliding doors and metal flyscreens, thicker than standard eave sheets and metal mesh fixed to the roof gutters to prevent leaves and embers from collecting in the gutters.

Jimmy says bushfire shutters are key to protect your windows and doors. 'The bushfire shutters had ember seals on the side and across the tracks which seals a home much better from unwanted embers,' he says. 'The shutters were a big part of the job but to completely conceal them in a 200mm wall was a feat in itself!'

Jimmy adds that when you are up against bushfire, the quality of a build and application of products is essential. 'If you're careful, you'll end up with a pretty fire-resistant product.'

Could the home serve as a model for building in the Australian bush? Jimmy believes so. 'It's a simple house with no sub-floor space. Many places burn because they get air in underneath, which expands and ignites, even though there may be no embers. But it's so hot outside it can ignite quickly.'

He adds that careful construction, detailing, attention to detail and the use of appropriate materials are key. 'If a house is not built properly, you have used inappropriate materials or there are voids or excessive gaps, it can lead to material failure and then ember entry into the building, and a home being significantly impacted.'

HIA supporting members

After the 2019–2020 fires, HIA brought together key players, including the NSW Rural Fire Service and affected councils, with HIA technical teams hosting recovery seminars. 'The response was bigger than any events we had held in the region previously and demonstrated the hunger for information from members and the wider industry, particularly in the immediate aftermath,' says Greg Weller, HIA Executive Director – ACT & Southern NSW.

'Both at the seminars and through calls to our workplace and technical staff, it was good to be able to help members navigate their way through the myriad of government programs that were available and the different support services on offer.'



Greg Weller: HIA Executive Director – ACT & Southern NSW

Lessons for the future

So, do we need to relook at how we build in bushfire prone areas? Greg Weller says current standards developed by experts on bushfire construction are rigorous and up-to-date.

'From what we have seen, homes built to current bushfire standards performed far better than those built prior to their introduction, and there has certainly been a number of articles written on newly built houses in highest bushfire prone areas being able to withstand bushfires with only minimal damage,' he says.

'The bushfire construction standard AS3959 is a contemporary standard and a new edition was published recently. Similarly, the NSW Planning for Bushfire Protection document was updated, with HIA providing input into both.'

However, he says there is always more we can learn: 'There may well be some items that arise from the post-bushfire studies for additional enhancements to some of the rules for building in bushfire prone areas to further improve resilience'.

This article was compiled with contributions from Dintel and Bushfire Control. For further information, visit: www.dintel.com.au www.warriorwindows.com.au

A COMBINATION OF CAREFULLY CHOSEN PRODUCTS APPLIED WITH PRECISION MADE THIS HOME MORE ROBUST



Photos courtesy Paul Whittington

