Bushfire Resilience Inc. Webinar 4 2020. Presentation

Understanding rebuilding

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Presenter: John Ginivan

Chair

Please note that the webinars and the presenters are providing information, not advice. Our intention is to provide general information about planning and rebuilding related to bushfire damage. But it's your responsibility to seek advice for your particular situation.

Our panel tonight consists of

John Ginivan, Strategic Planner
Rosa Zouzoulas and Renae Ahern from Nillumbik Shire Council
Julie Bowyer from Cardinia Shire Council
Kevin Hazell, Bushfire Planner
Peter Collina, Victorian Building Authority
Mark Holland, CFA Planning Advisor.

John Ginivan

I'm a Town Planner. I've spent a number of years working within state government, and working with local governments and regional authorities. I have represented Victoria and some of the national forums around disaster resilience and have a general broad experience across supporting rebuilding after Black Saturday, and also more recently at Wye River.

The image I'm showing you is at Wye River, and this was not that long after the fires had gone through at Christmas time as it was, and I think this was about March in the middle of torrential rains, with unstable land slipping down the hill. But even in amongst all of that rebuilding phase and this house here was one of the first houses that commenced a construction and planning permit that was still valid, and existing plans, and that was approved very quickly and off it went.

But when we look at that first question: how long to move in? Or how long is your planning phase going to take? I guess I describe the process in terms of four key steps: Concept Planning, as I call it; the Approvals Phase, that's building approvals, waste of disposal approvals, and a variety of other things; the actual Building Process; and the last one here: Managing, after you've actually moved in, and that's equally important in terms of a good outcome.

After fires, it is often just an urgency to rebuild, and often it colors judgment. So, one of the things I will stress tonight is take the time to plan what you actually want to do, and there's no sense that you're going to miss out if you don't move on really quickly. It's about varying level of awareness about what's involved for many people if they're impacted by fire. It might be the first time they've ever actually had to deal with seeking a planning permit, or a building permit, or any other approvals. So, it's something that's often foreign to people.

There's a reality to it as well because, again, unless you're constantly in the building sector, for the first time potentially you're dealing with the real costs of what construction involves, and there's a practicality lens here. Which is about giving yourself the best chance to meet your objectives, and Nigel Bell after Black Saturday certainly did reflect that people who had lost everything, they just wanted to rebuild. But often that colored what they achieved.

And people who took the time to plan properly and think carefully often ended up with a better outcome that suited their lifestyle ambitions better.

Why does time vary with redevelopment? Because locations are variable. We've got settlements, we've got larger properties, we've got very remote properties, and you could well understand that a house on flat land in the township is entirely different to one up a narrow road on steeply sloping land surrounded by forest. The context is different, the risks are different. So, you also have within that quite different site variability in terms of land stability, slope, the risk, the services available to it, and the immediate access to it.

The key steps that I've always come back to in helping to step through this is to focus on concept planning before you get into the process of detailed planning and approvals, or construction for that matter. Once you get into detailed planning and approvals, that's a regulated legalistic framework, the valid legal approvals that you're seeking, and if you change your mind through the process then it's expensive to change detailed plans, to go and get new quotes on things. So, my advice always is put as much effort as you can into this concept planning phase, where you can change what you're wanting to do without it costing a huge fortune. It's simply ideas.

And in this, we include things like doing preliminary site analysis. Have you got access for emergency vehicles? One of the standard conditions on a planning permit these days is that you must have an all-weather access for emergency vehicles. And that includes fire trucks of about 15 tonne load weight. So, do you actually have the capability to get those sorts of vehicles onto the site? What is the slope and orientation of the land? Do we understand the Bushfire Attack Level? And the planning system in Victoria will require that you assess the Bushfire Attack Levels and input into your planning process and your building process. Where is the sunlight and wind? And again, there's a lot of overlap here with energy efficiency and comfort, so understanding how all these things work together. And the most important thing is to explore possible dwelling locations, and, as far as possible, to site a dwelling in a location of least risk. That's not always possible because some blocks are small, but to the extent you can, one of the most effective things you can do in terms of mitigating risk is to site the dwelling in the right place.

It's important that you understand what planning scheme does say. And I've seen in instances where people often get poor information because they've heard a rumor at the pub conversation, or at the general store conversation, about, well, "I understand the rules say x." And, it's important that for your block of land you understand what's relevant to you, what you want to do. So, it's very important that you do engage with the local government and you understand what's relevant to you, not what's relevant to someone who might be 10km away from you.

Through this process, you can start to establish some overall objectives around being on-grid/off-grid. What sort of water based systems you'll be using and what build method you might use. I always am a strong supporter of then just slowly building a checklist that's relevant to you, and there's lots of examples of checklists around that just are already recognized so that you can come back and revisit things if you're not sure, but you can just tick off things that you need to do.

Budgets are always important because we need to think about budgeting in the sense of both design of the structure if you need to get a design made or architectural advice, etc. The actual construction of the house itself, the occupation of it, so everything you need to put in it, and what you need to do after you've moved in to manage it. So, when we think about budgets, it shouldn't just be in the context of building the structure. It needs to be a more holistic understanding of what you actually do need to fund, some of which might be covered by your insurance or not, and that will vary again with individual circumstances.

Often I think it's easy to fall into the trap of thinking that you might want to project manage a rebuild yourself, but it's certainly very important to think about what specialist skills and support that you might need. And particularly in the early phase, in stepping through what sort of designs might achieve the lifestyle outcomes that you want in the most cost effective manner for you.

I come back to my concept plan because this is the point where you can change things without huge cost. They're simply ideas, drawings, etc., and you can start to flesh out what the timelines are. And I know we've just had the first poll of how long we think it might take, well, that's where you start to map out what is going to be realistic for you. You can start to test whether or not you think a bushfire shelter might be part of your plan or might not be. And again, architects and building designers make a huge difference here just in terms of helping you step through a process of design.

It's really important to keep engaging with local government or a rebuilding service, depending on what's been established after a fire event, but normally it will be local government about your evolving concept plans and establish what approvals and information you actually need. So again, you can go back, put that on your checklist, and make sure you've got the right information when you need it at the right time.

As we start to engage with council, a key part of that is understanding what approvals are actually required. In most cases in Victoria, at minimum, you'll need a planning permit and a building permit. And I use the term here that they're legal approvals, which they are, and they're critical both in terms of giving you surety that you're allowed to build what you want to build, but they're also critical in terms of financing a bill or if you want to sell the property later on. And at a more profound level, a structure that is not built in accordance with the building permit will not receive an Occupancy Certificate, so you can't actually live in it at the end of the day. So, it is an important thing, and I know often the planning and building process is slammed for being too complicated, and take too long, and so forth, but at the end of the day, after a bushfire event there are lots of support arrangements in place to make that process as easy for people to step through.

What does the planning permit do? It tests the appropriateness of the use or development, and for anyone who's looked at the planning scheme it will zone land into an Urban Zone, Township Zone, or a Rural Zone. It might have overlays in it that deal with vegetation, flooding issues, landscape, land stability issues, as well as a whole range of other provisions. So, it really tests is this an appropriate use or development on this site? It sets up a pathway for referral authorities, and particularly in the case of bushfire that is the CFA, and the referral authority does have legal standing. It can refuse the issue of a permit, and if the referral authority determines that, then the council must refuse the permit.

The building permit approves the building structure, and this is really about ensuring that a structure complies with the national construction code. Building surveyors issue building permits, some councils do as well, and it's important that you understand that you're accountable for appointing a building surveyor who's there to ensure protection of your best interests in overseeing that the construction is actually being done in accordance with the construction code. The days of builders recommending a building surveyor to you because they happen to be friends of the builder is well and truly passed.

In both building and planning permits, an assessment of the Bushfire Attack Level is an important input, because it informs the sort of design and construction and materials that are needed. As we continue, it's important to also think about things that might not be up front for you. So, water supply obviously would be, but, where are the water tanks going to be and how will they be filled? And if your water tanks are up on the top of a hill, and you don't have a road access to it, then how is the water actually going to be pumped into it?

Start to think about where firefighting water outlets might be located, and whilst leave early is always the safest option, if part of your planning is about staying and defending a property, then where are the water outlets going to be? And it's much more cost efficient to have planned that and put pipes in the right place before structures are built over the top of them.

Gas bottles. Justin Leonard I think would have shown some examples where gas bottles have been a source of ignition and they've burnt down houses. Work out where they're going to be, and

again where do you need pipes to get them connected to the house. But preferably site them away from the house where they won't impact escape routes or otherwise.

Think about whether bushfire sprinkler systems are part of your planning or not. And at the end of all of that, come back and revisit this question of have you sought to site the house in the best location that minimizes the risk?

By now, we're probably at a stage where you're starting to think about the construction methods, and I'll talk about those in a moment and practicality of it in terms of site access, and you'll have been talking to builders and getting prices and quotes and so forth as part of your concept phase.

It's important that you understand where contracts will be involved and the Consumer Affairs Victoria website in particular has some very useful information on the sorts of contracts that are part of the normal building process, and some important information around how to seek quotes, when to seek them, etc.

It's critical that you use registered builders, professionals, and trades. And again, that's about protecting your interest. If you've gone down the path of wanting to become an owner builder, it's important that you also understand that as owner builder, you take on all of the legal obligations that a registered builder would otherwise carry, and that you need to use registered trades. So again, whilst you might be interested in that pathway, it does have some significant obligations on you as an individual.

So, hopefully by now you've had heaps and heaps of concept plans, and you can start to finalize those, you've been engaging with the council on multiple occasions as you work this up, so that any issues are identified early and you can resolve those before you actually get into finalizing your permit applications. And the permit applications can proceed when you're confident that you've got a sound concept that is consistent with the relevant planning and building requirements, and it's achievable. One of the greatest disappointments I suspect for many people is if they arrive at the council desk and they've got a sort of final plan in mind, and suddenly the first bit of information they get is that, well, it's actually not going to be acceptable. And that would be very disappointing and frustrating. So, a process of engagement and evolution of your concepts I think avoids that.

I use the term here "plan for safe fail" rather than "failsafe". One of the things the building system does, and the national construction code does, is to rely on passive safety measures. The materials that are used, the siting of the dwelling, etc. And whilst you might factor in other systems, sprinklers and so forth, that rely on technology to work, you should always plan on the basis that they may not work at the critical moment. And we saw that even just trying to start tonight with issues with the internet. So don't presume that you're going to be able to activate some system remotely, or that you're going to be at the property at the right time to activate a system. So, plan for safe fail.

What are the regulations trying to achieve? Clearly, more resilient communities. The focus now is protection of human life as the primary motivation. To site development in less hazardous locations. And, if you look back across all of the Royal Commissions and Inquiries, that's a common theme that's come out of all of the inquiries for the last 30 years. That planning and building systems should be used more proactively to slowly lift the resilience of communities as we start to see the full impacts of climate change, and more and more people living in hazardous locations.

As well as assessing the Bushfire Attack Level as one of the inputs, the planning system brings forth this notion of defendable space, and there are obligations to maintain that. The defendable space, in simple terms, is modified vegetation around the house structure itself that reduces the flame or impact on the structure. In terms of what the building's system achieves, it is primarily ember proofing at low BAL levels - BAL-12.5, to multiple layers of protection at higher BAL levels. And you can reasonably presume that as the exposure to risk increases the closer you are to the bush hazard, then the costs are likely to increase. And particularly things like windows and glazing

are a significant cost element. And my advice always to people is think carefully about how windows are used. Do you need floor to ceiling windows or not? Can they be used more judiciously? And for anyone who's looked at Malcolm's house, that's a good example where the windows don't go to ground level. It's a rammed earth structure, and it has non-flammable materials around the base of the walls, etc.

One of the other misconceptions also is that it's difficult to achieve a bushfire resilient building. That possibly was the case not long after Black Saturday, but now there's a wide range of materials and systems of work available. The key message here is that buildings need to be constructed to avoid gaps. And your relationship with the builder is absolutely critical. If you engage a builder who thinks good enough is close enough, then you probably won't get a good result. So, in thinking about which builder you might engage, look at the work they've done. If they take pride in what they're doing and they do it really thoroughly, then you're probably going to get a good resilient building outcome at the end of it.

One of the other common calls after a fire event is, “I’ve been told I’m in a BAL-29 location, I need a BAL-29 design. My response to that is that the design needs to suit your needs. We're all individuals, we all have different family sizes, we all have different expectations about what we want to live in. And the key issue here is not so much the design, but it's about how to put it together. Having said that, there are some general principles, and simple shapes and roof lines that avoid ember traps are important. Floors can be slabs on ground elevated subfloors, and if they're elevated, again, it is important that you think about how the underfloor is sealed.

There's really two key methods of construction.

> Traditional. What we'll call sticks and nails and frames, timber frames. Steel frames are an alternative, and they certainly have some advantages from a bushfire resilience perspective because it means there's nothing in the wall cavity that's flammable. Bricks, blocks, concrete, cement sheet, iron, rammed earth, etc. are all materials that are used in construction.
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> The other key method of construction is prefabricated, and in some cases that has some good advantages in the sense that the main building units are factory built, so they can be built rain, hail, or shine, and the footings are prepared on site and in effect, the pre-constructed units are delivered to the site and mounted onto the footings. But, one of the critical things to think about early in going down that pathway is can the prefabricated units actually get to the site? They might well get up onto the site, but can they get down the main roads? Are there trees? Are there power lines? Are there other things that would make the delivery of it to the site extremely difficult or near impossible? Having said that, at Wye River there was one house which was built in prefabricated shipping container units and helicoptered onto the footings. And that was more cost effective than freighting them down the road.

Part of your design process also will be about thinking about how you can achieve multiple benefits, and energy efficiency, largely, is about capturing passive solar energy, using thermal mass concrete brick, etc. to retain warmth. And, there's a lot of overlap here with bushfire resilient construction.

If we just look at this example, and it's a case from Western Australia, the Karri House as it's called. It was designed for a BAL-40 setting. It uses solid brick wall construction here. This is the BAL-40 side. This is BAL-29 fire attack from this side. It has multiple levels of resilience built into the way the walls are constructed. It has easy clean gutters that don't hold things. It has shielded eaves, etc. In that particular case, that was designed for a fire captain and I think, from memory, the components of it that were directly related to bushfire response per say, was about 6% of the total build cost. So, by taking a holistic approach to the design you can optimize the benefit you get for whatever the cost ultimately is.

I just want to revisit, before I finish, the question of why siting makes such a difference, and many of you have probably seen this diagram before, but you can well understand that in a BAL-40 or flame zone location where you're very close to the bush, the structure is directly impacted by flame. Very high temperatures, very high wind, as we've seen from recent fire events, extreme winds. So, you have higher construction requirements in terms of how roofing and materials are fixed. Fireproof silicones and a whole range of other things that apply in these cases.

Whereas down at the lower end of the scale, BAL-12.5, the principal impact is from embers and, providing the structure is well put together with no gaps, then it's a good resilient structure. So, the further down this end of the scale you can be in terms of where you site the structure, the better the outcome is going to be.

I've just put up there a reference to Bushfire Recovery Victoria https://www.vic.gov.au/rebuilding-support-bushfire-recovery and in there there's a good planning pack that includes an expanded version of what I've just been talking about, but also a number of examples, some draft checklists, and it includes in it a significant list of websites and places where you can go to get specialist information, whether it be about steel framing, contracts, fire assessment, you name it, it's in there.

What we're going to do now is just look at a hypothetical for the purposes of tonight, and this is a 10Ha site. We'll say it's up near Warrandyte, because Warrandyte State Park's there. And we don't actually know a great deal about it because we haven't in fact done all of the assessments that a planning permit would require, but we'll talk about that in a moment.

But, just at face value we can see that it's a fairly big block, fairly long driveway coming in across a creek with a bridge, a landscape corridor that's proposed, and we see here Warrandyte State Park. And, at first brush, you'd look at that and you'd think, "Well, in most cases in Victoria, bushfires start with a strong northerly wind, and fires burn north to south. We get a southwesterly wind change; the fire front then moves in from the west to the east."

And so, at first brush without knowing how extensive this is, you'd say, "Well, being right up against the eastern side of a State Park is probably not ideal." When the Bushfire Attack Level assessment is done, that requires an assessment of the broader landscape. So, are you up above abutting forest that runs for miles? What's down here? What's up here? What's the slope? etc. This appears to be a down slope and we're probably about 60m up the hill from overshooting their 10m contours.

So, another alternative, simply thinking about this risk on the west, might well be to site the structure further down the hill, further away from the bush. The advantage here is that you don't need a 15 ton load limited bridge here because we've got access immediately off the road into the residence. If you need to get out then the distance to the main road is much shorter. It does have an impact in terms of the views. So, part of what you would do in your concept planning phase is simply test the merits of different options before you finalize what you're doing and turn it into the planning permit or building permit process.