

[00:00:00] **DR MARK MAUND:** Hi everyone, and welcome to the People and Place Podcast by WSP. My name is Dr. Mark Maund and I'm WSPs Planning and Approvals Team Lead for Regional New South Wales and ACT. This year on the People and Place Podcast, we are introducing a mini series titled Planning for Natural Hazards. I'll be speaking with some brilliant specialists around Australia who can contribute to the conversation around Planning for Natural Hazards and a better future.

Before we begin, I would like to do an Acknowledgement of Country. We acknowledge the traditional owners of the lands, where our projects take place throughout Australia and their continuing connection to culture, community land, sea, and sky, we pay our respect to elders past, present, and future.

Now today I'm very pleased to be joined by Catherine Ryland. She's an expert in bushfire threat assessment, and she's here to talk to us today about all things, bushfire and how to consider natural hazards. Hello Catherine.

[00:00:58] **CATHERINE RYLAND:** Hi, Mark.

[00:00:58] **DR MARK MAUND:** Thank you for being here today. It'd be great if you could just give us some background on yourself and a little bit about some of the work that you're involved with.

[00:01:04] **CATHERINE RYLAND:** Thanks, Mark. So I'm a bushfire threat assessment expert, bushfire protection expert. I'm a director at my own company, C R Bushfire. I'm a level three accredited bushfire consult and my company does a lot of work in strategic bushfire assessment, and also, smaller scale assessments. We work with various government departments, and I also teach at UTS and for the Planning Institute of Australia.

So I have a fairly extensive background in bushfire protection. I previously worked at the rural fire service, and I worked on the new publication of Planning for Bushfire Protection in New South Wales. And I'm also a PhD candidate at the University of Wollongong studying bushfire protection.

[00:01:52] **DR MARK MAUND:** Great to have you here today, Catherine. I find that there's quite a lot of policies and guidelines related to bushfire, how buildings are built, where buildings can be located, access and egress.

Can you please explore the key role that policies and guidelines have in building resilience.

[00:02:07] **CATHERINE RYLAND:** Sure, in New South Wales, we have a really good system of policy and guidance when it comes to building houses and building subdivisions, building facilities like hospitals and schools. We provide them with as much protection as possible through our policies and guidelines. We've got a really good system in place.

So we do look at landscaping, we look at access, we look at providing the biggest asset protection zone that we can for those dwellings and facilities. We look at construction measures. So through the national construction code, which is actually a national standard, we also look at the construction measures, which are required for each type of building as well.

We look at water supplies and we make sure that access and egress is appropriate for firefighting operations, as well as people evacuating. So we do have a really good system of policy and guidance, in New South Wales in terms of providing those kinds of on the ground levels of protection.

We also have guidance when it comes to strategic bushfire matters as well, the new planning for which fire protection has a really good chapter on strategic guidance. And so we do actually now start to look at things other landscape scale as well.

So when we're looking at rezoning land, or we look at the kind of first steps in development, is this land appropriate for new development, we also have a really good system of guidance in terms of what we need to look at to determine whether a new community is appropriate in a certain location when it comes to bushfire risk.

[00:03:41] **DR MARK MAUND:** And that's a really important point as you know, strategic planning and considering where we locate buildings and homes. I do find that there's a strong emphasis on policies and guidelines in bushfire. Do you think that that emphasis has come from the impacts that have happened? Is it more of a focus on the community in that issue?

Why do you think there's such a strong focus in that area?

[00:04:01] **CATHERINE RYLAND:** There has been a lot of improvement and changes to policy over the years on the back of various bushfire events. So every time there is a bushfire event, the policies and guidelines are revised, reviewed and changed on the basis of what we've learnt from those events. So I think the biggest change over the last few years was after the black Saturday fires in Victoria in 2009 which changed the Australian standard for building in bushfire prone areas.

And also helped us to understand more about access and egress and what motivates people to either stay in the location that they're in or leave. And if they do leave, what kind of conditions might they face? And how can we improve the way we plan our communities to allow for safer evacuation and more consideration of some of those aspects of development.

[00:04:55] **DR MARK MAUND:** Thanks Catherine. And it's obviously really hard to predict the behavior of people during disasters. The other thing that we'll lots talked about is risk assessment is a key component of bushfires. Can you give us a bit of a understanding of what risk assessment is and how it's used in this type of industry.

[00:05:10] **CATHERINE RYLAND:** Risk assessment is a fundamental part of what we do in terms of bushfire protection and also other natural hazard assessments. So whatever scale at which we're doing an assessment, whether it's building a house, whether it's subdividing or whether it's rezoning, we are incorporating some form of risk assessment in that process.

Risk assessment follows a four stage process. The first thing that we're doing in that process is actually identifying a risk. What is the risk? And what can we expect? So what we're looking at is how a bushfire might behave when it impacts the community.

We're identifying, what is the risk, how much vegetation is there what's the slope like, what are the weather conditions like that we're expecting. And then we're starting to analyze that risk. So we're starting to look at what that risk might be, how that risk might actually impact a community.

So how big is that risk? What kind of scale of bushfire event would we be expecting? Then once we've analyzed the risk, we're starting to evaluate the risks. So what does that actually mean? Does that actually mean that development is appropriate or not?

And if we decide that development might be appropriate what level of mitigation do we need to actually, make that development as appropriate as it can be as acceptable as it can be. So that's the kind of last stage in the risk assessment is what kind of treatment do we need to make that risk acceptable in the development space.

[00:06:41] **DR MARK MAUND:** That's really interesting because risk assessment is obviously a key component, as you said, in strategic planning and understanding where we can build and where it's safe to build. In terms of that threshold of what's an acceptable level of risk, the community that are obviously involved in those discussions.

Can you give us an understanding of how can the community have more input into those decisions around risk assessment and helping to understand their level of risk and what the level of risk the community's prepared to accept?

[00:07:11] **CATHERINE RYLAND:** At the moment, I feel like the community are not as involved in the risk assessment. And one of the findings that comes up in all the various inquiries from all the various events is that the shared responsibility for different hazards and their impacts needs to improve. One thing that can improve in an the strategic planning process and the risk assessment process is actually involving the community in some of those decisions.

Involving the community would help them to understand their own level of risk. And understanding their own level of risk actually helps them, to be able to make some of those more informed decisions when it comes to bushfire events. So earlier we talked about, people evacuating, and maybe evacuating too late, and not knowing what their options are and not knowing how the evacuation process might work.

For instance, part of this strategic phase can be to involve the community in some of those decisions to provide that level of community education, which helps people to understand what actions might be taken, in that event. So, I think whilst, we've got a lot of work to do on that stage involving the community is probably one of the biggest things we could do to improve, the systems that we have at the moment.

[00:08:29] **DR MARK MAUND:** That's really interesting, Catherine. I think community being involved in risk assessment and making informed decisions is a key component of what we're looking at. Obviously to be able to make informed decisions a level of education is required. Who do you think is most important to be involved in educating the community? Is it a widespread responsibility or do you think there's key groups and agencies that should be involved in educating the community.

[00:08:52] **CATHERINE RYLAND:** I think the key groups who really need to take responsibility, for the education, would be the emergency services and potentially councils as well. I think the involvement of both of those groups is really important. The councils have really good knowledge and access of their own communities. So their own local government areas, the makeup and characteristics of those communities and potentially the contacts to be able to arrange meetings.

The emergency services obviously have their knowledge of the emergency process. And one thing I've learned actually fairly recently in the strategic planning process. Is that it not only helps communities to understand their risk, but it also helps firefighters to know that they are working with a community who understands their risks, because it helps them to be able to resource evacuation programs.

It helps them to know that they are working with the community that might understand the orders that they're giving or the guidance or advice that they're giving. I think that the emergency services being involved in that piece is really, really important from both sides of the perspective. So not just the communities themselves, but also emergency managers to know that they're working with the community who are informed and who are educated on some of the decisions that they may be asked to take and it helps the firefighters to actually be able to resource their operations if they're working with an educated community.

We're working with, councils to actually facilitate, workshops. The community members together. Not only talk about evacuation, but also to talk about preparing their buildings and preparing their, properties for events as well. So the education piece has different aspects that can be approached to help people to understand preparedness, both in terms of their properties, but also in terms of evacuation.

[00:10:50] **DR MARK MAUND:** I completely agree Catherine, the local knowledge and local experience is really important in all phases of the disaster management cycle. Now the other thing I did want to talk to you about, this is a little bit controversial. I know there's a big focus on risk assessment and bushfire management. However, I do think that risk assessment has its limitations in terms of planning.

There are still things we need to achieve, we need to allow people to build homes. We need to allow people, places to work. We build roads, we build power lines, communication. We still need to live within those environments, so we can't avoid risk. Can we talk about maybe the limitations of risk assessment and the ways, we can work around those really as a broader community I think.

[00:11:31] **CATHERINE RYLAND:** I totally agree with you, Mark. We live in a an incredibly disaster prone landscape, and we can't ever expect that our risk is going to be zero. No matter how much planning we do and how much strategic risk assessment we do, we're always going to be living with risk. And I agree with you that, we do also need livable communities.

One of the things that is talked about quite a lot is particularly in a bushfire space. We think about minimizing the amount of vegetation to obviously minimize the fire threat. A lot of people think of that as completely landscaping places taking away trees. And that obviously conflicts with, the idea of having green communities that people like to live in and obviously the urban tree canopy as well, which creates cooling and shade.

So we have to be able to amalgamate our thinking in terms of protecting communities, as well as improving the livability of communities. And there are definitely innovative ways that we can use, dual use of land or we can look at ecological ways to have asset protection zones, which also encourage habitat growth and ecological outcomes.

So there are definitely ways we can live in areas which are well-protected but also have a good livability dual use of land. Like recreational land can be an asset protection zone or can be flood plain, as long as we understand the risks involved. And again, we educate the community in terms of what might happen if there was extreme weather forecast.

[00:13:09] **DR MARK MAUND:** And that was a great answer. I think that balance between effective planning and strategic planning and development with an understanding of risk assessment is a really good way to achieve those livable communities that you're talking about.

Climate change has been identified as one of the key challenges of our time. We've seen recent events, the 2019 2020 bushfires, the emergency services knew the fires were coming, they planned for the fires and they were still overwhelmed. From your perspective, can you give us an understanding of what you think climate change means to both our risk around disasters or natural hazards and ways to mitigate around those and even potentially ways we may live differently in the future.

[00:13:50] **CATHERINE RYLAND:** Our climate does appear to be changing. I'm no climate expert, but we have seen some very extreme weather events over the past few years, and we are led to believe that those extreme weather events are going to be more frequent. I think it was commissioner Shane Fitzsimmons, the previous commissioner of the rural fire service coined the phrase, this is not unprecedented, this is the new precedent.

The events that we've been seeing are actually the new precedent. At least we know what those events look like, and we can begin to plan that we will see more of those types of events in the future.

When we plan our communities and we talk about having resilient communities, what we really need to be doing is projecting that they're the type of events we're going to be seeing, and that they're going to happen more frequently. What that means is that we need to, in our risk assessment include the potential for more extreme weather conditions.

Like you said, we can assume that we might have say drought conditions leading into a really hot and dangerous bushfire season and that is actually the problem we had in the black summer fires was that we had extreme drought leading into a very, very hot fire season.

We have to also look at the cumulative nature of those types of events and really expect the worst. We can incorporate weather factors into our assessments. We can look at assuming that what we call the fire danger index might be higher in future years. And that again, we might see more frequent events. We might expect more bushfire ignitions. We might expect more lightning storms.

We can incorporate that into our risk assessment and really create that worst case scenario based on the events that we've seen over the past few years and make sure that we are increasing levels of protection in any new communities or any new development to take account of those more extreme weather events.

[00:15:47] **DR MARK MAUND:** That's really interesting, something else to talk about as a potential changes to planning and building policies as a result of recent events, we're seeing different designs and some innovative, some really returning to old designs, such as bushfire, bunkers shelters. Do you think those are likely to be needed in some areas?

Or do you think buildings need to be redesigned to deal with some of these hazards? Or is this really just something that as policies and guidelines, adapt and change over time, we can incorporate them into our building designs.

[00:16:18] **CATHERINE RYLAND:** I think that we actually have a fairly good system at the moment of constructing buildings to withstand some of the impacts of Bushfire protection. I don't think we're ever going to get to a point where we are going to be able to say a building can withstand even the most catastrophic fire conditions.

So what we do need to think about, I think a little bit more in our policies and guidelines is more about the emergency response and recovery. We always look at from the fire events, we always look at the kind of building materials that we're using and whether we can do better in terms of obviously noncombustability and the impacts of radiant heat on buildings.

But I feel like the bigger picture is more about improving our policies when it comes to incorporating emergency management into strategic planning making sure that we are thinking really carefully about how communities might evacuate, whether there is an evacuation option or whether we need some kind of shelters.

And I would never advocate for the bushfire bunkers in people's backyards because of the safety aspect. I'm sure you're not surprised to hear that Mark, but I would potentially advocate for having buildings in communities which can be identified as potential refuges.

Not just a neighborhood safer place, which might be a place of last resort. But also having a destination that people are able to go to if they find themselves absolutely caught with no options to evacuate.

I think particularly when we're looking at new communities and new building we can have that backup option of having areas that people feel safe to actually travel to and shelter in the event of a fast moving bushfire or a fast rising flood that there is a potential destination that can shelter people and where they've got food and water and help guidance from people that understand the emergency process.

So maybe preempting a few more of those emergency management issues in our policies and in our guidelines could potentially be a huge improvement in the way we do things. And that also is obviously coupled with, like I said, the ability to improve the way we build buildings and also create those protections zones and areas of communities that people can potentially shelter in.

[00:18:50] **DR MARK MAUND:** That's a really good point, Catherine. I completely agree. One of the things I do talk about a fair amount is the need for evacuation centres is permanent, even adaptable buildings where people can during disasters, they know there'll be safe, they know they can get food, shelter, support. It's a really important destination.

And also being aware of that before the disaster happens, they know where to travel and they have a plan on how to get there if needed, and they know they'll get that support when they get there.

One of the other things to talk about is access and egress for communities. So both access for emergency services during disasters, definitely evacuation roads, and other destinations for people during disasters as well. It's a really important part of planning communities and planning resilient communities.

Can you talk a little bit about some of your ideas on either improving access and egress, or ways you think we can make our current arrangements more efficient? Is it a matter of just being more prepared evacuating sooner or do we need to consider different designs and different options during disasters?

[00:19:50] **CATHERINE RYLAND:** I think we need to treat each community based on its own individual characteristics when it comes to access, egress, evacuation. There's really no one size fits all approach, but there are some principles that we do need to think really seriously about when it comes to building new communities and placing people in areas of risk.

One of those principles is the RFS and other emergency services will always advocate for early evacuation. And part of that is obviously education and people understanding what their evacuation options are and at what point they follow a trigger to actually evacuate. So certainly when we're building new communities or improving the existing communities, one of the things that we do need to think about quite carefully is not just the education piece but also what that road network really looks like.

One of the things that we are doing quite a lot in New South Wales in this strategic planning phase at the moment is looking at a community and starting to think about when we use the risk assessment, where is the risk in the landscape? Where are we expecting fires to actually originate and travel to a community?

And what does that look like in terms of people being able to evacuate? Are they following an evacuation route away from potential bushfires or are they following an evacuation route into potential bushfires. So that's one of the first things we need to consider is where will people actually be traveling to?

And what's the level of risk along that evacuation route? The second thing we need to think about is, is there a secondary evacuation route that people can use? So once we've looked at that principle evacuation route and decided what the risks are along that route, what is the secondary evacuation routes?

So then we have another option to send people away from an events. If we've got two separate bushfire risks, for instance one to the Northwest, one to the north east, can we send people in different directions to travel away from that potential risk? So we're starting to look at the options there.

And if we start to say, well, actually there is no secondary access or there is no route which can take people away from that bushfire threat. Then that's when we need to start to think about how we're going to fund new infrastructure to make a new community potentially more acceptable. And again, when I talked about the risk assessment, this is where we start starting to talk about treating that risk.

So there is a risk we want to build a new community, but what do we actually need to put in place to treat that risk? And one of the things might be that idea of a secondary access or a series of evacuation routes that gives people different options based on different risk and different threats to the potential new community.

[00:22:39] **DR MARK MAUND:** The Australian Government as you know Catherine considers an all hazards approach to disasters. And I find that a really challenging perspective. It's



really important that we do consider all hazards. However It's quite a lot of years of experience to become an expert being proficient in understanding one particular hazard.

So in moving forward, what do you think is the best way to address this all hazards approach in planning and designing our communities and having these livable cities that. Is it that we needed to get emergency services, other specialists more involved in strategic planning is it that people planners themselves need to do some training. What's the way we can incorporate this all hazards approach into what is already quite a complex system.

[00:23:21] **CATHERINE RYLAND:** I agree with you that it is fairly difficult. We do get siloed into our own emergency world because the bushfire space alone is incredibly complex. As a professional in a bushfire space, it's very hard for me to then start to overlay different hazards. There really needs to be an overview of hazard risk assessment.

When it comes to strategic planning and we might have a structure plan or a precinct plan we need to start overlaying those hazard risks. And who is the most appropriate person to do that? I think probably the most appropriate person is the planner that is responsible for doing the assessment.

But like you said, that maybe needs extra training for the planners who are overseeing how do they add weight to different kinds of risks and actually overcome this whole process. And I do think that's where emergency managers, should be heavily involved in the process. And probably to a greater extent than they potentially are at the moment.

When it comes to actually responding to an emergency on the ground. What we're trying to do here is create resilience and allow the emergency services to actually respond better to those events. If we're not gaining insight from those emergency managers, How can we say as planners that we're doing the right thing in creating resilient communities?

What we need to know is how they're resourced, how they're going to operate and what extra facilities or resources they might need to be able to undertake more smooth operations when it comes to actually releasing sites for development.

[00:24:57] **DR MARK MAUND:** Yeah, it's a really big challenge. I think all of us working together is the best way to achieve that. That was a great answer. Thanks Catherine. Last question to wrap up where to from here for bushfire planning. Is it going to become a more specialized field? Is it going to become a field where more people are involved? What do you think the future is in bushfire threat assessment.

[00:25:15] **CATHERINE RYLAND:** I think we have a way to go to understand the strategic approach to bushfire risk assessment and natural hazard risk assessment. It has been a recommendation of the various inquiries and commissions over the years that we move more to a strategic approach. And I think we're still in the infancy of what we're doing.

I think there's still a lot we can learn we need more guidance. So we've got fairly good guidance at a high level, but we don't necessarily understand how to undertake the assessments in practice. Planners don't necessarily understand how to review those assessments in practice. So we still have a lot of training education and improvements in terms of that whole strategic bushfire planning piece.

And if we can get it right from the beginning, if we can get a bushfire protection, right from the rezoning stage, we can follow it through our planning frameworks. Then we are going to be in a much better position. We're not going to have to look retrospectively as much, we're not going to have so many legacy issues.

I think where we're heading is getting things right at that strategic phase. You and I have also done some work on regional risk assessments. So instead of waiting until we get to the local stage and we're looking at sites individually, we're going to start to look more at communities across boundaries.

We're going to start to look more at settlement planning. So we have the guidance set out at a regional scale as to which areas of land maybe more appropriate for development than others. So when we overlay all those hazard risks where are most viable areas for new settlements and new housing. And we start to work on those locations rather than looking at the really, really high risk locations.

We're always going to learn from bushfire events. So that building side of things is potentially going to change the way we do local risk assessment might also change a little bit. We are going to start to think hopefully more about people themselves in that shared responsibility and how we can improve levels of protection just by involving the community more in the decisions that we're making and also in their own kind of levels of protection.

So I think it's probably multifaceted. Is it going to get more complex? Are we're going to need more people involved? I hope not. I hope we do somehow find a way to simplify things, particularly for homeowners. I think this space is very complex for us as professionals. And for members of the community and homeowners to navigate, it can be very difficult and also can cost a huge amount of money. So I think we need to be focusing a little bit more on those homeowners and how we can better help them to improve their own protection without so many costs imposts.

Working on my PhD is about the maintenance of bushfire protection measures. I'm going to be looking at how we can move beyond the planning and building space into Ongoing levels of maintenance and people, again, helping themselves to improve their levels of protection just on a day-to-day basis.

So in the kind of looking after their landscape, looking after their house, looking after their property, how we can help people to actually understand how to continuously increase their levels and improve that levels of protection.

[00:28:40] **DR MARK MAUND:** Thanks, Catherine. I completely agree. It's the question of scale and dealing with scale from regional level, community level, and individual property owners, it's really as all working together and trying to improve resilience across the community. Fantastic. Talking to you. Good luck with your PhD. I'm really looking forward to reading the findings.

[00:28:57] **CATHERINE RYLAND:** Thanks, Mark. Thanks very much for having me today and for the discussion, I think we touched on some really important issues. So thank you very much.

[00:29:07] **DR MARK MAUND:** Thanks, Catherine.

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