

Reduce your house and property risk

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So, let's unpack each of these attack mechanisms and what they can actually do, or what we can do to address these. So, obviously, one of the Q&A questions is what can I do with a large area of window exposure to large fire fronts and radiant heat. So, if this is a genuine tick, I guess the intensity of the fire front that the house experiences really comes down to how far we are away from it. So, to gauge and profile that is absolutely critical.

It's important to understand what your maximum radiant heat level might be, and that might come down to learning and understanding how to do your own informal Bushfire Attack Level assessment, seeing where you sit on the spectrum of what your house would need to be designed to using a BAL assessment tool. And I'd encourage you to speak to various authorities like the CFA and do some web work research around how to do those calculations. Once you work out where you are on that radiant heat spectrum, or in fact if you're so close to the bush that you actually have the risk of flame contact, then designing for that becomes particularly important, because in the worst case fire events, you can have some very catastrophic rates of failure for your windows or the rate that your house becomes ignited.

Responding to those can be managed and varied and one thing would be to have a very low tolerance for having any exposed timber on your building at all. That might be your eave linings really can't be timber, any exposed timber window frames, any exposed timber doors or decking are all highly likely to be ignited during the event from that radiant heat and flame contact. And the obvious types of retrofitting responses that are possible are closable shutters over windows and doors and even things like roller security shutters which are some of the examples pictured here.

It really is a challenging deep dive if this box is ticked. It really means you need to really deeply investigate that context and also work on what can be done in the broader landscape to shield from that risk, or to extend that vegetation clearance, or have a staged vegetation clearance to mediate the radiant heat and flame contact on your structure if that's possible within your landscape and within your property boundary. It always seems to be that the most effective solution if possible is to get a balance between building design and landscape fuel management. But obviously every circumstance is different.

If we go to ember attack, the challenges around where embers act is really ubiquitous. There's just so many details and elements on houses that play out as a way ember attack can reach houses. The way it builds up in gutters and gets into roof cavities and causes ignitions that are in many cases completely unaware to an occupant until that building cavity is well alight and starts to threaten the integrity of the house. Brick buildings, even double brick buildings are susceptible given the way those wall cavities are ventilated. So screening all of the entry points down to gaps smaller than 2mm, which is quite a formidable task when you think about house and building tolerances and the way window frames are fitted to building facades. It's quite rare to actually find such attention to detail that a genuine 2mm tolerance is met.

It's also worth noting that things like timber features on houses, or timber facades on houses shrink in their moisture content varies and shrink and expand. So, actually maintaining dimensional tolerance to 2mm or less is impossible with some building designs as well. Every once in a while, I do find an incredible effort to achieve ember mitigation and tolerance, and probably the picture on

that bottom right is an example of a very well considered and structured enclosure of what was otherwise previously an open carport. So, it's actually very fine punctured steel that's been very very precisely cut in and fitted to enclose, and this tilt panel door is one of the few types of roller doors that is actually quite tight fitting when it closes. You notice there's not a gap across the top like a traditional roller door that the gap grows as the spool unwinds in the roller door.

And this particular tilt panel door actually has those high temperature nylon brushes along the base and along the track edges and along the top edge, so that as it closes those brushes are pulled up and act as an ember screen. So, it is achievable, but it is a real question of detail and understanding about "can a 2mm object get through and into either a building cavity or into the occupiable space of your home," is really the only way to unpack it and spend a lot of time understanding where all these features are.

Adjacent building and adjacent combustible objects are put into one broader category because, I guess, in a traditional urban setting, houses are packed in quite close and the fences are put in between, and all the traditional objects we put around our houses not only act on our own houses but act on our neighbour's houses. So it's this collective aggregation of all of these potentially combustible objects that are very significant and burn down for not just the 10, 20, 30, 40 minutes that a fire front classically can pass by these burn for hours and hours and act on your home if they're close enough. So, they're absolutely critical to deal with. Very difficult to mitigate the types of barriers you need to mitigate a structure from an adjacent structure is really tough, but you can build or retrofit houses, walls and windows to actually handle the potential of a neighbouring house ignition.

But probably one of the best ways to think about house-to-house ignition risk is to have a really deep discussion and a strategy with your neighbour. Because one thing you can do is if two houses have the potential to burn each other down, one of the key ways is ensuring neither a house ignites in a bushfire so you don't have that mutual risk problem. But either way your chances are elevated because you don't have to just get one house through the fire you've got to get two or more houses through that fire so it is a real question of a discussion at the streetscape level. And probably a good way to hopefully bring neighbours to together around a common issue.

Surface fire. I'd like to elevate that in the discussion because it doesn't actually get touched on that often. But it's something really common, and a common oversight I see. I guess the bottom picture is an obvious oversight where mulch and tan bark and things have been used right up to a combustible subfloor enclosure, the treated pine subfloor enclosure on the house. So, the house certainly isn't up to a surface fire action itself and the local landscaping is certainly not offering any attempt to reduce or manage surface fire risk.

The two problems are you just can't have combustible elements down to ground level, because even if this was concrete pathway, the debris that would blow up against those combustible elements would be enough to ignite the house. But, this combination pretty much puts it in the certain "sign off this house in a bushfire" type scenario.

Now the top picture was a reminder to consider things like low level lawn or managed lawn as not necessarily a problem, particularly if it's green. But a lawn that dries out in the most extremes of our fire seasons becomes a combustible surface. So, we do need to think about not of having a look for what's dry and ready to go in our preparation season, we need to think about how things transition. And that might also mean manage gardens up against houses which are not really in a flammable state in the off season, but could be quite water stressed and desiccated and be quite a problem in a fire season itself.

And, of course, tree and large branch strike in proximity of house is obviously a really major challenge and issue. It also is a major question around reliability of egress, either off your property and through the local neighbourhood to a place of relative safety. I'm certainly not predicating that egress should happen during a fire event, because obviously using your house to shelter during the peak of a fire front's key. But, in the event that the house becomes untenable, you then have to

consider egress and transitioning through the landscape. And that is really where tree and large branch strike become problems, not from just the context of hitting a house but blocking a driveway, falling on a car, blocking off major traffic routes and causing traffic jams and entrapments on roadways. So, it's really that question about an onion ring approach of considering all the trees and potential actions.

And certainly I'd encourage you to talk to tree experts and arborists around the types of trees and the state they're in, and the likelihood that they could fall. There's a lot in the tree type and their age, and the degree of imperfections in them that help to find the likelihood that they could fall and be problematic in a bushfire.

And wind and wind-blown debris is another one of those really key factors that can drive embers up. And I've purposefully put a skylight in here because they're probably underrepresented in our broader context, and it was great to hear a question specifically about them. Addressing the details of how wind actions can play up that might disturb a skylight or it might blow debris up against it that's readily ignited from an ember attack. And just looking at all of those actions in combination I think is really key.

And I thought this was a really great photo set that actually showed a recognition that a skylight by design could be an inherent weakness on the roof. And the top picture is actually the drop-over protection box that's put over these skylights during the peak summer season as a direct way to address that factor, from wind actions acting on it, it's also an effective radiant heat and ember attack factor. It's a real multifaceted design mitigation feature for this particular element.

And then of course the last but not least is around really having a deep think about smoke and what it would be like to have to deal with the steady accumulation and build up of smoke within a house that slowly builds up, and if you can keep the house closed and tight as much as possible, obviously, the rate that that builds up is quite managed. But the really noxious and toxic smoke actually not only just comes from bushfire, but it comes from when urban fuels and synthetic things like plastic and whatnot, burn either as an aspect of the house itself or from adjacent things in your broader landscape.

And that really noxious smoke really takes the exposure question to the next level. And that's a question for you getting through in relative comfort and safety within your house, but also that question of whether what you're genuinely exposed to if you need to leave a house, if it's going to become untenable because it ignites.

The top picture here is actually a prompt for me to highlight some more novel ways of thinking about not only having a house that's relatively airtight and well designed to limit the rate of smoke ingress, but to actually consider novel things like hair scrubbers and air purifiers that if used in designated rooms that are obviously rooms that are also exits from your house they can help to improve and extend the tenability and limit that smoke ingress. And particularly useful if you're susceptible to smoke. If you're asthmatic or not as physically fit as the rest of the population.