

TRANSCRIPT

STANDING COMMITTEE ON THE ENVIRONMENT AND PLANNING

Inquiry into fire season preparedness

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The CHAIR — I welcome the Victorian National Parks Association to the table. Can I ask you to make a short presentation pursuant to our terms of reference on bushfire preparedness, and we will follow with some questions.

Visual presentation.

Mr INGAMELLS — Thank you. I have just prepared a very short number of slides to help before I answer questions. I point out that on the first one the photograph of the kookaburra was taken by Jenny Barnett, my friend and colleague who died in the Black Saturday fires. Had that not happened, she would be here today doing a much better job of this than I am. Since she did die, I have spent a lot of time trying to do the work that she did. I thought I would just throw that in there.

This was an attachment to our submission. Basically I went through all the records going back to the 1930s of extended bushfires and fuel reduction burns in Victoria. I just make a very simple statement on two things: firstly, that there is no obvious correlation between bushfires, which are the red bars — that is the 1930s on the left going up to just a couple of years ago on the right — and the yellow bars, which are fuel reduction burns. The other one is that 1983 — you cannot really see it on the scale — is the only year in which fuel reduction burns have reached the previous 390 000-hectare target.

The CHAIR — Which years were they?

Mr INGAMELLS — I think it was 1983, from memory. And having checked with foresters who were in operation at the time, those fuel reduction burns were really just along the ridge tops and they counted the whole area as 390 000 hectares. So I think effectively you can say that 390 000 hectares has never been reached in Victoria's history. I just wanted to say that there is no obvious correlation and that really those large bushfires, the large red bars, are a product of fire weather. The scientific evidence basically, as I have put in my submission, shows that fire weather is the main driver of fire fairly obviously, and that fuel reduction burns are not the most effective tools.

Obviously the Victorian National Parks Association is primarily an organisation dealing with the protection of our natural environment. The next slide is a basic sort of map of the different habitat types across Victoria, and different habitat types, obviously, support different plants and animals. We have actually got 100 000 native species in Victoria, and they all rely not just on different habitats but on the different age classes and structures within each habitat. That is what we had in pre-European times, and that is what we have got left. Victoria is the most cleared state in Australia. Most of our remaining habitat types are highly fragmented and they are also weed and pest animal invaded, so quite apart from the fire issue they are under enormous stress. We have a large number of threatened species and threatened communities and they are protected in legislation. I will just go back on that one again. That is the basis of the conservation predicament.

Ms BATH — Just one question while that slide is there: if you were to overlay plantation on top of that, would there be an overlay that does not have plantation forest, say?

Mr INGAMELLS — No. Plantation forests are largely monocultures. They are not critical in — —

Ms BATH — Yes.

Mr INGAMELLS — We know now a fair bit about the sort of fire history we need for each ecosystem type, and different habitat types. Different, if you like, vegetation classes and so on have established where they are and basically this is just one example. This is the box-ironbark forest of Central Victoria. Basically they do not really need a fire until about 150 years. They can maintain their biodiversity without fire, and this varies enormously across different regions. However, they can survive a high-severity fire every 30 years and they can survive low-severity fires every 12 years. Those figures vary enormously for different ecosystems across Victoria.

Ms SHING — I am just going to jump in with another question, if I may: what is the definition of the difference between a high-severity and a low-severity fire for these purposes?

Mr INGAMELLS — I would have to go into what they do, but basically a high-severity fire would be an extreme fire weather day where you have a fire raging through the canopy and a low-severity fire might be

typically the proposed fuel reduction burn or a mild fire that just trickles around the understorey. I cannot give you more accurate definitions than that.

Ms SHING — No, that is a good indication.

Mr INGAMELLS — These vary enormously for different ecosystems. For grassland you can have a fire every year or two; there is no issue at all. Some areas should not have fire at all. To give you an example of where we are with that, this is Wilsons Promontory National Park. On the left there is a map of different age classes and for each vegetation type — how that fire history works. Just to simplify it, the red areas are effectively in need of a burn and the other areas to lesser degrees either should not have burns at all or do not need burns. I might just walk up to the screen to show you. On the right the black areas are the Black Saturday fires, which also came to the prom. It is a satellite photograph. The red areas are the complete opposite. They are actually green on the satellite photograph. The Black Saturday fire at the prom started here and moved through this area here and went around to there so it actually burnt most of the areas that were in need of fire. So you are in a situation now at the Wilsons Promontory National Park where most of the park is actually below what they call the tolerable fire interval, so any future fire will affect that. That is replicated across most of Victoria.

This next slide shows the most recent report from the department on the tolerable fire intervals in Victoria. On the top left is 1991 and it shows the red areas which are below the tolerable fire interval. Below that at 1997 you can see an increase in those areas, and at the top right, 2009, there is an increase again, and in 2014 most of the state is actually below the tolerable fire interval. We are basically in a situation where bushfires, almost certainly affected by climate change, and fuel reduction burning have reduced most of the state to an area where further fire is very damaging to the environment — and, as I say, that is from the department's own most recent report.

Ms SHING — Sorry, I am just going to ask another question. What do you mean by 'Further fire is a very damaging to the environment'?

Mr INGAMELLS — Okay, when an area is below its tolerable fire interval, a further fire can actually start to wipe out species because they do not have time to seed and things like that. It is a bit complicated. There are a whole lot of issues.

Ms SHING — No, that is okay. It is just that this terminology sounds general but is actually quite specific in a definitional sense so as we go along these sorts of things are important.

Mr INGAMELLS — Please ask. I appreciate the clarification. There are issues not just with tolerable fire intervals, and this next slide is probably the most extreme example. It was a burn on Mt Alexander forest near Castlemaine, where a controlled burn got somewhat out of control. It was left unattended. It was actually grassy woodland, and I have not got a photograph of before the burn, but it was just basically grassy woodland with a very grassy understorey. After the fire within a year it had returned to a grassy understorey so the actual effect of the controlled burn was minimal, but it destroyed a very large number of trees. All of those are very large old trees with hollows. There were actually more than 600 significant habitat trees that were affected by that controlled burn, and again this is quoted in our submission; it is a report from DELWP. There is a significant effect on the loss of tree hollows by fuel reduction burning. Tree hollows are enormously important for a very large number of birds, bats, mammals as well as lots of other things in Victoria.

Ms SHING — So that map shows dots that are — what are those dots there because on the right it says 'More than 600 significant habitat trees destroyed' yet on the left I cannot see 600 dots.

Mr INGAMELLS — Okay, the dots are the very large old trees, but there are other not-so-old habitat trees, and that was a survey done. So that is just a separate survey. Just summarising, there are an awful lot of reports on this, but the last Victoria State of the Environment Report was actually referring to the frequency of burn and states that this places species with life cycles dependent on particular fire intervals at increased risk.

That is overlaid on the general threats to Victoria's environment anyway. Again, getting back to the effectiveness of the fuel reduction burn program in saving lives, which is the prime objective of fire management — understandably and quite rightly — again there was a scientific study by two Australians published in the *Journal of Environmental Management*, which is one of the leading international journals on

managing biodiversity. It states that recently burnt areas of up to 5-10 years may reduce the intensity of the fire but not sufficiently to increase the chance of effective suppression under severe fire weather conditions.

There are now a number of scientific papers which have come to this conclusion — that at the very time you actually want to save lives, it is really not an effective tool. Basically a fire will go into the canopy and roar along and is not manageable anyway. I did note that that was actually reaffirmed by the submission to this inquiry by the bushfire and natural hazards CRC — it has used that same conclusion.

Effectively our prime tool and our main investment in public safety is a tool that has time and again in scientific papers been seen to be not the one to work. I think it is very important. It does require a really good look at this. What I am contending is that we should look at all of the tools available to us, including fuel reduction burning, particularly the importance of changing that burning to be near the assets you are trying to protect. Not only that, but each situation, either because of the habitat and natural values or because of the community or because of the geography and the type of terrain and various other things, should be looked at separately at different places across Victoria. But it also should not just be in the hands of DELWP to solve everything through fuel reduction.

I feel so sorry for DELWP — it is an impossible task what they are actually trying to do. They should look at increased rapid attack capability. We are already very good at it. It is a very difficult thing to do, but I think at some point I worked out that — I cannot remember the figure — 10 Elvis helicopters, I am just supposing, was what you bought for Victoria. You are up for sort of many tens of millions of dollars. But the Black Saturday fire cost Victoria about \$4 billion. On Black Saturday there was actually a fire which broke out at the Dandenongs. A helicopter happened to be there and put it out. No-one has actually costed the cost-effectiveness of that intervention.

Just looking at rapid attack capability is an important thing and strategic fuel reduction of course. The other one is that there is a whole thing missing, particularly about household bushfire bunkers. There was an urgent report from the royal commission on that before the final recommendation. Virtually nothing was done to encourage that, and they actually do protect lives. Off-grid power generation was really missed in the whole thing. There was talk about burying powerlines. That is another one. There is also monitoring firebugs, police presence and cameras where firebugs operate to actually prevent the ignition of fire, and community education. The other one, a very important one, I think, and it came up in the recent fires in Canada, where they evacuated a whole town — they lost thousands of houses, but they did not lose a single life — is that we do not have compulsory evacuation in Victoria.

There is a whole range of things, and each is applicable, but the appropriate mix is different in each situation. But it really has to be taken away from DELWP, possibly to the inspector-general for emergency management. Is that the right name for that? I think it is. It is in Craig Lapsley's area anyway — somewhere to really re-establish where you put your budgets and where you put your effort. It is worthy of very serious investment. I think it is a stitch in time saves nine with that sort of investment. It might cost a lot of money, but the cost of extreme fires to lives, property, rebuilding infrastructure and so on is actually enormous.

We are one of the most fire-prone places in the world. Climate change is making it worse. We have to get very good at this. We are very good at it. We have the potential with the knowledge we have got here since the royal commission to be much better at that. But while we just leave the whole bucket or largely leave the bucket with DELWP running around trying to reduce the fuel, it is not the way to go. That is basically it. Thank you.

Mr DAVIS — Can I thank you for that presentation. There is a whole range of very interesting information in it. I want to go to your table, which I think is an important table on fuel reduction burning and bushfire in Victoria.

Mr INGAMELLS — That is the history of it.

Mr DAVIS — Yes. I understand that in more recent years the fuel reduction burning has been much more carefully documented and recorded, but I do not think that was true in the early days. If I were to pick 1939, for example, when my grandfather in Boronia on Forest Road, along with many others, fought a fire in the terrible fires of 1939. I do not think there was systematic back-burning and preparation before that time. I am not wanting to be troublesome, but I am just saying that in fact the days of systematic burning and the recording of burning may not have been well captured back in that period.

Mr INGAMELLS — It is a good point. All I can do is the very best I did. I based it entirely on the records of the Forests Commission's annual reports, which they did regularly. It is systematic. They have reported on that all through the years, all through the time. So that was information that I had, and there is no other data that is — —

Mr DAVIS — I am happy to put on record my caveats on this information, noting that the more recent records on preventative burning of various types is much more robust, and indeed lots of land clearing was occurring back then, which was not documented or recorded. I think it is probably important to — —

Mr INGAMELLS — No, look, I take the point. I just did the very best I could, but I think it is indicative of the sorts of levels. But even today, basically, when people do fuel reduction burning, the percentage that they burn of an area varies enormously across the state and varies enormously according to weather and things like that. So we still have a thing where an East Gippsland burn, which might be 90 per cent of the area, is counted as a burn over that whole area, whereas one in the Mallee that was 30 per cent was still a burn over the whole area, so even today it is a bit rickety.

Mr DAVIS — But at least there are recording systems, and one task of this inquiry might be to improve some of that. I just wanted that caveat put forward.

Just going back, historically there is what is now I think a semi-famous book, *The Biggest Estate on Earth*, by Bill Gammage, which looks at burning by our Indigenous communities prior to European settlement and the shape of the flora and fauna in the light of those changes. I will very happily put on the record here that I was convinced by much of the material in that book. I would be interested in your thought on the longer term issues in terms of flora and fauna and what has adapted to perhaps tens of thousands of years of careful land management by our Indigenous predecessors.

Mr INGAMELLS — Absolutely. It is a book that has impressed a lot of people, and a lot of the information is very good. He had a strange sort of anti-science approach to the book, and there is a chapter at the end where he sort of goes through and builds straw men around science and condemns them. I think the better book, quite frankly, particularly because it is Victorian and it is written by an old forester, whereas Bill Gammage is simply a historian, is *The Victorian Bush — its 'original and natural' condition*. I am just trying to think of the name. He is an old forester who is now not alive. It was published about the same time as Gammage's book, but the man died pretty soon after publication. But it is a really interesting — —

The CHAIR — You might want to provide that detail, and I will certainly make it my business to read it.

Mr INGAMELLS — I will absolutely do that simply because it is a really, really well-researched book and it particularly relates to the Victorian bush. It does not discount the fact that, talking about Aboriginal burning, it was obviously very important and very big. Also Beth Gott, she is very old now but she is a professor at Monash University and she has done a lot of papers on Aboriginal burning. The burning was very specific for very specific purposes, and it is very interesting how they did that. I will leave both of those there because her material and the book I mentioned are very good caveats to Gammage.

I will just throw in one other thing, and I did mention it in my submission. Currently fuel reduction burning, partly for safety reasons, is done by burning from perimeter roads so the crews do not have to go through with driptorches and burn through the bush. To have a fire carry from perimeter roads in towards the centre you can only burn in quite dry conditions, and the fire actually tends to build up quite intensely.

The CHAIR — It carries a greater risk.

Mr INGAMELLS — It carries a greater risk to wildlife, but also you get canopy scorch and things like that, so it does a lot of damage. As far as I understand it, it is nothing like what Aboriginal burning would have been, because they just would not have done that sort of thing. Even though it is highly mechanical and in that sense very sort of Aboriginal, a much better approach, which is another way they do fuel reduction burning, is, if you are doing remote burns — and I do not discount that there is reason at times to do remote burns, even though the more strategic, close burns are more effective in terms of safety — it is much better to burn at a time when the weather is not so dry, when a fire does not carry, and to fly over with a helicopter and drop 1000 or 2000 little incendiaries. This is done quite commonly. It is a perfect way of doing it. That way you get a series of burns which trickle through the undergrowth and go out. You can be very targeted about where you burn, so you can

avoid rainforest valleys and things like that, and so you get a much more sort of, in my mind, and I obviously cannot speak for the Aboriginal community, but it is much more like traditional Aboriginal burning, which is very local and deals with those sorts of areas. We have the capacity to do that. Also you avoid that whole issue of safety for fire crews, who, for understandable reasons, do not want to go through the bush where they are worried about falling branches and things like that.

I totally agree that there is a long history of Aboriginal burning and — —

The CHAIR — And the lessons from it.

Mr INGAMELLS — And the lessons from it — yes, absolutely.

Ms SHING — Thank you, Mr Ingamells, for your really very informative presentation and for providing further information to the committee today. I would like to talk a bit further about what you have just discussed and the way in which Aboriginal land management has typically involved localised burns and careful land management through that very hands-on, on-the-ground approach and the way in which that differs from planned burning scenarios currently being undertaken in Victoria. How would the incendiary approach, where micro-fires might be utilised before the fuel can cure to manage fuel and to localise those burns, work with an inter-agency operability and also across different types of land?

We have already heard evidence in relation to tenure-blind issues and the need to have responsibility and ownership in local communities for where and how planned burning takes place, but based on what you have told us about what works and what is in your view a better way to manage risk and to minimise harm, how would that work where we have borders — they may not be physical, but they are definitely regulatory — and different agencies all with a hand in the success or otherwise of planned burns and also dealing with emergency fire response? There is a fair bit in that, I am sorry.

Mr INGAMELLS — Sure. That is a good question. That is all right. First of all, I just take issue slightly with one point: I never use the term ‘tenure blind’ because you cannot actually legally be blind to tenure. I prefer the term ‘cross tenure’.

Ms SHING — That was evidence from other witnesses. Sorry.

Mr INGAMELLS — I know. It is used by DELWP, and it is used by everyone, but you actually cannot be blind to tenure, but you can plan and operate across tenures, and that certainly should happen. On public land, certainly with fire and it should happen with many more things, like weed management and so on, but with fire on public land cross-tenure planning happens. There is burning inside and outside national parks and things like that, and that is largely in the hands of DELWP, so that actually works very well. The fact that that process is there works well. I would take issue with the level of burning, but that is another thing.

Where it fails completely is with private land. Given that the scientific evidence is now pretty clear that we need to do our fuel reduction burning, if we are going to be effective, as close to the assets as possible, it is rather odd that we are doing everything except engaging private land. In New South Wales this is handled very well with a program called the Hotspots program, which was set up by the New South Wales Conservation Council, a conservation group, in association with the fire agencies. They actually run a program where they go around the state talking to local landholders. They bring scientists in and explain how in their particular area fire will affect it or not affect it and how it may be really desirable and so on, and they do that sort of thing. Victoria definitely needs a program where you actually look at planning into private land and also engaging that private community with the scientific community and the land management agencies. I think that is the most important thing in cross-tenure management.

Ms SHING — We heard evidence earlier today from the Australasian Fire and Emergency Service Authorities Council in relation to the need to have a coordinated approach, an interoperability, around the way in which planned burns take place. They have expressed a number of views in relation to having a National Burning Project to bring together those interrelated aspects of prescribed burning and to prescribe guidelines and principles for a consistent approach to managing fuel reduction and prescribed burning practices. Do you have a view in relation to what might work best, noting the concerns that you have talked about and the fact that you may differ in terms of degree and how much is burned? What looks like a best case scenario, from your

perspective and from the Victorian National Parks Association's perspective, in getting to a guideline and a framework that delivers on what it is that you are trying to achieve?

Mr INGAMELLS — Okay. That is a fairly general question. I will do the best I can.

Ms SHING — It is deliberately general, yes. No, feel free to expand. If there is anything you want to provide — —

Mr INGAMELLS — No, that is all right. Like I say, you certainly need to plan fuel reduction burning under the best scientific advice, and the scientific advice has taken leaps since the royal commission. There has been a huge amount of money put into it. The royal commission actually asked for that research, and the reason it asked for that research was because, at least by implication, its recommendations would be modified according to that research; otherwise there is no point doing it. I think it is very important to look at that. But again, I think you have to look at not just fuel reduction burning in that planning process, and I think that is an important thing. You could take many examples across Victoria, but if I take the Mornington Peninsula, where you have houses right along the peninsula. They are basically surrounded by tea-tree, which is a native. It is sort of an invasive native, because there used to be mainly she-oaks there, but they were — —

Ms SHING — An enthusiastic native, even.

Mr INGAMELLS — Yes. There is an understorey of polygala, which is a South African weed. Both of them are highly flammable. You really cannot do fuel reduction burning on private land on the Mornington Peninsula — or on the public land much, for that matter — because it would just go up like a bomb. So I just think — —

The CHAIR — You can do fuel reduction, though.

Ms SHING — By removing the fuel?

The CHAIR — Yes, you can do fuel reduction — —

Mr INGAMELLS — You can remove the fuel, yes —

Ms SHING — Other than through fire.

Mr INGAMELLS — but whether that is socially acceptable would be another thing.

The CHAIR — Some of the introduced weeds might be desirable.

Mr INGAMELLS — I would love to get rid of the polygala, yes. But I think also I would say that the Mornington Peninsula is an absolutely prime example that there should be an absolutely well-established permanent, during the fire season, rapid attack capability, because the potential for a raging fire to go through the Mornington Peninsula in that area — with limited capacity, there is really only one direction anyone can escape — —

Ms SHING — It is not dissimilar to Mallacoota, albeit all built up.

Mr INGAMELLS — Yes, yes, there are places all around the state where it is. Again it is a case where, if you look at region by region and look at all of the tools available — and this is something that DELWP does not really have the capacity to do, or the authority to do, that is why I say it should be taken out into something like Craig Lapsley's area or something like that, so you have that planning process where the budget is applied to different solutions and a different mix of solutions in different places.

Ms SHING — I do not want to verbal you here, but that then means you would have a broad oversight plus the capacity to be tailoring resources and plans to the local areas in which they are intended to operate? Is that the objective?

Mr INGAMELLS — Absolutely, yes.

Ms SHING — Right. Thank you very much.

Mr BARBER — Does the VNPA get to participate in these processes on a sort of small scale and also in terms of the overall program?

Mr INGAMELLS — We have made submissions to everything. We were very much involved in the royal commission. In fact, we had leave to appear at the royal commission and it was our recommendation to engage in research. We had a right of reply to the commission's initial recommendations before the publication of the final recommendations, and it was our request for the research that built into that research in the royal commission's recommendations. So we have been engaged for a long time. I also sit on — in fact, I was a founding member of it — DELWP's bushfire community round table, which has been meeting pretty much ever since the royal commission. That includes a whole range of people: the mountain cattlemen, the wine industry, the asthma foundation, the CFA — all sorts of people. There are about 10 to 15 people around the thing. So I have engaged in the discussion for a long time. Is that sort of what you meant there?

Mr BARBER — I guess. You showed us a chart showing where things were at in terms of fire frequency and the kind of ecological tolerances that we were approaching on that. I noticed that when DELWP put out their book they produced this sort of one big number, which is the residual fire risk profile.

Mr INGAMELLS — Yes.

Mr BARBER — They have even got a chart.

Mr INGAMELLS — Yes.

Mr BARBER — Not surprisingly, after three massive fires in the 2000s that burnt 40 per cent of the land area, they saw that residual risk as going down — to about 60 per cent. I do not know exactly what 60 per cent represents, but presumably you can get it down to zero by burning everything to ash all in one go.

Mr INGAMELLS — Or concreting the bush, yes.

Mr BARBER — Concreting the bush, but nobody has sort of proposed to get anywhere near that, and as you have also provided us, the annual area of fuel reduction burning has never even approached where it was under the Cain government. Does anybody know where your numbers about ecological tolerance actually meet their residual risk number?

Mr INGAMELLS — Yes.

Mr BARBER — And is there going to effectively be some kind of equilibrium that is going to become what we come to accept?

Mr INGAMELLS — Okay. There are a few things there. First of all, that table that you showed has been in — there have been three reports. These reports were required by the royal commission on the effectiveness of the fuel reduction program. There have been three reports produced. The first two show that table that you have seen there — it was very much the same — and largely that the fuel was reduced enormously after Black Saturday and various things and has been climbing back up, but then it has been reduced through fuel reduction and a couple of other fires. They came to the conclusion in the first two reports that — and I have not got these with me, but I am happy to send them to you — their conclusion was that they had actually failed in their objective to reduce fuel enough to provide for public safety and so on, the objective of the code of fire practice.

In the last report, which is the 14–15 report, that graph is exactly the same, but for some reason or other, which I have not got an explanation from the department about, their conclusion for the last report is that they had reached their objective, which itself is a bit odd. I am not going to try to explain that; it is something that DELWP would have to try to come to.

The other one, in inquiring on exactly where you say there is a 60 per cent sort of reduction in risk, I asked them how they calculated that and they have not given me an answer. So it is a useful sort of diagram but I think it is a diagram of what they think it is rather than what anybody actually knows the risk is. I do not mean that as a criticism at all. It is just an enormously difficult thing to establish, and I think they are doing their best there. I have slightly forgotten the rest of the question.

Mr BARBER — I think you answered that adequately. If your figures on annual area burning are even half right, then clearly the annual area plummeted under the Kennett government. I presume that is not because the VNPA held some great sway over him and you told him to back off.

Mr INGAMELLS — We have never opposed fuel reduction burning. As far as I can go back in our history, we have supported ecological burning. We certainly did not have sway over the Kennett government. There was a period when there was very little fuel reduction burning done. There were all sorts of reasons for that but it certainly was not pressure from the VNPA. We did not exert that pressure.

Mr BARBER — Finally, do you have any comment on the adequacy of the current Parks Victoria budget to participate in all these exercises and do all the many things you said needed to be done in order to reduce risk?

Mr INGAMELLS — Victoria has various obligations to protect biodiversity — that is, under the international convention on biodiversity, which Australia has signed up to and ratified, and federal and state laws in relation to the protection of biodiversity and the National Parks Act itself. The current budget of Parks Victoria to protect our prime natural areas, which is absolutely sort of the cornerstone of the protection of biodiversity, is very inadequate. Basically we are failing to protect biodiversity and failing to protect the national parks. It is actually my job at the VNPA and has been for about the last eight or nine years to reverse that situation and I have failed spectacularly. Now that we have just got a lot more evidence and that, I am hoping that we can do that. It really helps, basically the knowledge. The conservation budget is not a big budget item in the scheme of things. Even a really adequate and effective budget is small in the scheme of things, and I think it is time we really grabbed that one.

Mr YOUNG — Thank you, Mr Ingamells, for coming today. You mentioned strategic fuel reduction, but you have not really gone into any great detail about what the VNPA's thoughts are on that or what other methods they are aware of or would advocate for. Can you please elaborate on that?

Mr INGAMELLS — Again I say that I would not like to be in the position to plan it myself. There are people with more expertise in this than I have, obviously. But just relying on those people, I think that first of all fire is an obvious one to reduce fuel. There are other methods. Fire is probably ecologically in general terms the best one, as long as it is appropriately applied; slashing; and the other one is to roll out and actually layer the understorey. That can actually be quite environmentally damaging, particularly if you burn over that afterwards. Then you have a very hot fire, which actually bakes the earth. So there are sort of ecological reasons not to do those things. But again, if you are very close to a house and you want an immediate fuel break around the house, obviously slashing. You cannot really burn in that situation. Again, there is a whole range of opportunities and it very much depends, as I say, on the right decision locally.

Mr YOUNG — We have had other evidence to suggest other methods, such as selective thinning. Is that something that the VNPA have any knowledge of or thoughts on?

Mr INGAMELLS — That is of the overstorey, you mean? Trees, you mean? Selective thinning of trees?

Mr YOUNG — Yes.

Mr INGAMELLS — Fuel reduction is normally a case of the understorey, so I would not see that as being a particularly useful thing, but again there may well be reasons where that would be. Fire is largely initially carried by the understorey and on extreme weather days would get into the canopy. Obviously there are levels of thinness of the canopy, but in any normal circumstances a fire on extreme weather days would rage through a canopy, yes.

Ms SHING — Can I just leap in there? What about selective thinning of saplings in relation to the pre-emptive work on thinning that might take place to reduce canopy burn down the track?

Mr INGAMELLS — Yes. It is a very hard thing to do; it is a very costly thing to do. If I can maybe answer that in a slightly different way. The general assumption is that when you put a fuel reduction burn through, you reduce the fuel. It is actually not always the case. There are cases where you put a fuel reduction burn through a grassy understorey in box-ironbark forest and you end up with cassinia, which is a thing that used to be called Chinese scrub or kerosene bush, which is a thing about that high and is absolutely enormously thick.

Ms SHING — Blackberries.

Mr INGAMELLS — Blackberries maybe are not so burnable. But in box-ironbark you get this cassinia, like an absolutely thick understorey of it. So you actually increase the fuel through a supposed fuel reduction burn. There would be reasons to thin things like that but it is much better in that case not to have done the burn. In tall ash forests, which of course is largely not so much a fuel reduction burn but a bushfire issue, as in the stuff that went through on Black Saturday, you end up with mountain ash saplings about that thick and about that far apart and you have a hugely burnable understorey. That is a difficult thing to deal with with thinning.

Mr YOUNG — What about dead wood and fallen timber?

Mr INGAMELLS — Fallen timber is not such a big issue. It is fine fuels that really carry a fire. I think that is a bit of a misunderstanding. People drive through an area after it has been burnt and see the fallen timber smouldering, but it was not actually that that carried the fire. It is really the finer fuels, as I understand it, that carry fire.

Ms BATH — Thank you, Mr Ingamells. I have a couple of questions. The first is that I would like for clarity's sake, when you were putting the slides up you said the red areas were where much of Victoria was below the tolerable fire intervals. For clarity could you just paint that picture for me again? What does that mean?

Mr INGAMELLS — The issues of tolerable fire intervals, the work behind all of that, was initially done by David Cheal, who was then a botanist in DELWP. I understand that he is giving you a presentation in a day or two, not in Melbourne but somewhere else. That is a very good question to ask him. But basically, take a very simple example — mountain ash forests. Mountain ash is an unusual eucalypt in that it is killed by fire, whereas most eucalypts will resprout —

Ms BATH — Regenerate.

Mr INGAMELLS — and they will just regrow from the trunk. After the fire goes through then the seed in the ground or the seeds that have been dropped after the fire, because the light comes through the canopy, you get this big growth of mountain ash. But mountain ash does not develop seed for another 15 years, so if you have a fire going through, say, 10 years later, and you lose all of that mountain ash, you have basically lost mountain ash in that ecosystem. This has happened with three successive fires in alpine ash in the Alpine National Park around near Mount Feathertop near Harrietville. The decision becomes then do you reseed with alpine ash? What do you do? Or do you let nature do its thing and you end up with a whole lot of wattles and things like that? So the tolerable fire interval for mountain ash is about 20 to 25 years. That allows seed to have regenerated before a fire goes through.

It becomes much more complicated because you have a whole lot of plants and different things like that that respond to fire, so at the other end of the tolerable fire interval is the maximum tolerable fire interval, which is where if fire has not gone through an area, the whole ecosystem starts to senesce and fall apart, and you actually lose species. That is a more complicated thing. Some of the things actually require fire to regenerate, and there are things that do that. So you then have a minimum tolerable fire interval and a maximum one. What you really need in most ecosystems, because different animals and birds and plants for various reasons — nectar production and so on — require different —

Ms BATH — Habitat.

Mr INGAMELLS — habitat or different fire stages. You actually need a whole range within the ecosystem type of fire age classes. What that graph showed was that a large part of Victoria was actually at that minimum thing, as in any fire going through you will actually start to lose species, so that was where it was.

Ms BATH — I appreciate that clarification. The other area of interest for me today is in your submission, where you talk about — and I cannot pronounce it very well — aerial incendiaries; firebombs, I guess. I would like you to explain to the committee more about that and more about the philosophy behind it. I understand that Western Australia use it quite a lot; they have used it a lot to meet their targets over a number of years. I understand that it is quite a soft fire or a mild fire. Could you tell us more about that?

Mr INGAMELLS — Yes, sure. I suppose where you are going here is that in my opinion it sort of gets closer to the sort of Aboriginal burning or traditional burning. A good fuel reduction burn does not affect the

canopy. If you affect the canopy, it has all sorts of impacts, including reducing blossoming and things like that — nectar flow and various other things. But if you burn from the ground and you want the fire to carry through, you have to do that at a time when the moisture levels are relatively high to allow that fire to carry, and then it can get very hot and wreck the canopy. It also means that if you are burning inwards like that, animals actually cannot escape the fire. You get a very hot fire and you lose a lot of fauna.

DELWP staff are really, really good at knowing and understanding moisture levels in forests. They have the equipment to do it and that sort of stuff. So you can establish your moisture level and the flammability level of the bush very well, and then you get the appropriate weather conditions. You can actually fly over with a helicopter or an aircraft. They have these little ping-pong balls that they drop, which set off a fire when they hit the ground. They will burn for a while in that appropriate moisture level, but then sort of trickle out. So you actually have what is considered to be the ideal sort of fuel reduction burn ecologically, which is also very useful in reducing that fuel load. But it is a patch throughout the forest and so you effectively have a range of age classes established in a forest area.

You can also be very accurate so you are not going to burn important creek lines or rainforest areas or where you might even have a particular threatened species, somewhere that does not want fire. We do it in Victoria; we are actually quite good at it in Victoria. It is also used quite often in back-burning operations, when you are burning in front of an advancing fire. That is a different thing with the moisture levels, but that is what I was saying.

Those burns or any remote area burn, as the scientific papers are now showing, are not particularly useful in reducing the threat of fire on extreme fire weather days, so again there is that caveat as to how much of that you should be doing. But there are certainly times when it is appropriate, and I think that at that time where remote area burns are appropriate it is much better to do it this way, which is, A, safer for fire crews and, B, much better ecologically when we have a real problem ecologically.

Ms BATH — Thank you very much.

The CHAIR — Mr Ingamells, thank you and the VNPA very much for your evidence. We will no doubt have further discussions as this inquiry proceeds. Thank you very much indeed.

Mr INGAMELLS — Very happy to.

Ms SHING — We will wait to get the details of that book as well.

Mr INGAMELLS — I will send that through — absolutely, yes.

The CHAIR — I will look forward to the bedtime reading.

Ms SHING — Thanks, Mr Ingamells.

Mr INGAMELLS — Thank you.

Witness withdrew.