



## **Reducing risks for people and houses**

Chair: Malcolm Hackett OAM

Presenter: Justin Leonard

### **Malcolm**

You've talked about those three La Nina summers that we've had and I think I wouldn't be alone in having been lulled into complacency, even though I've been through a bushfire and I do these webinars and all the rest of it. My bushfire preparations I'm sure weren't adequate during that time because things didn't seem threatening. I'm pretty motivated this year I can tell you. Are you coming across those attitudes that people forgot what it was like and now they're getting ready?

### **Justin**

Yes definitely, I think the lack of constant reminders of what a bad fire season can be people get a little bit more complacent. The disappointing thing I see is the missed opportunities because people are less considerate of preparing for fire events. They're making choices around upgrading a retaining wall or something like that and using fire prone materials rather than using it as an opportunity to reduce the fire proneness of their immediate landscape. So I think preparedness is a really long term whole of life journey that we really can't afford to be complacent even when we've enjoyed a couple of nice cool wetter summers.

### **Malcolm**

This question connects pretty well with what you were talking about. This person says in a BAL 40 forest area our extension required composite weather board at least 9mm thick instead of timber weatherboards. We have timber stud walls and blue reflective paper. How effective is this material in a bushfire?

### **Justin**

The cladding itself obviously doesn't present fuel load or an ignition risk to your structure. The main challenge there is how well that facade is sealed to protect the combustible building cavities that sit behind it because you do have a timber frame. And the blue sarking paper itself doesn't necessarily burn continuously when you ignite it but it doesn't offer a significant barrier to debris build up and flame ignition on it. Holes will burn through it fairly readily. So keeping your facade in good condition and looking very carefully about the details of where those facade boards end near the floor level and around the corners, and where it meets the eaves is a real trick to getting the most out of that facade design.

### **Malcolm**

What's the best practice for storing gas bottles? This person says we place ours inside an external pizza oven with a steel door. What do you do with solar batteries in the case of a bushfire?

## **Justin**

Quite a clever idea to put it inside a pizza oven. It's great at keeping heat in and for the very same reason it's exceptionally good at keeping heat out. So it's one of those clever places to store either highly flammable items or store your valuables.

A gas bottle is relatively safe if it's put out away from other heavy fuel sources. It can survive a relatively short passage of a fire like some low level grass burning past it. But it doesn't fare well at all when it's placed up against something that's going to burn for a long time like a retaining wall or a vehicle or a house. Also it is extremely dangerous for those gas bottles to fall over because they can't, if they heat up sufficiently, vent and reduce their pressure in an effective way. They become an explosion risk if they're allowed to fall over and then continue to be heated. So that's another reason to get them away from buildings and away from elements that can burn fall on them or knock them over. And another good reason why securing them to a non combustible structure like a steel post in the ground with a metal chain securing them upright is a really good idea.

You'll also notice that those gas bottles have a vent. That's the vent that helps them relieve pressure and avoid explosion. Having the vent orientated so it points away from things that would suffer if they were impacted by a gas flare or an egress route that you might be considering planning as a secondary exit.

Your other question was around batteries. If you've had a battery installed you'll notice that there's quite a lot of consideration around the location of that battery and what it's attached to. And that's consideration of whether the battery itself has any fault or failure and becomes a potential ignition source. It does quite a bit to try and contain that to a small area and not lead to burning your house down. Those same design considerations mean that there's not a lot of combustible material immediately next to those batteries. So in a bushfire event they actually help to some extent limit the likelihood that the batteries are going to get involved. That being said though there's a lot that can be done from a broader bushfire safety perspective to keep those heavy fuel elements away from the battery so it's not presented with a massive heat exposure risk.

## **Malcolm**

One person says I'm going to fit metal screens over the air vents under our house's brick sub floor. What sort of mesh should I use?

And another person is concerned about whirlybirds on the roof. What materials can they use to stop embers getting into those?

## **Justin**

In both cases a fine metal mesh fly wire screen is a really good choice. Something like stainless is going to give you a really good design life and it's also particularly strong even if the wire gauge is very fine. Two millimetre or smaller aperture between those strands of wire give you a fine enough screen so that the embers that do get through are so small that they will have very little to no chance of igniting anything combustible behind it. Two millimetre or finer aperture stainless mesh would be the go to. But other types of metal mesh would be feasible as well.

## Malcolm

This next question's about sealing gutters by filling them with water. If it is useful what's the best way to do it? This person is dubious about the efficiency of tennis balls. And I must admit tennis balls have been the go to since I was a child.

## Justin

I've noticed that there's quite a lot of diversity in gutter and downpipe design: square downpipes, round downpipes, different diameters. Also different styles of gutters and the way they're set on eaves. In some cases if you fill a gutter up right to the top it'll actually flood back into your ceiling. So certainly work through this process quite carefully. But provided you can get any amount of water to sit in most of your gutter around your house, the means for achieving that are many and varied.

I've seen some very clever ways of putting essentially a gate valve or a ball valve in the downpipe as well which is another way of doing it at ground level. Which obviously avoids the safety issues or awkwardness of getting up to the gutter level itself to put something in it or block it. But of course there's only certain downpipes that lend themselves to that type of approach. I think the other idea of pumping water up onto your roof so it's actually running through your gutters down into your downpipes and then being collected and then re-pumped back up isn't a bad idea as well.

## Malcolm

Are there professionals geared up to install mist sprayers inside roof spaces?

**Justin:** It's certainly a really interesting and useful idea. I think we've touched on it in some previous webinar series as an idea. A novel idea. I haven't come across anyone that's professionally attempting to do that but I hope that the industry cottons on to that as an idea and starts to formalize that approach.

## Malcolm

How much of a house's survival is dependent on the construction standards compared to the annual preparation and preparedness around the house? Is a well prepared house with active defenders more important than a well built house?

## Justin

I would say the combination of the two is obviously the ultimate solution. A lot of houses aren't deliberately built in their first instance to survive a fire, so many have weak aspects to them so there's a huge task for many able bodied adults to address all of those simultaneous ignition challenges. There's no really right or wrong answer to say one's more than the other. But the combination of very carefully preparing a house for a fire and then actively defending it is obviously a lot more effective than simply trying to actively defend and overcome all of those shortcomings many of which ideally should have been addressed by passive fixes and design details that can be readily addressed - not during the fire event itself.

## **Malcolm**

My experience is if you don't have those passive things in place you just run off your feet trying to attend to everything. Which is impossible and you can't keep it up and you really do need an army of people to make it happen.

Our house is about 500mm above ground on concrete stumps with a timber floor. The external barrier around the house is plinth boards with a 20mm gap. We live in a BAL 12 area. What modifications should we make?

## **Justin**

Your two strategies are to either consider protecting your entire subfloor area from attack from underneath, or to fully enclose your subfloor area and try and make it an ember proof space underneath, which comes with its own range of challenges like how do you keep that area well ventilated? You certainly don't want moisture and mildew build up if you fully enclose it and not adequately ventilate. You can ventilate with the right measures and the right sort of attention to having enough airflow ember protected vents around that area.

And on top of that I guess if you go for something like an open subfloor space that the subfloor itself is protected you want to be really diligent about A not storing anything under there and B watching for debris accumulation. Because it's the amount-- the size of the fire that could occur under there that would then define whether the amount of protection you have applied to your floor is adequate. You weren't specific in saying whether your plinth boards were ignitable or not but I'd assume like most houses they would be timber plinth boards with a 20mm gap. I'd say almost certainly replacing those timber plinth boards with non combustible ones or removing them all together would help significantly as well. That kind of fire load on its own is enough to threaten your sub floor even if it's protected and also other areas like your deck and facade of your structure.

## **Malcolm**

There's two questions here about fire bunkers. People can refer back to our 2022 webinar 3 where we talked about last resort options. This person says being on a dead end road if you do not have a bunker what do you recommend to people if they cannot get away?

## **Justin**

Upgrade your house to be extremely reliable. Also plan all of your strategies in the event that your house actually does ignite while you're using it as a shelter - like where to go if and when the house starts to burn. When exactly you'd exit. How you'd exit that structure. What path you would take. And what other places on your property would offer you some degree of shelter. What's your strategy once leaving the house? Like straight into a vehicle parked in an open area. You need all of those things really adequately sorted out. Also having a really sound understanding like has already been demonstrated that the prospects of getting out on the road beyond your property really challenging and should never be attempted once the effects of fire are in the immediate landscape. It's really down to making the most out of your immediate surroundings and what you've got as shelter options at hand.

**Malcolm**

I'd recommend that people have a look at that webinar. It goes into those options and strategies.

This person has asked is a fire escape bunker recommendable as protection for people? Any cons to be mindful of?

**Justin**

A regulated and properly installed approved bunker offers quite a high degree of safety. They're designed specifically for that purpose, and there's a lot of design redundancy built into regulated bunkers. I would say they do offer a high degree of reliability provided they're used in an effective way. You've got to be in them well before the effects of fire are around. You need to get in them while the air is clean effectively around the bunker. And you don't want to try and get into a bunker or be at risk while you're trying to get from a house to a bunker. There are many factors around it - being able bodied and have part of a really reliable plan. But it's a really useful prospect to consider for many people.