

Reducing risks for people and houses

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Malcolm

There's some terrific questions so we might just launch straight into them. But I know from personal experience that what you think is going to happen doesn't happen. And in our last webinar Danielle Clode talked about expecting the unexpected which is pretty hard to do. It's the unknown unknowns. But what are the unexpected things that you hear about that catch people out?

Justin

I guess what I hear a lot of I guess accounts of what people faced and it's things like "I never expected how much impending darkness there is as the fire front passes." And I guess how visually intrusive the smoke blankets out and disorients people very quickly. So even though it's their own place they're really intimately aware of where everything is they lose all of their reference points and find it really hard to just navigate around. The other aspect is the incredibly oppressive noise and the impact that that noise has both mentally and emotionally to think. So communication outside is really difficult and it's really oppressive.

Also I think the degree to which people gain confidence in having or knowing other people are nearby doing similar things. It's kind of two people are in the front yard trying to wet down vegetation one person drops the hose and disappears either inside or somewhere else the other person then feels quite vulnerable and alone and starts making less formal plan decisions that are rational and making more reactive and emotional decisions. I think people are presented with mentally stressed and taxing scenarios that provide challenges. And I think that's why having these really well rehearsed logical trusted plans that are embedded in everyone's minds become important because hopefully they fall back to those practical decision hierarchies rather than making quite spur of the moment fight and flight ones which tend to have people heading around less rational, high risk evacuation strategies.

Malcolm

So that suggests that you should practise things? Either practise leaving your house to get to a point that you've identified is going to be safer than the house burning down. And you should do it well before a fire comes. How many times would you practise something like that? What amount of things should you practise in terms of your plan?

Justin

I'd practise every aspect of the plan. And I'd practise it at least once or twice coming into each summer. I'd constantly think about the interplay between what you're doing to prepare your house and your landscape and how well that works in with your plan. Things like assume you can't see anything. Close your eyes and work out how hard it is to navigate out your front door down the stairs and along a pathway to a place you know you need to get to. And what you can do in those

areas like hand railing and the textured finishes you put on the ground to help you navigate even if you're blinded. It's all of those interesting scenarios and options are really well worthwhile when it comes down to actually doing it for real.

Malcolm

This person wants to know if we cannot exit safely say in a sudden fire and I have MS and cannot walk far in the heat. What's my best personal preparation to survive? And this particular house has roof sprinklers.

Justin

So it's almost certain that a house once it starts to burn down and involves internal furnishings and fixtures it will be untenable and it will involve the entire house. There's no other way that scenario will unfold. So to work out how best to plan for that you obviously need to proactively plan to be near an exit. If you're mobility impaired you need to be near an exit as soon as practical to minimize the time it takes for you to exit if you have to exit.

That exit strategy could be really well thought out. You might exit directly into a carport that's devoid of any combustible material other than your car. And you might exit directly into the car and you might need to ideally shield that carport from other impending fire exposure. So you're leaving your house for a car which then offers you quite a lot of protection and then you can move to various parts around the yard. But I think every scenario's unique and I think that it would be really good to work through that specific scenario with a series of learned people that have gone through this process to get some expert advice to make the most of your plan.

Malcolm

If leaving vehicles behind when evacuating should they be parked away from the house or left in a garage or a carport?

Justin

There's a mutual exposure risk issue. Put any combustible item like a car next to a structure if the car is the first thing to burn then the car has enough fuel load associated with it that it could burn down the structure it's parked next to. You really need to ideally separate objects by something like 6 to 10m to start to manage the risk that they could mutually burn each other down. Then the question is the car more important or the house more important? So you've got to think through those things. Cars out in an open area on a non combustible surface certainly do significantly better than parked on dry grass or on any combustible material or near a combustible thing like a fence or a retaining wall or another structure. So I think separation is the best thing. But particularly pay attention to what is under the vehicle.

Malcolm

This issue of sprinklers. What part can they play in helping people if they're unable to leave? What's the best configuration and is there guidance on how to set up sprinkler systems?

Justin

I assume this is referring to what we call domestic or residential sprinklers which is the sprinklers and sprinkler heads within the building. So a bit similar to how commercial premises have sprinkler heads with those little alcohol vials that break and deploy. A residential sprinkler system is a really practical idea in a bushfire noting though that water supply is often compromised so you can't rely on town's water pressure to supply that sprinkler system. But if you've gone to the trouble of building a good bushfire defence system with stored water, reliable pumping system and all of those other aspects that we've covered in previous webinars the upgrade of that kind of system to include residential sprinkler heads within the house that activate either within roof cavities or within individual rooms throughout the house is a really practical idea. And in some cases could actually mean the difference from the house igniting and putting itself out versus igniting and progressing fairly rapidly to being completely untenable. So I think that's well worth it but be careful to make sure you have adequate pressure for that system and a reliable pressure supplier to make the most of it.

Malcolm

You've talked a lot in the past about sprinkler systems on the outside of homes that point in the wrong direction so the water just goes up in the air and disappears and so on. I presume there are people who are skilled at putting up a regulated or registered sprinkler system that is more likely to be effective? Or do you just go looking online?

Justin

Obviously I can't recommend any particular person but if they are following a formal guideline and standard on how to fit them then it's a lot better than not. And I think you have to use your intuition to pick the most skilled and diligent of that group and to have a good hard think about how that external sprinkler system might behave under really aggressive windy conditions. Because I see the vast majority of systems fitted in the past end up delivering quite fine water sprays that are very readily carried away in the wind away from the structure they're hoping to defend. Therefore the water is essentially wasted.

Heavy streams of water and jets that hold up to strong winds that deliver on to the surfaces of the house that you're trying to protect is the kind of strategy you'd want to adopt in thinking about a sprinkler design. And that actually means thinking less about putting the sprinkler heads on the house itself and more thinking about putting sprinkler heads in the proximity of the house spraying back at the house and also out into the landscape using really solid jets of water, similar to chopper sprinklers. They're called impact head sprinklers. Farmers use those to irrigate their paddocks and they hold up really well even under really windy conditions.

Malcolm

If you're sheltering in your house from radiant heat but you know that it's compromised at what point should you decide to leave? When's it more dangerous inside than outside? How do you make that decision?

Justin

So what will happen once the house starts to become involved smoke will build up in the house. Closing off areas using your internal doors will help limit the rate that smoke builds up throughout the house. But what the smoke will do is it will start to build up around the roof and then descend

throughout all parts of the house. So the breathable air within the house will get lower and lower and close to the floor. So getting to an exit and getting low will be your best strategy. And you pretty much want to try and use the house for as long as possible that it's going to provide you tenable conditions. Because that's giving the fire the maximum amount of time outside to have passed its peak and to start improving. So you're trying to maximize your chance of getting a transition into a burnt out landscape to move into. But you certainly don't want to risk getting caught significantly away from an exit or being exposed to too much toxic smoke build up within the house that you're going to be impaired so much that you won't be able to safely exit.

Malcolm

I might add in my experience too I don't know whether the house was distorting but I had trouble opening interior doors. They seem to somehow be stuck. It was an old weatherboard farmhouse and it could easily have been distorting. And that was pretty scary I might say.

Would a dam be safer than a car if you were exiting to somewhere? What would make your decision about whether you go into a dam or go into a car?

Justin

Good question. Very related to the actual specifics of the circumstance. But if I had a car and a dam to work with I would probably choose to stay in the car and park the car next to the dam and use the car in a similar way that's described with the house. Because the car is a complete enclosed atmosphere where you've got some relatively clean air in it and quite a good radiant heat shield around you. You'd try to use that to the extent you could. But if the car actually became involved then you've got the option then to exit and get into the water body as another backup.

Malcolm

If you were going to shelter in a car what would be the steps you would take? You get into the car than what do you do?

Justin

You would make sure you're not pumping fresh air from externally in. Turn on recirculation mode so you're not bringing in smoky air from outside. Running the engine and the air conditioner isn't a bad idea. If you can see, drive slowly to places that give you the best separation and distance from other burning items is really useful. But if you can't really see then moving the car isn't recommended at all. Getting down low below the window lining covering up with woollen blankets give you the maximum chance of surviving. Also monitor whether the car's beginning to become involved in the fire itself (a similar thing to monitoring in a house). You really have to recognize if and when the car itself might start to lose tenability and you might need to plan your exit.

Malcolm

Are cars likely to start to burn first or might they just explode?

Justin

Burn first.

Malcolm

So you would have some indication that things aren't good?

Justin

That's right. Things like tyres and tail lights and engine bays start to burn first. The cars only really tend to explode once they become well involved in fire and things like the gas tank or the fuel tank or the battery get really severely heat exposed. It's only in those advanced stages that you'd move to an explosion risk.

Malcolm

We live in a very bushy town. How can we know when to evacuate despite all the efforts to reduce risk of fire attacking our homes? How can you know when to tell people to evacuate as their street becomes compromised?

Justin

The ideal time to evacuate is before there's any direct threat to your place, to the region and you've got full confidence that you can get from your current location to a place of safety without having any risk of being exposed in transit. Once the fire is active within the township you often don't have any real clarity about where the fire exactly is and is not. And I wouldn't suggest anyone try to move around or through the landscape. Once you get to that point you're really working in a very localized way. So it's pre-emptive. Pre-emptively not being there is the ultimate strategy. And I guess for every particular township there's better places to be in that area than others. So understanding what the local reasonable places are is worth knowing. But also noting that even getting to those localized places you need a very high degree of awareness that it's safe to even make those short trips before you consider seriously doing it.

Malcolm

One of the questions that we didn't get a chance to ask you before was are there any recommended fire resistant or retardant wood paints or liquids that you can use to increase the fire resistance of your home?

Justin

Yes, there's quite a range of different types. And I guess you've got to take each of those ones with careful consideration and look at the degree that they've been tested and verified to perform. But noting that each of those coatings will weather and degrade in their effectiveness over time so you have to pay close attention to how much duration of protection you're going to get, like how many seasons they'll last and whether you need to recoat and reapply to keep them effective. Also noting they only protect up to a certain amount. You've got a combustible material you're putting a thin coating over it. There's a point where too much heat will mean that the underlying timber could break down at gaps and at that point it's going to push the coating off and it's going to peel, blister and flake away and reveal the underlying combustible material. And it's also worth noting that the paint coatings don't necessarily seal up all the gaps and the underside or back face of those timber facade elements aren't protected and you've got just as much chance of a internal cavity fire as you had before you put the external coating on.

Malcolm

Thanks Justin. Once again you've been terrific at answering many and varied questions and we really appreciate it.