T R A N S C R I P T

LEGISLATIVE ASSEMBLY ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Tackling Climate Change in Victorian Communities

Wangaratta—Thursday, 13 February 2020

MEMBERS

Mr Darren Cheeseman—Chair
Mr David Morris—Deputy Chair
Mr Will Fowles
Ms Danielle Green
Mr Paul Hamer
Mr Tim McCurdy
Mr Tim Smith

WITNESS

Ms Bronwyn Chapman, Executive Officer, Goulburn Broken Greenhouse Alliance.

The CHAIR: Thank you, everyone, for joining us today for the public hearing into tackling climate change in Victorian communities. On behalf of the Committee I acknowledge the traditional Aboriginal owners of the land upon which we are meeting. We pay our respects to them, their culture, their elders past, present and future, and elders from other communities who may be here today. I also extend a welcome to any members of the public or the media that are present.

This is one of a number of public hearings that the Environment and Planning Committee is conducting in Melbourne and around Victoria to inform itself about the issues relevant to the Inquiry. I will just run through some important formalities before we begin. All evidence taken today will be recorded by Hansard and is protected by parliamentary privilege. This means that you can speak freely without fear of legal action in relation to the evidence you give. However, it is important to remember that parliamentary privilege does not apply to the comments made outside of the hearing, even if you are restating what you have said during the hearing. You will receive a draft transcript of the evidence in the next week or so for you to check and approve. Corrected transcripts are published on the Committee's website and may be quoted from in our final report. Thank you for making the time to meet with the Committee today. Could you please state your name and your title before beginning your presentation.

Visual presentation.

Ms CHAPMAN: I am Bronwyn Chapman. I am the Executive Officer of the Goulburn Broken Greenhouse Alliance, and I would like to thank you for the opportunity to speak to our submission. Yesterday I was in Shepparton as an audience member, and the Goulburn Broken Greenhouse Alliance includes councils right around the region, pretty much the Goulburn Broken catchment and the north-east catchment, and I will be talking about those catchments a bit further later on. There are 13 councils, and also the two catchment management authorities are members, as is DELWP Hume as an associate member. So it is a very strong collaboration, and we work together on climate change mitigation and adaptation.

The Inquiry has been about communities adapting to climate change. We are not a community group. We are obviously a group of organisations that work with communities. Adaptation to a changing future has many steps and it is going to be a long-term ongoing action. A lot of our work has been around enabling work, and that is some of what I want to talk about today. Our mission is in partnership to raise the awareness and capacity of the region to respond to a changing climate—so very much focused on our communities—and I will also mention that as an organisation we have a very formal governance structure. We are not independent. We are auspiced by one of our members at the moment, the City of Greater Shepparton. We work on a four-year cycle. We have an ongoing strategy and a clear governance structure to assist us with our work.

The GBGA commenced in 2009. At that stage it commenced in the Goulburn Broken area with seven councils, and then it expanded later to take up the area and the members that we have today. Some of the work that we have done along the way has been, along the top, some agricultural projects, which I will talk about next, and down the bottom, work around energy efficiency and exploring new technologies like electric vehicles and how they might be introduced to the region. In our future work we want to be working in the urban cooling and green infrastructure space to recognise the issues of heat in urban areas and also to assist councils to address climate issues in their policies.

Those two programs at the top were two separate programs. One was in the Goulburn Broken catchment; it was called the climate smart agricultural project, and that was in 2016. That was by the Goulburn Broken Greenhouse Alliance. The second project was by one of our members, the North East Catchment Management Authority, NECMA, called embedding climate change in agriculture. That was just finished last year, and it is ongoing for the next few years. What happened was that we learnt a lot from the first project to progress how we tackled the second project, and we made the community a stronger focus and more central to the second project.

These projects have been really important in this adaptation journey, which starts by understanding the impacts of climate warming in the region. We cannot adapt if we do not understand what we are adapting to. So that is

the first thing. Also these projects have been developing tools to assist adaptation in sectors, especially agriculture, but the second project has expanded that to other sectors as well by the way the information is presented. Another key role of the GBGA is joint knowledge and capacity between the members. We do a lot of transferring of information, pilot projects and the like so that others can learn from those projects.

These are some of the results of the Goulburn Broken catchment talking about what we are adapting to. This project looked at average temperature, and we have got a historic period, 2030 and 2050. The brown and red areas are getting higher average temperatures. You can see average temperatures are increasing and generally in that sort of southerly direction. So the north part of this catchment is more affected by an increase in temperatures, with the higher areas and the southern catchment less so. You can drill into this, and councils have this on their websites—or on their databases, not all on their websites—so that they can have a look at this in their planning.

Rainfall is showing a pattern where again in that northern area we are getting drier, and in the southern areas, because they come off a higher rainfall to start with, I guess expected rainfall is not as affected. So we are looking in this northern plains area at this hotter, drier climate.

We came to the north-east and did the second project. I will just emphasise this: both projects had a look at the impact on crops in the region, and the impact of those temperature and rainfall changes is to decrease yields on a number of crops. So we had a look at that expected yield impact, and this one is showing the change in yield. As you move over, a green colour is actually an increase in yield; that pink colour is a decrease in yield. This was looking at phalaris. You can see with phalaris the pattern of change is not the same across the catchment, because of the way those temperature and rainfall effects are happening, but it is pointing to definite impacts in that north-west section, but in that central section—white is little change. There are other opportunities across the catchment for looking at this. Then we compared it with rye grass, which was far more affected, as an example. Grapes are showing a decrease in productivity in that section where they are mostly grown, that irrigation section. And then we looked at different types of apples. This is royal gala, a particular type that is grown, and we had a look at some different types of apples as well to start to understand: what is the impact of all this on this productivity?

As it says up the top, the motivator with this is to protect the region's economic and social base, because agriculture underpins the economies of both regions. That leads to our townships being viable, and all of the rest of it all flows on from there.

Ms GREEN: Did you do one on stone fruit?

Ms CHAPMAN: We did do stone fruit. It was rather affected, I have to say, yes.

This is the north-east catchment. Here is where we took a different approach. Notice here we have got the January maximum temperature. The previous study looked at average temperature. By the time a couple of years had passed we had access to better information and we could drill down further and start to appreciate what the key factors are that growers want to know about. There were actually meetings with growers in all these different production groups to find out what affects their industry. Maximum temperature was obviously one they wanted to know about, and in January this was showing again that heating of the region from that north-west section.

Something I want to say about this is—and as you would appreciate this gets a little bit detailed, but at least to a point I am coming to—when you look at that 2030 range, it is not at 2030. In the same way that this historic range has 20 years, 2030 is around a 20-year range, and 2050 is as well, so it is 20 years around that period, and it is the mean across that period. You probably cannot see it, but the range that you are looking at for that January maximum up at the top is 29–34, because it is the mean across those 20 years. Last January Wodonga had the hottest ever day at 45.3 degrees, followed by the hottest ever day again this January just gone, 46.1 degrees. So you think, what on earth is going on there? And it is because, taking that mean across the 20 years, the data is not detailed enough to be starting to have a look at these really extreme events, and that is where we also need information. It just has to be understood; it is very good information, but it needs to be understood.

Again we could look at January days over 35. The growers want to know this because if they have animals this relates to heat stress for the animals, and of course it is not just about agriculture; this is heat stress for humans as well. So this is where having the data in this form, this particular form, helps us to be able to appreciate how it affects all parts of the economy and our social aspects as well. Again you can see an increase in January days over 35. In that top one, the scales go up to 14 days in 2030 and 2050. January last year, 2019, in Wangaratta saw 19 days over 35 degrees, so again it tells you where we are heading and what we need to be preparing for, but we still do not have the whole picture we need to have, especially if we want to be looking at these extremes and how they affect human health and emergency situations.

When we come to rainfall, the north-east catchment, because it has got these higher areas, is not as affected as the Goulburn Broken catchment, but the plains areas are affected in terms of impact on rainfall. So in the plains areas in particular you are looking at again those hotter, drier conditions.

With each one of those squares you can actually drill into that and pull up those factors that we talked about. So this one that we are looking at is rainfall. This is for the total catchment. So this is annual rainfall, and you can see in 2030 that over the total catchment there is a net slight increase but by 2050 it is dramatically affected. And then if we go to growers, they will say, 'Oh, okay, that's really nice. We want to know about annual rainfall on average, but when is the autumn break going to be?'. So you can also pull out graphs across the year that are projected. Now, the grey one is current, the blue one is 2030 and you can see that autumn rainfall pattern looking on average better in that period but then becoming a lot more fluctuating by the time we get to 2050, which is the red. So this is the sort of information that enables growers to say, 'Okay, you've told me that a particular crop could be suitable for my area, but I have to go down to my area and have a look also at my soil types and what I know about my environment. I need this sort of information to start to make a judgement if I'm actually going to make a change which needs capital investment'.

We also did this sort of commodity mapping as well. You see across the top that this tool is actually available on the North East CMA website for anybody to delve into, but it is targeted so that people do not have to go through a whole lot of guff; they can go straight to the area they are particularly interested in. This one was in cropping and for canola, and the results show that in 2030 conditions on the plains areas—sort of north of us—are improving for canola. That is an opportunity, but what I have not got here is that—and you saw that grapes were affected in the other region—the heat around the Rutherglen region is going to have a marked impact on the yield for grapes, with around a third to a half decrease in that 2030–50 period. It is hard to imagine Rutherglen without grapes and a wine industry and the Rutherglen walkabout, but that is the sort of impact that we could be looking at, and we need to know these things so we can start to think about how to tackle them.

A few other ones: this is from Everton Upper, a bit further east of us. The left one is growing days. So the producers said to us, 'We'd like to know how many days between 10 and 35 degrees'. We call them growing days; they are good temperature days. And again you can see that in that autumn period things are looking better and later in the year they look better. But on the other hand the top right one is those days over 35, so there are more days over 35 interspersed amongst them as well, so they need to balance it up: 'Okay, more growing days but more really hot days. How am I going to handle that?'—an opportunity and a difficulty. Also we saw that potentially wetter autumn; hotter, wetter days can mean more disease and pests to deal with as well, so they have to think about that. The outlook for chestnuts because of those conditions is not good, even in the upper areas where they are grown. The bottom right-hand one I might leave; I cannot remember, sorry.

Before I get onto this, the other thing we had a look at—remembering that we looked like we were going to have more overall water in 2030—is that we have got that heating climate. So the heating climate means that, particularly when you see on the top right-hand side that those preconditions in December and January are hotter, the catchment is drier and there is more evaporation before we get that rainfall. So despite that pattern, this particular project did some work on surface run-off. It is, I guess I would say, early work, but it is showing that surface run-off has been markedly affected by this heating and evaporating trend. The browner areas are reduced run-off, so you can see patterns of areas that are getting browner over the years, and the modelling shows decreases to streamflow in the order of a 20 per cent reduction by 2030 and a 30 per cent reduction by 2050—so really marked effects. As I said at the start, unless you know what you are adapting to, you do not know how you are going to tackle it, so this work has been very, very important.

A few points about what we need to progress this work. We learned from our first project that we really need that detailed work to be extended back into the Goulburn Broken, and now that is what we will be seeking to

find support for. I would say both these projects were supported by the Federal Government, so we will be looking for opportunities with both State and Federal Governments. There are some opportunities in the State area as well. The work that was done in the second project was really helped by the Bureau of Meteorology and CSIRO and by the bureau in Melbourne, and so it is really important that they are supported to continue to make this work available and to help the regions understand how to use their data. People from the Melbourne BOM were very helpful in this, so that support is just essential. As I said before, we need more work on understanding these extreme events. That is more difficult work because they are rarer, but the BOM tells us that they are now entering a stage with modelling where they are going to be able to start thinking about that and looking at it. That is really important because it is the extreme events we are seeing that are actually affecting us before those long-term trends; that is our difficulty. So we need to know about them as well.

We need to prioritise regional support for adaptation. Just about some of the regional, I guess, partnerships, the Goulburn Broken CMA was very involved in the Goulburn Broken project, and this work has shown that the CMAs have the connections in the region, they have got the capacity and they have got that link through Landcare as well to be able to make that connection from the experts in those agencies right down to the growers. That has been really important. The CMAs really struggle with sustainable funding. They have a very important role to play, but they never know if they going to get funding in the next tranche. That is very difficult for the regions because that holds up a whole lot of possible advancements. The department of ag also played a role, but they have tended to withdraw a bit from on-ground work in the regions. The CMAs have taken it up with their Landcare role. I would like to say that Hume DELWP is also extremely helpful in this region. It has got very strong connections throughout the region. So those agencies are really showing the way with the regional presence for the State Government. I was going to say the other thing is that information also has implications for tourism. So if we are able to get information about 'We're going to get this many more hot days' or 'That period looks better for events', that is helpful as well. Information in this form could be used for all sorts of sectors.

Now just to say something quickly about some of the other work that we have done, which is more in the efficiency and electric vehicles space, we have done work within the GBGA but we have also—and I will skip over this because I have got some other slides—done work between the alliances. Later on this year nearly all councils in Victoria will be part of an alliance. There will be eight greenhouse alliances around the state, and that is quite exclusive to Victoria. No other state has this sort of organisation. Being able to cooperate between the alliances has enabled us to tackle some bigger projects. So even within the GBGA, this project was an earlier one before we expanded—so eight councils. It changed over residential streetlights—nearly 13 000 streetlights. The councils reduced their streetlighting power by 33 per cent and saved the equivalent of 51 000 cars off the road—this was referred to yesterday. It had a five to six-year payback on paper, but the councils got a better payback because we had got some funding to reduce that payback period.

I would just like to say something about that, because councils are in a situation where they get a good amount of their funds not from rates. A lot of councils will get, say, 40 per cent of funds from sources other than rates. For regional councils in particular to get a project done they are looking—it has become sort of the goal—to leverage off the rates and show the community that they are getting good value for money by bringing in some other funding. So to get a project up, having some external funding is very important in getting it up the list of budget at council. Even a small amount can be helpful. I note that sometimes governments think, 'Oh, councils are always looking for some money', but there are some big advantages even in some not huge grants.

We have done a project to assess main road lighting. So the previous one was residential lighting. We would like to continue with main road lighting. You have probably heard about this at other sessions. VicRoads has a share in the cost of lighting. The region is very reluctant to continue until VicRoads is able to make a contribution to these projects for that reason I talked about. They are sitting there—councils are sitting there saying, 'Hang on. We're expected to fork out the money. We're not actually asking for a grant; we just want them to pay their way'. All the regions have done these studies. They show similar advantages of savings against costs. So VicRoads has over 20 years some considerable savings to be made if they can make the capital up-front. But it is not a budget priority for the State Government at the moment. It could be phased in over years; it would not have to be a huge amount in the State budget, I would not think, but it would make a big difference to these projects going ahead. It also demonstrates that commitment to the community. So the payback across the region is five to six years, but it varies between the councils because we have got two

distribution networks and the payback varies because of the way different costs are done in those two different networks. So the VicRoads partnership is really essential to these projects. I know some metro councils will go ahead without it, but regional councils will not.

Coming together as alliances means we can really ramp this up, so instead of talking about a project that saves tens of thousands of tonnes of CO_2 we are now starting to work on hundreds of thousands of tonnes of CO_2 saving in a project to purchase renewable energy across 48 councils, and that is a project that is in development and ongoing at the moment, and we hope to be out for tenders this year. Forty-five per cent of Vic councils' annual electricity use would be in this project, so that is quite substantial.

Another project we are sharing in, which you have probably heard about, is the Charging the Regions project. We are studying establishing the infrastructure for EVs in the region. Now, for me what brought us to this project was I went to a session with Infrastructure Victoria where they had been studying the scenarios for electric vehicles and autonomous vehicles in the future. So they had done a number of scenarios. They had done some mapping around what would that mean for where people would be locating their houses, the planning aspects, being driven by transport opportunities. It shows that it would concentrate development more in Melbourne and the regions could become stagnant because people would be with electric vehicles and eventually autonomous vehicles as their transport. So that is a real alarm bell. Even though it is a few years off before maybe EVs start a big uptake, it is not that far. It is getting closer all the time, and we do not want to be left behind. That was a key driver for participating in this project—so we can understand what needs to be done and try and drive that forward.

Another one: the Hume renewable energy road map identified opportunities in hydrogen fuel, particularly for freight transport. I have left out here the Hume corridor, obviously, and also Shepparton have a number of places which would be viable hydrogen centres. Because it is that transport corridor, about a quarter of the state's truck movements happen in this region, so that is a big opportunity to test out hydrogen as a fuel.

Another one you got yesterday from the Bendigo sustainability group—they gave you the report from Wodonga, for the sustainable subdivisions project. That was not a GBGA project, but we did assist with the original scoping of the project. The first project had those councils that are shown across there, across Victoria. That has expanded now. We have now got three GBGA councils in that project and a new project. The first project produced those guidelines that you saw, and the second project, which is underway now, is developing a tool to take those guidelines to actually assess and improve subdivision design and test that with some subdivisions that are already underway in some of these councils with a view to then having that evidence base to go to State Government and say, 'Okay, this should be considered for the State planning scheme'.

The thing is you cannot transfer metro planning, especially around development, into the regions because of the difference in the value of the development. So there is a general principle that what you ask in planning needs to be commensurate with the value of the development; it should not be way out of whack, and because development in regional Victoria, particularly housing, does not have the same dollar values as Melbourne, we cannot ask the same as some of the metro councils can; it is not seen as reasonable by the developer, so it is hard to counter that argument, and that is what this project is doing. They have also been, as part of this, looking at the value saving, the value proposition, for increased environmental aspects in subdivisions. So that is a really important piece of work in the regions.

So what is holding us back? One of the things that holds us back, and I think the councils will talk about that, is the low priority of climate issues and the struggle that many rural and regional councils have to actually meet the expectations around climate change and the environment. It is often swamped by other priorities, and regional councils have trouble attracting the staff that might have the expertise in this area. They have trouble funding more expert staff rather than generalists. The staff that are working in the area are time poor to be tackling the ever-expanding issues that we are trying to address, and we often need consultant studies, but again we are competing for dollars in the budgets for councils. So those things are holding us back.

What could be helping us? Some investment by the State to increase the capacity and action, and again I think the councils will talk about some examples of that today, but there are also some pieces of work that are underway at the moment that would be really good if they came out earlier rather than later. The MAV has been working and DELWP have been working on some councillor training, which is still being developed. It

has been underway for a while, and with elections coming up we have got a golden opportunity to be rolling out a package that assists councils to understand these issues.

DELWP has been doing a piece of work called Climate Roles and Responsibilities. They are waiting for the *Local Government Act* to be finalised, but then we hope that that will come out very soon after and not be delayed any further, because it has been underway for a year. That will really assist councils to understand how this works into their governance, so that is really important for councils.

One idea amongst the resourcing one is that in planning they have had what is called a flying squad, where a planning team comes in to assist rural and regional councils on specific projects. That could be something that could assist councils in the climate change area.

Development planning: I have already talked a little bit about the work that is going on there, but it is really important also to apply pressure to the Federal Government with the Australian building code. Because it is spread across Australia it tends to be a minimum standard rather than a desired standard, and that is a real issue.

The other thing is our community in this area is very active in energy and adaptation projects, and as an example, there has been some recent State Government grants that have been hugely oversubscribed in the sense of the numbers of projects that came forward. I think our rural committees have really stepped up in their understanding, maturity and their capacity to handle these projects, so the plan to make more funding available to build on that community expertise would be really helpful. To go back and keep applying for funding is so difficult for community groups.

The CHAIR: Fantastic. That was a fantastic presentation, Bronwyn—very detailed.

Mr McCURDY: Bronwyn, thank you very much for that presentation. It is very refreshing to talk about adaptation and the changing climate rather than the global discussion that goes on about whether it is or whether it is not, and it is really nice to get to that local level.

In terms of the agriculture community—and in Shepparton yesterday with the food bowl and through this region here—you rely heavily on the agriculture sector. Do you think there is enough research and development going on in specific areas, because we have got stone fruit, we have got broadacre farming, we have got wine grapes—we have got everything going? If we take one example, the rainfall, there is a really clear example about where the climate is changing, not necessarily so much about the amount that is coming, when it is coming, and so the rainfall in this region what we used to get between April and October versus October to April is now completely different to what it was.

Even though you can look on a map and say, 'Oh, well, we're still getting X amount of millimetres a year', the timing is changing and farming communities need to adapt to what they are growing and how they are growing it. My concerns are that although we talk about the broader aspect of climate change—CO_2, the Paris agreement and all these things—what we really need is that targeted research and development to the stone fruit industry, to the dairy industry, to all of these industries, because they have to change and tweak very quickly, because it is changing. Do you think there is enough being done, or is there more we can do in specific areas?

Ms CHAPMAN: Yes, there is one thing I did not say. I mentioned that NECMA's project is ongoing. In their next stage they are working with several sectors to help them understand that work and how it applies to them, so they are working with the Upper Murray dairy area and I know they are hoping to work with Rutherglen. Clearly there is a need around that grape and wine area.

Producers, understand, have very complex businesses, and so climate change is a risk that they need to build into their business in the same way they have to think about their risks, say, due to export issues or changing technology or different types of commodities and all the rest of it. So they need to understand those things together. They need to be able to have a look at it in that holistic way as part of their business, and that is why the way this information is presented is so important, because it brings it down to that local level. The other research that is being done, say, on different varieties also needs to come back to that local level. That is what is really important. People need to be able to get this information in a way that makes sense to them and that they

can apply to their business, because they are also really time poor and they have got so many other pressures to think about.

It is really hard to adapt to a very significant decrease in productivity. We will be seeing how people tackle it with the NECMA project, but I can see that people would take some interim measures. So they will think about, 'Okay, now I understand there are going to be more hot days, my animals could be heat stressed. I'm going to have to think about cooling them, shading them and other measures to tackle that. Down the track I may have to think about different pastures. To change pastures is a big capital investment; I'm going to have to think about different types of crops and other big capital investments'. So I think they will have a look at some of the tweaks first, but down the track they are going to have to look at some actual capital investment. And to make that, they need some really relevant information.

The CHAIR: I might just follow up on that. In terms of the agriculture sector, it just seems to me that we have a really strong Landcare model, and part of the success of that is that it is farmers working with farmers in effect. And it seems to me that translating the fantastic work that is being done into an easy, digestible, understandable document that farmers can understand, where they can see the things that need to happen on their own properties and within their own sectors I think is going to be really important. How can government best support that happening, making sure that the fantastic work that you have done actually now translates into literally every single farmer getting access to the information that they need to make those decisions in an easy way? I think it is Landcare, but I would be interested to hear your view.

Ms CHAPMAN: Because it is complex—and Landcare, remember, is volunteers—definitely they are a conduit, and they will be very much involved, but that is where the catchment management authority has come in because they also assist that Landcare sector. So they have got that link. They have got links in the other project in the north-east—it was not just through Landcare—it happened by their knowledge of producers in the area as well, so they have got that really good knowledge. Not all producers will be in Landcare, so you need to have other ways of contacting them. That extension work is really important that they are going on with.

So the first project we have has not had the take-up we were looking for because it finished, basically. It did not have that ongoing extension work to be able to take it into the community. The other group that needs to be involved in all of this is the consultants that actually work with agriculture. So agriculture will go out to consultants and have them work with them. They also need to be skilled up in these areas and be able to take that information to their clients. So they will not take that up, I guess, immediately; it needs some assistance to make that transition and to get that information into the sector effectively.

Ms GREEN: Leading on from that, I have a question about curriculum—the VCE agricultural studies course, which I understand has not been reviewed and updated for a while, and also Dookie—

Ms CHAPMAN: TAFE.

Ms GREEN: Yes, TAFE. Melbourne Polytechnic, which is in my area, train more ag, hort and viticulture students than any other institution in the state, so it just seems to me we really need to be embedding it.

Ms CHAPMAN: That is right; we have got to work on a number of fronts.

Mr MORRIS: Thanks, Bronwyn; I found that a very useful presentation. Just on the first part of the presentation, the maps and impact, what were the assumptions in that?

Ms CHAPMAN: Actually, yes, that is a good question—it is always a good question! In terms of the climate modelling, both of those projects took the higher impact sort of modelling path.

The CHAIR: Higher range.

Ms CHAPMAN: Yes, because that is the track that we are on at the moment. Those later projects are about mitigation. Sometimes they are seen as separate things, but mitigation is adaptation, because if we cannot control what we are adapting to, we are going to have so much more work to do. So those projects actually are—the climate modelling was for greater than 2 degrees, more like 3 degrees, because unfortunately that is

where we are heading. So if we could pull back the situation to less than 2 degrees—hopefully 1.5 degrees, although realistically I am not certain that we are going to make that—

Mr MORRIS: It is not going to be easy.

Ms CHAPMAN: We could be having a very different conversation with those grapegrowers at Rutherglen.

Mr MORRIS: Just a quick one: the NECMA model that you talked about, being able to access the information quickly, is that in a form that could be used as a template for other CMAs if they had the data?

Ms CHAPMAN: Yes, and that is where it still needs the BOM involvement to help them with that. The CMA could not do it themselves. At the moment they do not have that particular sort of modelling capacity; it was done by consultants. A key feature of it is the way that that information is made available to the user. There is a very particular consultant—every time I show this, anyone who works in the industry says, 'Oh, did such and such do that work?'. Yes they did, because they are well known for it. So that is the real value of that. That information is out there for other modellers to use, but the way that it is presented, and the fact that we went to growers and said to them, 'What do you need to know? Why is it important to you?', means that when we go back to them we can say, 'Okay, you said "We need this data" because that enables them to assess heat stress, potential soil moisture or that sort of thing', that makes sense to them.

Mr HAMER: I was just wanting to know—I mean you have some of those historic data on particular yields and food crops and what the future might be—are there individuals or corporations or others that have already made those decisions, are already changing their cropping behaviour or have diversified into different crops because of that rather than, 'This is what you may have to consider in the next 10 years'?

Ms CHAPMAN: I guess the stand-out, and not because of our projects, is Brown Brothers. I do not know if you have heard—you probably know—they have bought land in Tasmania. Brown Brothers is a 100-year-old business, and they intend to be here for the next 100 years. They will not be growing the grapes they are now in Millewa; they know that. They have known pre this work what was happening; they had their own work done. One of the things they found—so they are testing new grape varieties and the like, and this is where that is a real advantage to our region to have Brown Brothers here, because they basically do work that assists all the other growers to understand what the pathway might be. And that leader in the region can be so important. That is where some of the peak bodies come in as well. They can work on that too, like the Apple and Pear Association and the different dairy associations.

The other thing that is happening is that the seasons are being compressed. So one of the things Brown Brothers realised—their annual grape growers know this—is that the grapes are ripening in a shorter period of time. That meant that they had to increase their processing capacity equipment by an extra third at Millewa. That is a big investment.

The other thing that we are seeing in recent years—people are commenting—because we have got the valley environment here in the north-east, people traditionally would see that crops to the north of the valley would mature first and the crops up the cooler end of the valley would mature later. So when you did cropping and contractors came in they would start at the bottom of the valley. They would work their way up to the top of the valley. Everything worked nicely. Machinery could be shared. In recent years it all matures at the same time.

The other thing that happens is weeds. If we are doing weed control, they will also mature at the same time, so where do you get all the contractors and equipment to do that work? It is a real quandary. It is a real challenge operationally as well as that forward planning. It is now; it is a challenge right now.

Ms GREEN: And fire mitigation as well, because of the growth at the same time.

Ms CHAPMAN: Well, that is the other thing.

The CHAIR: Do you think it would be useful if the Victorian Government paid for the modelling that you have done, CMA by CMA, in consultation with industry sectors within those CMAs, across the whole of Victoria?

Ms CHAPMAN: I think that would be ideal.

The CHAIR: You would recommend that?

Ms CHAPMAN: I would recommend it. And I think it would also be worth just reviewing with the BOM to make sure that the work that is being done—I guess the modelling that is being done—could easily have that new data input into it, because we want to update it later on as well if we get this information of extremes or the like. To have that connection with the BOM and the CSIRO to make sure, 'Okay, that data can go in quite smoothly', that would be great. And that was part of the idea: it had to be able to be replicated. That was very important.

Ms GREEN: You mentioned the visitor economy. There is another billion-dollar industry in the north-east very close to my heart, with the ski industry.

Ms CHAPMAN: Oh yes.

Ms GREEN: Do want to speculate what the data means?

Ms CHAPMAN: I have not really looked at in that sense—

The CHAIR: Is Danielle going to be able to go skiing—that is what she wants to know.

Ms CHAPMAN: Yes, that is okay. But of course the alpine resorts have also been doing their own work, and they have known for a long time the challenges they face. They are putting in place, if you like, other aspects—snowmaking and the like. They are—

Ms GREEN: It has still got to be cold, though. It has to be cold and dry.

Ms CHAPMAN: Well, in this area—I think this was mentioned yesterday—up until about 2030 we are actually seeing increased frosts. Over the last 20 years there have been increased frosts in spring compared to the previous 20 years. Again, the BOM did some work that showed that. And what is happening there is that we have this heating—so again you think, 'What's going on there?'. So we have got these heating conditions, but because we have got warm air, the night skies will be clear but there is still enough moisture. That moisture regime has not changed enough to mean that there is no moisture there to create the frosts. So we have still got the moisture to create the frosts but we have got the dry sky to radiate heat out. So we actually get quite different cool nights here in this region. So we are going to have that sort of condition, but by 2050 those frosts are going to be decreasing, which is going to have more effect, I suspect, on that snow environment as well. Some of the work suggests that we have almost got a period where if we really put a concentrated effort in, we can get prepared and be ahead of the curve.

The CHAIR: Thank you. Are there any other questions? All good. Thank you, Bronwyn.

Ms CHAPMAN: All right. Thank you so much.

The CHAIR: That was a fantastic presentation.

Witness withdrew.