

Topic 2 Vegetation Issues Trees, vegetation reduction, mulch, fine fuel

Chair: Malcolm Hackett OAM

Presenter: Dr Justin Leonard



Justin Leonard

If we look at this scenario in plan in a simplistic way, we could be faced with forest right up to our structure. You can see the relative distances marked out below. So, issues with trees less than 10m. Well, tree-strike is an obvious scenario that should be carefully considered and eliminated.

Fires act on trees, they weaken them during the fire events by burning out knots and attacking the bases of the trees, and if you've been through a fire previously, you'll notice that there is extensive tree-fall occurring during and for the many days and weeks after these fire events. So, tree-strike risk is an obvious one, and that's where the 10m rule plays an important role.

The other aspect is the removal of shrubby vegetation under the trees, not the trees themselves. And that's a very important distinction. And obviously the way you're in a BPA and a BMO, you actually get the option to clear your shrubby vegetation to 50m.

Now, most importantly, the trees themselves haven't been removed. And why would that be the case? Well, there's many things to consider in terms of trees and their role in a bushfire. There's many pros and cons, and I've spelled some of these out in a table here. So, some of the issues with trees is, well, they're a source of embers. Certainly the bark on those trees, and that'll be the rough woolly bark trees, are certainly a high ember risk, whereas the smoother barks don't present an ember risk at all.

They drop debris on the houses themselves, so that builds up in gutters and in roof valleys and up underneath houses and decks. They drop debris on the ground, which needs to be managed and cleared. And of course, they bring the risk of tree-strike from either branches or falling over.

But on the pro-side, they actually provide important shade and moisture retention for your landscape. As our landscapes dry out, it's the treed areas that are the last of the landscapes to lose their moisture. And that moisture can play an important role in meaning that your house is less ignitable because it has higher moisture content in the decking, and less stress on the plants that are around the structure.

They attenuate wind, which can mean less wind action on your house to weaken the house during these events, which is an important process that can lead to loss if you have a structure that's been compromised by wind damage first. They act as radiation shields between you and the unmanaged bush. So, they obscure the radiant heat as it's trying to travel between the unmanaged forest and your house.

They're obviously aesthetically pleasing to most. And they certainly help in retarding the growth of surface fuels under them by shading the ground. So, you can actually end up with less work of in terms of surface fuel management.

Tree-strike risk is an ever-present issue and it can't be underestimated, not only for the house, but for the pathways and routes that you might take through the landscape in a fire event.

Justin Leonard

Flame-front contact is obviously an expensive prospect to deal with direct flame-front contact on a house. However, in many cases, it can be solved in the landscape. And, I guess, the 10/30 and the 10/50 rule are good examples of where a landscape approach can, by and large, eliminate most of the flame-front contact prospect that a house may face.

So, in terms of what that clearance means, there is a few extra nuances. We spoke about 10/30 and 10/50 that I introduced in our previous webinar. There's actually a lot of detail that can be wrapped around what types of vegetation clearance, and selection are relevant. And what the actual metrics in the 10/30 and 10/50 mean. For instance, does 10m mean that you can cut down any tree within 10m? Well certainly, if the trunk is within 10m, yes, you can take the tree out. But you can also remove overhanging foliage that reaches into the 10m zone as well.

And if you're interested in the specifics of exactly what to clear and how to clear, I'd actually encourage you to look up this particular website, called environment.vic.gov.au, and in their landing page, they have a tag that says "Native Vegetation Removal Regulations". And that actually delves very deeply into exactly what you can and can't do. And this is actually the front page of the document you can download for free, and it takes you into the really-specifics of what's behind it, and there's a lot of very good guidance advice about the tree removal and the vegetation surface removal out of the 30 or the 50m.

And, I guess, that also covers the implications and descriptions around the consideration of dead trees, which by themselves may not present a significant fuel load, provided they're a significant distance away. But the way to consider trade-offs about them being habitat trees, and what role they might play in limiting access or egress, or for vehicle access for example. And it also goes into the tree and vegetation clearances along fence lines, which is another important aspect, so, a very valuable document for people in Bushfire Prone Areas.

Chair

I think lots of people would be in this predicament, or at least they would have faced it when they were doing their gardening. What about bark mulch around the house, and the fine fuel load that comes from that. What should people do there? What are the alternatives?

Justin

I think you've inferred the answer there: what are the alternatives? Because there's nothing good about bark mulch near your house. It's just as bad on the ground as it is on the trees and will produce extensive and prolific ember load to the structures. And if the bark mulch is actually adjacent to the structure itself it can also provide so much heat that it can crack windows and ignite decks and facades and building elements, just simply at that adjacent proximity. So, I would suggest all the non-combustible alternatives, be it gravel or stone or physical separations. So, garden beds significantly far from the house. And, if you're going to use things like bark mulch or you're inevitably near a forest that has a high ember load, then you really have to focus on making your house ember proof, because eliminating embers from those landscapes all together, from a landscaping approach, is not technically possible or feasible.

Justin Leonard

I was thinking of this picture specifically when I was answering that question about heavy bark mulch. This was a BAL-29 house in Sydney which received a significant fire event but did not have any particularly high intensity presented to the house itself from the fire-front. What did happen though was ember attack ignited this bark mulch covering on a garden bed that was immediately adjacent to the house. Now, this was a relatively new build, so the gardens had not actually been planted out, they only had the bark present over the soil adjacent. So, the bark burning out was significant enough to actually melt the blinds through the toughened glass windows, which the

house required because it was a BAL-29 build. Now, if this was a building that did not require toughened glass on both of those elements, the glass would have almost certainly broken and the embers from the surrounding landscape would have entered and ignited the house. So, particularly important to address garden beds and fuel loads against house facades and particularly windows and decks.

Chair

How do you prevent debris build up in panel box over the years? This person's found that their gravel and stone mulch is actually just disappearing.

Justin Leonard

That is a bit tricky because it does all infuse and meld into one, and I guess some of the more innovative approaches involve an old bed frame and some hard yakka with a shovel, where you actually dig it up and re-filter it all through the mesh of one of those old steel bed frames, or something similar to try and separate it all. But I find that most people end up sort of removing it and laying down some fresh stuff.

Chair

Is there any such thing as a safe garden mulch except for small rocks and scoria, which this person's concerned about? It makes plant roots hot in summer especially. How do you manage the leaf litter in rock mulch? If you're going to have wood chip mulch, how far away from the house should it be?

Justin Leonard

I guess it's a two-fold consideration and the first thing to consider there is what house elements are immediately adjacent to the mulch bed. So, if we're talking about no windows and a double-brick wall up against the mulch bed, well, you could probably tolerate tanbark mulch, noting that you actually have vents that might be low and flames could play up and travel through those vents. So, you really have to think about what can a house tolerate and what kind of fuel source am I putting. The tanbark and wood-chip mulches under the middle bushfire sort of conditions, and that dry climate that the bushfires are most problematic in, mean that virtually the entire depth of your wood chip bed is available fuel and burns for a long time and provides a lot of heat to its adjacent elements. So that's the inherent problem.

So, moving to fine-leaf debris build up is a problem, but it burns out relatively quickly. And you can also consider that even a gravel bed will have new leaf debris blown onto it during a fire, and that will ignite and burn on top of that scoria. So, you don't actually completely remove the potential for flames to act on the adjacent elements, so you really have to do a significant amount with the house itself. And, I guess, what you're doing in the garden bed is then considering how to keep that down to a reasonable level, and really separation is what's needed.

I don't have any magic materials and go-to's that are better, but I really encourage people to - it's a relative common-sense thing. If it can't burn, you're not adding fuel to the problem. But there aren't any sort of fire-retarding treated magic wood-chips that I can put in the mix here. So, no magic bullet. Apologies for that.

Chair

Is it true that European tree species such as oaks are more protective of houses than native trees such as Eucalypts?

Justin Leonard

As a general rule, things like oaks and figs, by their nature and their structure, have no specific bark that presents an ember hazard and they don't tend to burn in a fire. But I guess the statement that "European trees are less of a fire risk than Eucalypts" is not true in all accounts. So, you can have a European tree, like I showed in an earlier slide, which was a Cyprus or a Pencil Pine, that can burn far worse than a Eucalypt and present far more acute risk on its own next to a house than a Eucalypt ever could. And I guess there's also good and bad Eucalypts. So, smooth-bark, very clean-bark Eucalypts that are virtually shiny finish, have little to no bark hazard at all. Whereas other types of Eucalypts can present a very high acute bark load, which is the fundamental source of embers.

Justin Leonard

I was actually very pleased to see that profile and a strong emphasis on fine-fuel management. Because I guess that's the fundamental trick; that if you manage the fine-fuels, and especially the fine-fuels that form structures that connect the ground to more elevated fuels, you actually take out the seat or base of any fire. Certainly, the canopies of tall trees can't get involved in a fire and can't really contribute if there's nothing underneath to deal with. So that gives you that sort of ideal scenario that you saw in the cross section slides earlier.