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Justin Leonard

Decking is best considered as an extensive fuel load attached to a house, where the heat from a decking fire itself is enough to ignite or break windows. And of course, this photo emphasizes how decking and floor elements can actually be intertwined where the fire actually burns up through and under into a floor cavity or space.

The deck itself is an issue, as well as the typical things we store on our deck: furnishings, plastic furnishings, barbecues, you name it. All can present a combined fuel load that can be formidable for a structure.

As well as stairs and stairways, any re-entrant corner or detail is an obvious place for debris to land and start to develop. There are very good behaving decks and deck solutions, and an obvious way to go is to use a steel substructure so the support systems aren't a fuel source themselves, and then either use high durability Class A durability timber top, but even better specific bushfire resisting wood like composite decking systems that are specifically designed and tested to survive bushfires. And this is an example of one of these loaded plastic decking solutions that are specifically fire retarded to resist bushfire.

Now, this deck actually had to put up with a treated pine retaining wall, which was between this garden bed and the deck which burnt aggressively against it, but the deck didn't actually then develop or present any additional risk to the structure.

Justin Leonard

Moving away from the ground surface itself, there's many nooks and crannies on the attached elements that surround our house. So, this decking element here actually shows how much debris has packed itself in between the decking boards and the fascia on this deck. And that has obviously provided one of the better locations for an ember to land and take hold in that fine debris, and develop into a decking fire that, if left unsuppressed, would provide such a significant heat load to a house that the house itself could be taken out.

How do you eliminate these? Well, it's simply not viable to have multiple timber elements contacting each other in a complex way, you have to eliminate timber elements by actually using non-combustible supporting elements under decks. And it's possible to use non-combustible supporting elements under decks, and possibly use high durability timber decking boards, or even better than that using deliberately designed wood composite decking that is rated for use in Bushfire Prone Areas. But, the importance of having non-combustible substructures under the decks, and under houses themselves, is absolutely critical.

Justin Leonard

Those surface fires can attack stairways, and this one's a very important one to look at because the stairway itself didn't actually contact the ground. If you look to the bottom left, you can actually see that there's a metal stirrup and a certain amount of clearance between the tanbark fuel bed underneath the stairway. And that typical height that those stirrups are set at are actually not far enough to prevent direct ignition and combustion of the adjacent timber elements.

Justin Leonard

The similar can be said about the typical way that poles are stirrpped with a galvanized footing stirrup, such as this. The typical height clearances are never enough, and at the same time the way these are designed is quite typical to allow debris to pack in at the base of the post but in that U-shaped stirrup. Likewise, an ember attack around decking details is also one of those really important processes to hone in on.

Now, in terms of solutions, you can't really ever completely eliminate the debris build up under a structure or against the structure, but you can think about complete, non-combustible solutions. So, we think about brick piers or bricking in existing timber piers, or having all steel support posts. Now, these ones are actually a securing type. There's screw-in piers, and others that are placed in situ and three angular pegs are driven into the ground to secure their location and support.

And, of course, for decking, the steel structures underneath the decking are important, as is, in this case, a mod wood composite decking that was deliberately designed and tested for performance in bushfire, and, of course, it has performed extremely well, despite adjacent fuel loads and impacts on it. And it could actually be an effective deck to use as an egress route in a fire event.

Chair

Is there any merit to pre cutting cement sheets to fit on top of a timber deck to stop embers igniting when there's an extreme risk?

Justin Leonard

Yes, that sounds like a really useful idea. The way the embers fall between the gap to boards on a traditionally designed timber deck and land on the bearers is a really common way that ignition happens. And the way the wind blows through the deck then propels those small flames to track and burn along the bearers and involve the deck significantly. It doesn't completely rule out the idea that the deck will burn down because you still get surface fires attacking the stumps and burning up under the deck, if the deck's close to the ground. And the embers can still blow underneath and lodge on those bearers, although it's less likely. But I guess the sheeting does offer some extended time frames that that deck might be navigable if you have to leave your house. But, I wouldn't say it'd completely rule out the deck being lost.

Chair

Where can you buy and get the metal sheeting to use under stairs and decks? Any ideas?

Justin Leonard

Use your local network and chat to as many people locally as you can. It's more a question of convenience and process, I can't really recommend any particular suppliers for a given one, but I hope the broader neighbourly network can offer an answer to that question.

Justin Leonard

Of course, the way staircases also present re-entrant corners is ubiquitous and similar to actual decks as well. So, any little nook and cranny or re-entrant corner is a critical way that these can be lost. And, while that looks quite difficult to design a stair system that isn't susceptible to direct ember attack, there are quite a few accidental designs that work particularly well. And here's one we observed in the Tathra fires a few years back, where this staircase not only survived the onslaught of radiant heat and ember attack, it actually survived the complete burnout of the house it was attached to. And that's not because it was all non-combustible. In fact, it had high durability timber treads, but the stair design itself highlights how a bit of isolated timber, not connected

intimately with other timber elements, can perform quite effectively because the substructure supporting it has no particular combustibility. So, it can't work off each other and burn down.

Chair

What's the best way to protect a wooden door step from embers?

Justin Leonard

Well, that's a tricky one. So, the wooden doorstep would be the lower threshold?

Chair

I would guess so.

Justin Leonard

I would probably consider trying to wrap it with some type of metal flashing or finishing. It'd probably give you one of the more durable solutions.