PRODUCTIVITY COMMISSION

INQUIRY INTO BARRIERS TO EFFECTIVE CLIMATE CHANGE ADAPTATION

DR W. CRAIK, Presiding Commissioner
MR J. COPPEL, Commissioner
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TRANSCRIPT OF PROCEEDINGS

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Continued from 10/7/12 in Sydney

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DR CRAIK: Good morning, and welcome to the public hearings for the Productivity Commission inquiry into Barriers to Effective Climate Change Adaptation. My name is Wendy Craik and I'm presiding commissioner on this inquiry, and with me are Jonathan Coppel and Neil Byron.

The Productivity Commission received terms of reference for the inquiry on 20 September 2011 and the terms of reference gave us two key tasks: the first was to assess regulatory and policy barriers to effective adaptation and the second to identify high priority reforms to address barriers. We've held consultations with governments, businesses and other organisations. We received 79 submissions prior to releasing a draft report on 27 April. Since the draft report we've received another 80 submissions and they're still coming up. We're very grateful to the many organisations and individuals who have already participated in the inquiry.

Following these hearings in Melbourne - and we've also held some already in Sydney - other similar hearings will be held in Canberra and Adelaide with participants from other locations able to participate by phone or video conference. We'll then be working towards providing a final report to government in September. We'd like to conduct all hearings in a reasonably informal manner but I remind participants that a full transcript is being taken. For this reason, comments from the floor cannot be taken, but at the end of today's proceedings I'll provide an opportunity for anyone who wishes to do so to make a brief presentation.

Participants are not required to take an oath but are required under the Productivity Commission Act to be truthful in their remarks. Participants are welcome to comment on the issues raised in other submissions. The transcript will be made available to participants and will be available from the commission's web site following the hearing. Copies may also be purchased using an order form from staff here today.

Now, to comply with requirements of the Commonwealth Occupational Health and Safety legislation, you're advised that in the unlikely event of an emergency requiring the evacuation of this building, you should follow the green exit signs to the nearest stairwell which is just out the door and on your right, not very far away. Please follow the instructions of floor wardens at all times. The assembly area is William Street on the banks of the Yarra and for those who don't know, the toilets are just down the corridor that you came in on, on the left and right. If you believe you're unable to walk down the stairs, it's important that you advise the wardens who will make alternative arrangements for you. Can I also ask the audience to please turn off mobile phones or turn them to silent. If there is any media in the room, could they identify themselves to some of the staff, please.

I would now like to welcome Suncorp. So welcome, thank you. Could you say your name and position for the record, please.

MS BUTLER (S): Annabelle Butler, executive manager public policy and stakeholder management with Suncorp.

MR HONAN (S): Benjamin Honan, stakeholder management adviser for Suncorp.

DR CRAIK: Thank you. If you would like to make a brief opening statement, we'd be very happy to hear from you.

MS BUTLER (S): Thank you, Wendy. Good morning, everybody. We'd like to thank you first of all for the opportunity to participate in this inquiry. Suncorp is one of Australia's largest general insurance groups and operates several well-known insurance brands including AAMI, GIO, Shannons, Vero, Apia among others. Combined Suncorp brands of around nine million customers and we pay an average of $25 million a day in claims. Suncorp's principal interest in this inquiry is to support community adaptation to the increasing financial risks associated with extreme weather events. 2011 demonstrated on a worldwide scale just how costly natural disasters can be and just how important natural disaster risk management actually is.

The United Nations estimates over the past 20 years natural disaster affected 4.4 billion people and caused more that $US2 trillion in damage. In our back garden the Queensland floods and Cyclone Yasi caused roughly $6 billion worth of damage to the Queensland economy. Suncorp alone has processed more than 40,000 claims at a cost of just over $1 billion. While these may be headline numbers, certainly underlying costs associated with natural disasters have been increasing at a rapid rate. Economic growth, population growth, urbanisation and domestic mitigation all contributing to the increased cost of extreme weather events.

The two graphs that we've included within our response to the commission's draft report show how insured losses are increasing both worldwide and within Australia at a rapid pace. The need to adapt to this increasing financial risk is clear. Even setting aside the potential impact of climate change, increasing natural disaster costs are beginning to increase insurance premiums and place pressure on the family and small businesses' budgets. Suncorp believes natural disaster risk management must improve to offset the increasing risks associated with extreme weather, particularly the prevention stage of natural disaster risk management needs to be significantly improved to better mitigate the effects of extreme weather.

Of course improving disaster prevention will need national leadership and additional funding. Managing disaster risk is a complex matter and to ensure an effective and equitable risk that adaptation takes place, there must be national coordination. We believe the current hands-off approach where local councils are asked to manage risk with little operational, financial or expert assistance is a key

downfall in the current approach to disaster risk management. Suncorp fully supports a shared responsibility approach and are of the view the Australian government can provide the leadership needed to bring the philosophy to life.

DR CRAIK: Thanks very much and thanks for your submission, it was very helpful. Firstly, Suncorp withdrew new insurance policies covering flood from Roma and Emerald.

MS BUTLER (S): That's correct.

DR CRAIK: Is there evidence in other places that that sort of strategy by insurance companies is imminent and have other insurance companies done the same thing in Emerald and Roma or not?

MS BUTLER (S): I'll start with the industry first and then move back to us. In terms of the industry insurers decide where they're going to underwrite. So, for example, some insurers won't write in Queensland, that's quite common.

DR CRAIK: Has that been common for a while or particularly since the floods?

MS BUTLER (S): Yes, it was there prior because especially within northern Queensland the high risk which is sort of what you see with the strata availability in northern Queensland because so many people pulled out of the market because they were losing so much money in it. So that process of what we call red-lining happens frequently. New Zealand I think probably is a classic example now after the earthquakes. You've got a large number of insurers pulling out of that market because they just can't cope, their balance sheets can't cope with the continuing bashing of them from the claims side.

In terms of Suncorp itself, they're the only two areas that so far we have ever done this in. Not all brands would write there anyway, some of them wouldn't. So, for example, our Apia brand wouldn't have underwritten in some of those parts anyway. Apia by its nature has always had flood, for example, since 2002. But it wouldn't underwrite in very high risk areas for flood; that was to do with the pool and balancing that pool for other premium holders.

DR CRAIK: Okay. How do you think governments can actually go about identifying places where the benefits some kind of mitigation strategy would be worthwhile? Would that exceed the costs of that? How do you think governments should go about - you talk about national leadership but what would that actually involve, do you think?

MR HONAN (S): I think the first step would be to collate the risk data at the national level.

DR CRAIK: From insurance companies or what?

MR HONAN (S): From the local council risk maps. Most local councils already know the risk that's particular to their areas, so they might have a bushfire map or a flood map or some knowledge of cyclone risk. But that isn't taken up to the national level. So if you ask somebody at a state or a federal government level, "Which is the local council with the highest risk in your area?" most of them wouldn't know because the maps are done on different methodologies and aren't shared at a high level. so I think once you have the picture of risk, then you can start to identify where high risk areas are and that will help you determine the cost benefit.

MS BUTLER (S): Insurers also have a role to play within that I think because we price on two ways, we price - I think you're aware that we have a flood database that we've been putting together since 2002 which is where Apia started underwriting flood which is now used by the industry. But we also have our claims history so we have a good picture of what high risk areas look like within Australia and what types of risk they face. The Australian Geoscience's process that is going on at the moment is putting a lot of this information together - that's the idea of it - to then allow that information to be publicly available to whichever part of the community would like to use it.

DR CRAIK: Okay. Have many of these councils ever said to you why they don't actually fund these things? Why they don't put aside money in their own budgets as to why they don't fund flood levees? I mean presumably you've raised this issue with them.

MS BUTLER (S): The way the current partnership works at the moment is it's a two-two-one relationship where the local council puts up the one, the state government puts up the two and the feds put up the two. I think you're aware that there is a pool that sits there at about $27 and a half million a year that's available at federal level.

DR CRAIK: For all disaster?

MS BUTLER (S): For all of Australia for prevention which seems quite incongruous to how much money we spent on recovery. In terms of some of these areas I think - we gave a quote in one of our papers from the mayor in Roma that people keep telling him the money is available but no-one has actually given him anything. I think in more recent times the Queensland government has actually agreed to pay for some of the costs in terms of pulling together the reports needed to determined what to build and my understanding is the Queensland government has got some money there ready to match the council's money and then it will be a matter of the federal government doing the same thing to build the levy.

I think it's probably not actually understanding a process. It seems an awfully long process and that is probably why it hasn't been necessarily utilised as well as it could be and there are limited funds available.

MR HONAN (S): Mitigation is also a long-term investment which requires a lot of operational support to get that happening. So if you have bottom-up local council investment it's more difficult to get it happening over a long term because your focus will be on the short term, "What can I do now to make my residents' life easier."

DR CRAIK: I guess that's right. Do councils face any constraints on this issue like the information or liability issues? Is that part of an issue holding them back? I mean, financial is an obvious one but is there also - because they don't have sufficient information or they're worried about the liability or - - -

MS BUTLER (S): I don't have any evidence specifically that council is worried about liability as such but I would imagine and anecdotally we have been told over the years - because we were the ones who were collecting the flood maps originally - that they were reluctant to release them because of that issue to us. It wasn't always to get them and to build a picture for the flood database. I think we said in our response that in terms of liability it can't be retrospective, it's got to be forward looking because the last thing we want is a whole load of bankrupt councils on our books as well.

Also in fairness risk changes. The classic example that is given is Mackay where they built a railway cutting which ended up creating a flood bowl, if you like, which wasn't there previously. So as infrastructure changes and geography changes the land for whatever reason, therefore, the risk then will change as well.

DR CRAIK: Have you got any thoughts about how that can be kept up to date? Whose responsibility is it to keep it up to date, do you think? Is it local council's responsibility to keep that risk assessment up to date in their area?

MS BUTLER (S): Yes, it would be local council but it needs a coordination process probably and they need an actual process that they can follow. One of the things we advocate very much in our paper is for a national approach.

DR CRAIK: Why is it better than a state approach? It adds another level of government into the process and inevitably it makes it longer.

MS BUTLER (S): One of the problems we face at the moment is there is a lack of consistency of application. So whether it's the methodology, you know, they use a flood map or bushfire map or what have you it's a bit all over the place. It's one of the things that we said to Australian Geoscience is that we have to have a criteria

that's national that we can all use. We can't just have a haphazard "we do it this way so therefore we're going to do it this way" approach because it's a meaningless thing. In the end you're not comparing apples with apples and if one council takes a very conservative approach and another council doesn't, then you actually affect the residents that live there as well because the value of their properties could increase or decrease depending on the council approach which will be unequitable.

DR CRAIK: Yes. In the Australian government's hazard risk information portal and Geoscience Australia - and they have started collating the flood data but as we understand it it's only related to flood at this stage and one of our recommendations was that it be expanded to cover all natural hazards over time and be upgraded to take account of climate change and those impacts and changes in risk. Is that your view too or what would Suncorp's view of that be?

MS BUTLER (S): Absolutely, yes. Our view is that the risks to property from a climate change or general climate approach needs to be disclosed and it should be assessed thoroughly. I always think of Bairnsdale in Victoria as a classic area. It is subject to both bushfires and floods, not necessarily at the same time but certainly within the same year it's quite common for that area to have both issues and so for a resident living in that area or moving into that area, whether it's small business or residential, to have that knowledge and information it would allow them to understand, "I really need to consider buying a property that is on the hill," or, you know, "There is a reason why this house is built this way," et cetera so we very much see it as all natural hazards should be going into that portal eventually.

DR CRAIK: How do you think such a database should take account of future climate risks? How should they be incorporated into a process? Some kind of national - - -

MS BUTLER (S): That is quite difficult obviously because it's not an exact science.

DR CRAIK: No, it's not an easy question. But given you are the people who are often the frontline of this issue - - -

MS BUTLER (S): But my understanding is that there are models available. We do have models available within the community about what we think that could look like. That could probably be made available on that portal as well. Long-term investment will eventually be affected by that type of information; not that we do it at the moment so much but eventually it's thought that banking, for example, we will be taking that kind of risk into consideration.

DR CRAIK: Is banking taking it into consideration at the moment?

MS BUTLER (S): Not that I'm aware of yet, but it's starting to certainly become a focus because the loans are 25 to 30 years, so one of the questions is, "Well, will the property still be there in 25 to 30 years?"

MR HONAN (S): The other point I would raise is once you have all the risk information in a central place it will become the point of attention, so then you'll have government agencies and experts approaching the person in charge of that portal to say, "I think we can do this aspect better. Can we work together?" If you have at the moment a hundred local councils all doing a different map, it's very hard to point out how it could be improved, because if you have some sort of centralised area where you know Geoscience Australia looks after risk information, it's very easy as an expert to go to Geoscience and say, "I would like to help make this better."

DR CRAIK: Okay. In terms of communities facing high risk - or facing risks - we've seen instances and we heard instances, last week, for example, in Gosford council assumed vulnerability warnings because of sea level rise to something like 8000 properties, we understand, and then because in their view I think the state government didn't give them appropriate advice about what they ought to do next, and I guess the responses from the citizens, they have now withdrawn those advices. Do insurance companies have a view about how this whole issue of warning communities, advising communities of the risks they face should occur, what sort of process it should be, and how those risks should be advised to citizens?

MS BUTLER (S): As many times as possible is actually our view. As we said in our paper we really do think this process is actually a shared responsibility approach, and part of that is the individual as well as the councils, state government and federal government. As we said in our response there are various mechanisms already in place where consumers receive information, so whether it's on the section 32 or equivalent in other states when you purchase property, it should be on there. It can be on your rate notices. All property owners receive those quarterly. From a renter's perspective it can be mandatory to be on a rental agreement, so the renter understands the risk that they're facing and what type of insurance they should take. That's deemed as a mitigation strategy by them. Other mechanisms can be utility bills. People receive those on a frequent basis.

DR CRAIK: Someone suggested the notion of - there's stickers for hazardous chemicals around places and you might have - you probably want it on your front door but, you know - - -

MS BUTLER (S): I could imagine that wouldn't go down well. It's an interesting concept. I mean, obviously one of the things about services continually losing face is that people don't really understand or don't take the time to understand what they're doing or what their product is doing, and that was evidenced in Queensland. It's been an issue in the industry for years and years since the FSR really. So I mean

Jeremy Cooper from ASIC did some work in terms of risk management around investment strategies in having like a set of traffic lights.

DR CRAIK: Who did this work?

MS BUTLER (S): ASIC. Jeremy Cooper did it, actually, or his heir did it. There's obviously also the food warning system they have in Europe. Even my child has that at school - orange and red for different food types in canteens. I mean, if you want to speak, yes, I guess, very clear and very visual if you look at doing something like that.

MR COPPEL: What about on insurance premiums, when you issue an insurance premium or an insurance bill and you relay information through that process? You mentioned rates, notices, you've mentioned utility bills.

MS BUTLER (S): The insurance premium itself is actually an indicator of risk. We have approached it two ways within our organisation. We've got the majority of the organisation automatically underwriting flood; AAMI has an opt-out process. So when the risk level hits a certain demand the consumer is given the choice whether to opt in or opt out of that flood cover. That was done purely because of the affordability issue with flood cover in high-risk areas to allow the consumer to continue remain insured. It's not for that particular event.

DR CRAIK: Do many opt out?

MS BUTLER (S): About 50 per cent - - -

MR HONAN (S): Of the customers offered the opt-out, which is just the high-risk customers, about half have chosen to keep it in and half have chosen to go without, obviously based on the decision to self-insure. With regard to communicating risk information, insurance premiums reflect the entire risk for the property so it's a multi-peril risk. So if we then were to only point out one of those risks - bushfire, for example - can give the misinformation that your burglary risk is lower than otherwise because my premium has gone up $500 and it says there's bushfire, so I'll just focus on bushfire and ignore the burglary risk. So in effect it's definitely trying to operationalise looking at your own risk and taking control of what risks you know are in your area so that you can build on that over time.

DR CRAIK: One of the issues that the COAG Select Council on Climate Change is going to examine responses is for when it's not appropriate to rebuild settlements after some kind of a disaster. Do you have any thoughts about that or any thoughts of the New Zealand experience after the earthquake where some places were identified as not appropriate - - -

MS BUTLER (S): Rebuilding parts of Christchurch.

DR CRAIK: Yes, that's right. I guess there's the Grantham example here in Australia where people were given the option, as I understand it, a land swap.

MS BUTLER (S): A land swap, yes. In terms of the concept we support it. Obviously we do not support building buildings in high-risk areas. We do in reality understand how incredibly difficult it is to do that. I mean, they did exactly the same thing down here after the bushfires in Victoria. I understand they had a very, very low uptake rate. People live there for a reason. It's very easy to say, "Go away," but people don't necessarily want to. I think Grantham - because it was the same place, maybe it's slightly different from what they experienced down here. In New Zealand, I don't think the government has been left with any choice. They have got some very serious problems facing them. I gather there were four tremors over the weekend. It's just continual.

MR HONAN (S): I think the key is to have some idea of what that decision looks like before you hit that. Our key complaint out of New Zealand from our customers has been that we don't know who's making these decisions or why they're making these decisions, and we're not really sure what the scheme looks like. If you have at least some idea at a government level and an industry level what that process of making that decision not to rebuild looks like - - -

DR CRAIK: Did they have that process in place before the Christchurch earthquakes happened or not?

MR HONAN (S): It was put together after.

MS BUTLER (S): Okay. I don't think they foresaw what would happen.

DR CRAIK: Yes. I suppose even though the government and industry might understand it, it's doubtful that citizens will take that on board any more than they take on board a whole lot of other - - -

MS BUTLER (S): As I said, I think the bushfire example here showed the same thing. I don't know the answer; whether people ignored the risk or whether they chose to adapt to that risk, but people don't necessarily make choices you would think are the most obvious.

DR CRAIK: An example the Insurance Council of Australia showed us the other day in their submission was that - no, it was IAG, I think. They commissioned a survey. The actual rate of insurance hadn't changed between 2002 and 2010, I think it was, by households and small businesses, so roughly the same percentage of households and small businesses were still taking up building insurance which was a

bit surprising, I thought, given the increased risk. Were you surprised about that, given what you hear about the impacts of non-insurance?

MS BUTLER (S): To be honest with you, not really, no. There was a big contrast actually in our experience between Queensland and Victoria. Victorian non-insurance was a really big issue.

DR CRAIK: Is that right?

MS BUTLER (S): And under-insurance. If you look back at the commission's report, it talks about that quite a bit, whereas in Queensland that wasn't such a big problem. I remember us talking about it at the time and we thought maybe it was because Queensland is so used to experiencing natural disasters that for the Queensland residents it seems a natural product to hold, whereas maybe in Victoria we're a little bit less enthusiastic because we don't have necessarily the same issues on a year-by-year basis, at the moment anyway. So I'm not particularly surprised to hear that it hasn't affected it.

There is a cut-off point with affordability. We've worked with the Brotherhood of St Laurence over the years, pulling together information regarding low income earners and accessibility to insurance and there seems to be some rumours or myths within the community about insurance which aren't actually necessarily true.

DR CRAIK: Like what?

MS BUTLER (S): "I can't afford it." The reality is that - I mean, certainly our AAMI brand offers a policy for renters that's $150 a year; you can pay it over 12 months.

MR HONAN (S): Plus tax.

MS BUTLER (S): Plus tax, yes; mustn't forget the tax. So it's a very small cost and it gives you basic $25,000 worth of insurance for contents, but no perils attached to it - there's no perils in that policy. There is certainly a misunderstanding in certain parts of the community about it.

DR CRAIK: So how do you overcome that?

MS BUTLER (S): We've been working for a long time with Brotherhood of St Laurence to try and push the message into the community areas. One of the problems that they face and we face is around financial advice and where the cut-off points actually are. So although ASIC has given relief to community advisers to a certain degree in regards to giving advice, there is still very much a nervousness within that sector about overstepping that invisible line and suddenly you're in

financial advice land and there's a whole myriad of requirements that legally sit upon you if that's the case. So that sort of education process can be stifled just by the regulatory environment it has to operate within.

DR CRAIK: So do you think the regulatory environment is a barrier to advice to the understanding of insurance products and insurance availability and things?

MS BUTLER (S): Absolutely.

MR HONAN (S): I spent quite some years selling insurance over the phone and it was always very difficult to - at what point can you have a genuine conversation with the customer about their circumstances. The advice regulations restrict you from taking into account their personal circumstances; you can only present the options available and say, "All right, the decision is now up to you." If you have, for example, a 22-year-old renter that calls up to insure their car, how do you then say, "I notice that you live in the middle of the city in a very high-risk theft area. Do you want to insure your contents for $150?" I can't really have that conversation because the very fact that I know he lives in a high theft-risk area is personal advice.

MS BUTLER (S): You're applying their personal circumstances to the information you're giving. It's been a problem since the introduction of FSR in 2001. Principally the advice definition under the Corporations Act is incredibly broad and because it captured all of the financial services sector, not just the investment industry, we all end up being caught. For general insurers it was a very, very difficult decision to make. I was involved in part of that process at the time. The sheer cost and complexity of introducing an advice model into essentially large brands where volume is very high in transactions - for example, AAMI, it was just cost prohibitive. We couldn't do it.

Suncorp itself does actually have two brands that give financial advice to retail consumers, and that's Shannons and Apia. That was done primarily because of the types of customers they have - Shannons because it tends to be customers who have a large amount of assets - and our model is very different there. Our assessors will go out to the property and look at the 25 cars they've got and offer advice about garages and whatever.

DR CRAIK: So it's the high end of the market.

MS BUTLER (S): Yes; the enthusiast people. Apia, because of the type of person they have - often it will be a woman whose partner has died and they have never really had to deal with financial issues before. So they rely on that brand to give them help and guide them through what they need to do. So that's why the models were kept there.

MR HONAN (S): The benefits of that definitely flow through because you see the customer satisfaction rates are a lot higher because they actually have insurance that meets their needs. It's very difficult to get somebody who's not familiar with insurance into the right space to get a policy that is the exact right policy for hem. We do the best we can but it's very hard if you can't give somebody advice based on their personal circumstances.

DR CRAIK: So what would be necessary to make it work better?

MS BUTLER (S): Carve general insurance out of it.

DR CRAIK: Just carve out the general insurance from the FSR.

MS BUTLER (S): The banks have had the same issue as we've had in terms of a large number of people in banking just offer low-level financial advice. It could be as simple as, "Well, I notice you've got $25,000 sitting in your current account. Maybe you should think about putting that into a long-term deposit." They too are stifled. The government has recognised this in part with FOFA.

DR CRAIK: What's FOFA?

MS BUTLER (S): Future of Financial Advice; it was the recent regulation that went through on 1 July. So the banks and the ADIs and insurers have a slightly lower bar test, if you like, or process that they have to follow than other types of financial services, but it's still cost prohibitive for us.

MR HONAN (S): I guess the key is general insurance - if you provide advice it's quite low risk because all of the conversations are recorded and there's a clear policy record of what's happened, so if anything does go wrong, which is unlikely, you can go back and unpack what happened, and that's what our IDR team is for. So we don't necessarily understand why there's such heavy restrictions on general insurance when there's no evidence that there's any detriment ever come of somebody getting advice on general insurance.

MS BUTLER (S): If you look at FOS's statistics, it's not there.

DR CRAIK: Is there statistics available on that?

MS BUTLER (S): Yes. FOS, who's the ombudsman for financial services, produces an annual report every year and they break down the statistics in that, or you can just directly approach them and they will be able to do that for you.

DR BYRON: I was struck by the comment in the submission about Suncorp considers any delay in amending the National Construction Code is a significant

barrier to climate change adaptation. I'm just wondering if you could elaborate on that briefly.

MR HONAN (S): A good example is the application of the Australian Standard 3959 on bushfire risk management. It was found in the Canberra bushfires that that standard wasn't applied as broadly or as well as you might like; it was also found in the 2009 Victorian Bushfires Royal Commission and in the 2011 Perth Hills Bushfire. So you have a decade there where a government inquiry has identified that the standard isn't being applied to new buildings to the standard that it should be and it's been found in three separate states. So we felt that perhaps there was something missing there. If it's a problem in Canberra, one would assume that that would be identified nationally as also a problem in Queensland and Perth and Victoria. So we felt that there was obviously some delay in updating the construction code to reflect the lessons that we learned from previous disasters.

We felt that that was a very big barrier because if you have that exact example happen again, another five years, another ten years goes down the track, you've got another 10,000 houses at risk. It's very difficult to apply the construction code on existing properties, so it's important that the construction code is the highest bar you have available. It's very important to have that bar set very high all of the time and frequently updated. I think in the commission's draft report they identified that the Building Ministers' Forum hasn't responded to some advice in 2009; again, three years have gone by, another 10,000, 20,000 houses have been built. That's our key concern.

DR CRAIK: So we'll call a halt there. Thanks very much for your submissions and coming along today and for your advice. We do appreciate that.

MS BUTLER (S): If you have any other questions you know where we are. Please don't hesitate to contact us.

DR CRAIK: Thanks very much.

DR CRAIK: Next off we have the Yarra Ranges Council; David Harper. If you could state your name and position for the record, and if you'd like to make a brief opening statement, we'll go from there. Thank you.

MR HARPER (YRC): Thank you. David Harper; I'm the environment manager at the Yarra Ranges Council. This is Zoe Stephens. Zoe Stephens is also with the Yarra Ranges Council and has been instrumental in some of the work that we would just like to have a discussion with you about today. If it's okay, can we table a couple of reports with you?

DR CRAIK: That would be great, thank you.

MR HARPER (YRC): We will talk about this report in a few moments with you. We are just providing you with a map of our shire. I'll just map out briefly who we are. In relation to Victoria and Melbourne, this is a map of our shire which sits on the east side of Melbourne, I guess on the left side of the map. It's bound by the Dandenong Ranges. It goes up into the upper reaches and the middle reaches of the Yarra Rive and, of course, you have a significant part of Melbourne's water catchment which are indicated by some of the key dams that are there. So we are home to over 150,000 residents in Melbourne and we cover an area of almost 2500 square kilometres. We're the seventh-largest local government in Melbourne in terms of population size and the largest in geographical area, that's in the Melbourne metropolitan area.

We have pockets of our community who are vulnerable because of their socioeconomic and geographic isolation and, of course, they're subject to both flooding and bushfire risks and bushfire risks were obviously a significant impact on our communities in 09. We have the largest green wedge area in metropolitan Melbourne providing a diverse mix and range of land uses from rural residential areas to intensively farmed areas. Our agriculture sector is the second-highest producing region in Victoria in terms of value of agricultural output and is critical for Melbourne's food supply.

We are highly car dependent due to a lack of public transport infrastructure. We have high conservation biodiversity areas providing important habitat and ecosystems for threatened flora and fauna. We've got industries like agriculture and tourism which includes wineries, retreats, bed and breakfast, so lots of small industries. Also there's a lack of drainage infrastructure and a high percentage of unsealed roads across the municipality which causes problems with stormwater and key events like that which impact on the quality of creeks and streams.

So why are we interested? We have really come here today to provide a perspective from a local government area. We can talk quite broadly on the sorts of issues that we face and we're happy to talk about it through discussion. We have just

developed a climate change adaptation plan which is what we have just tabled with you. Zoe is going to talk a little bit more about some of the key aspects of that and how we're addressing that. It's a little bit different though because we have addressed it by dealing with three interrelated issues which includes not just adaptation but mitigation and also peak oil which is of importance to our council.

We have done this because of a recognition of our exposure but it is both negative and positive, we do recognise that, and it's about positioning ourselves to both adapt and be resilient but also look at what the opportunities are for the future. We pursued the three topics at once because we believe that we can do certain actions in our municipality which address multiple outcomes, be they adaptation, mitigation or peak oil. We are interested in this inquiry because we feel that we can assist in the identification and removal of some of the barriers to effective climate change adaptation and we're rigorously trying to address those as a local government area but recognise that we can't do it on our own. I will ask Zoe to make three key points that were provided to you in our submission.

DR CRAIK: Thank you.

MS STEPHENS (YRC): So we did raise a number of issues in our submission but today we will just summarise those and three keys points that we would like to highlight. These points come from our experience in the development of an adaptation plan and the involvement of actually pooling that together through quite an extensive engagement exercise throughout our council. So the first point is really highlighting the importance of creating and providing the knowledge needed. We were in a lucky position because we were able to dedicate a full-time resource to actually doing the research required to set us in a good position to develop a plan that was fit for purpose for our organisation and this resource enabled us to access the raft of information out there in terms of adaptation research which really was a critical agreement to providing the capacity of our staff to actually get started in the adaptation planning space.

The point that we would like to make in this regard, and first of all probably define the importance of that research was one around access to regional climate projections. We collaborated with the CSIRO through their Climate Futures Program to access regional data on eastern Melbourne, so there is that aspect to it. But more importantly, the access research communities such as the National Climate Change Adaptation Research Facility and the Victorian Climate Change Adaptation Research Organisation as well in regard to the different types of methodologies out there to construct a policy response to adaptation. This was important in terms of framing our response but also very, very important in just having the conversations with staff to sort of start setting a course of action.

The importance of the federal government in this aspect is their role in

designing policy settings that actually encourage collaboration between the research community and the practitioner or the policy community and organisations that are on the boundary of this - so those who are on the boundary of science policy and practice and some organisations that I mentioned before are good examples - and the policy settings that would be useful in place are things like setting up funding arrangements which actually encourage more collaboration between local governments and those research organisations because - and this is more a personal point of view - there is a bit of an institutional barrier between those spheres and if we can learn to work together more effectively, there is a lot of value out of that knowledge sharing, particularly for local councils that don't have the resources that we were lucky enough to have in that regard to access that information.

The second point that we would like to capture is around the importance of getting the right institutional structures in place to support adaptation planning. But that's the first step. The second step is the challenge of delivering on that. So in our experience - and this is both personally and also conversations I have had with colleagues working in this space across the local government sector - there is a real gap in the lack of social and behavioural change research out there, particularly in institutional settings and obviously the interest that we have is in local government and particularly how the behavioural barriers of people's mind-set and attitude affect the delivery of adaptation in the workplace, particularly when organisations have been operating in a certain way for, you know, 10, 15 years and you're asking for change.

So there is probably a space there around better understanding what social structures support embedding climate change adaptation into business planning, for example. The third point that we wanted to also make was around, I guess, the broader governance framework that would ideally be - some points around some of those barriers that could be removed to help facilitate local governments deliver on adaptation. These include things like reforms that are more logically placed at the federal or state government level and things like the reforms in the Victorian planning scheme but also in the building codes and building regulations.

Also there is a space to actually start a discussion around what type of funding programs - literally in terms of money but also access to technical expertise to actually help local governments undergo quite significant and costly decision-making processes in regard to certain adaptation actions that they may be pursuing and what programs there are out there that might be suitable to support them in that process. An example might be what was the existing National Disaster Mitigation Fund which is now rolled into the National Partnership On Disaster Resilience, rehashing that and looking at that as a funding or a technical support sort of program in which local governments could secure funding to implement some projects and get some projects up and running. So that's it in terms of key points and we're open to answer any questions you may have in relation to what we have just raised.

DR CRAIK: Thank you. Over to John.

MR COPPEL: Thank you very much and thank you for your submission. You have given us a copy of this plan. It identifies a number of risks facing the Yarra City Council and you have also mentioned that there are a number of actions that you could take to address those risks. Could you elaborate a little bit more on what those actions are and what are the specific risks that the Yarra Council faces in relation to climate change.

MS STEPHENS (YRC): We took a risk management approach and there were pros and cons in doing so. The types of risks that we end up prioritising as an organisation were focused around the cost side of electricity and fuel use, so that was on the mitigation side. But some of the risks in terms of the adaptation side was the fact that we are a community that is highly vulnerable to events such as fire and flood, more so bushfire risk given that there are a lots of settlements through historical decisions that have been made that are actually in bushfire-prone zones and we actually have settlements that are now also on flood plains. So we have a community that's highly vulnerable to impacts of disasters in relation to obviously natural hazards. But that is further exacerbated by other issues that are going on such as high electricity prices, high fuel prices and the act that these households in these localities don't have very good access to public transport, so there are mobility issues.

So we were sort of looking at the risks, not so much about just climate adaptation but looking at all those other risks that actually exacerbate our community's vulnerability. So it was a complex task in terms of the amount or the broader view that we had but that's the frame in which we were looking at. So we wanted to be able to develop responses that looked at the risks within that lens, so a lot of the focus that we had is looking at those impacts on our municipality and trying to construct a scenario saying, "Well, if that's the type of future that's presented to us, what are going to be the demands on council in terms of the types of services that we need to provide to our community and therefore to be proactive in trying to change the way we deliver our services to meet community needs."

So a lot of the strategies that we ended up identifying were articulated around those and that is on page 8. We came up with seven strategies that were framed around that thinking which stretches from prioritising, going through to a process of actually defining what council's role is in meeting community needs through to prioritising our assets and services with a view to increasing energy efficiency and adaptability to a changing climate, building local resilience in terms of building our community's resilience to changing climate but also energy futures and most importantly what council's role is in mitigating risk both in terms of risk in service disruption to our community should we, as a council, also have to go into activation

mode for a municipal emergency response and then the impact that has on the delivery of other essential services. But also mitigating risk in terms of what council's role is in the education space with community, also what council's role is and the capacity it has in terms of the regulatory side around levering tools such as planning schemes and building codes and things like that.

There is little influence that we have there because a lot of that policy is the state and federal government but it is certainly space we can play in if improvements are made.

MR COPPEL: You did mention that there was a need that there was a need for reforms at the state level for planning and building regulations. Can you elaborate on exactly what is the problem in terms of your ability to respond to climate change because or these planning and building regulations.

MS STEPHENS (YRC): Yes. I probably should also put a disclaimer at the start of this that I am not a planner so I want to ensure that my knowledge is ascertained from conversations I've had with colleagues in the planning department but also in my research around the barriers of climate change at a local government level. So in particular I think for local government, in the Victorian Planning and Environment Act there is no specific provision per se around climate change. There are provisions around the impact the environment has on settlements and what the settlement and development has on the impact of the - what impacts they have on the environment.

But in regard to climate change and reference to climate change and the impacts of things such as food security, heatwave, cyclones, floods, fires without those objectives clearly articulated in legislation, it becomes incredibly difficult for local governments in Victoria to actually administer planning schemes in a way that allows them the flexibility they need to actually address some of the issues or the climate risks in their communities. So take Yarra Ranges, for example, we have a lot of equity issues around climate risk and there is a diversity of risks.

So in the Yarra Ranges pockets of our community are vulnerable to different degrees and in different ways. So, for example, we've got communities that live in high bushfire zones, we've also got highly valued agricultural areas too where there is going to be significant food security issues but more so for Melbourne as a whole because it's one of Victoria's food bowls for horticultural supply. So there are all those issues as well and you can see the difference between the two and also we have highly urban areas. So I guess there is a lack of flexibility in being able to administer land use decisions that cater for that diversity due to the lack of referencing schemes.

MR HARPER (YRC): Can I just add there, things are coming through in waves. So things like the bushfire management overlay which is still being worked out with council, obviously that is a planning mechanism and will have some things that will

fortify communities against building unsafe properties into the future or in fact building them in locations where their risk is high, also sustainability. The desire obviously to get more sustainability design built into the planning scheme is something that we will always keep championing. It is always that test between planning becoming such a high bar with so much regulation so there is a bit of resistance on that front. Then, of course, it is also perhaps seen that perhaps putting in a whole lot of sustainability requirements on applicants potentially adds costs to them building dwellings and the like. There is still a bit to be sorted out on that front.

MS STEPHENS (YRC): There is also an issue too in regard to the building codes as well. So I understand there is a bit of work going on at the federal level around the Australian Building Code in regard to trying to look at how to build climate change adaptation requirements into the design of buildings but currently there is provisions around obviously meeting sustainability requirements and safety requirements. But in terms of a building meeting durability or survivability requirements in terms of the lifespan of that building and the life of that building and the types of climate events that it might be exposed to over that life.

So if there is more clearer regulations around that in terms of the design of a building and certainly the whole existing building space is also an issue as well but looking at how we can apply those types of codes to help advance that type of planning too to ensure that we build buildings that are better able to withstand extreme weather events is particular important for local government in their role as asset managers as well.

MR COPPEL: So that would include an explicit objective of durability in the building code?

MS STEPHENS (YRC): Yes, absolutely and to help understand if you're actually looking at developing an asset in a particular location that would be susceptible to natural hazards, if it was in a bushfire risk area or a flood-risk area that mitigation measures went into that design to ensure that it was fire resistant, for example or better able to cope with inundation events.

MR COPPEL: Yes. You mentioned that there was extensive consultation with the community in the development of this plan. Could you tell us what the reaction of the community was to the plan.

MR HARPER (YRC): Actually I'll just correct that. The extensive consultation was actually through council, as in the offices of council and with councillors. When we were setting out to do this task, it was on a council directive - the councillors wanted us to do something around a climate change response. When you come and scope something like this you need to think, "Okay, what's the conversation we're

having with the community?" and our focus was, "Let's just look at our own business internally first of all. Let's look at the community through the lens of what services we deliver to the community and let's also get our own house in order and actually lead by example." So the plan is somewhat internally focused, and now that we've got the organisation wedded to a whole lot of strategic directions for the future, it's now about what's the conversation we go out and have with the community, so how do we extend that reach.

Of course, perhaps like everywhere across Australia at the moment we've got communities divided on this whole topic - some who don't want to engage on it at all, and some who want to engage quite vehemently on it. It's a tricky business being at the coalface. I guess that's probably why we're here as local government to say that it's often us that needs to crack that nut as to how do you have effective conversations around the community adaptation.

MR COPPEL: We have measures like constraints on development consents being used as an instrument by the council and if you have used these sorts of provisions, what has been the reaction to those and how have you responded to that?

MR HARPER (YRC): I'm not sure we can answer that question.

MS STEPHENS (YRC): Not that we're aware of but it's something that we could ask our planning department and get back to you on in relation to that.

MR HARPER (YRC): I mean, fire would be the closest, putting constraints on places because of their fire risk would be the closest that we'd come; certainly about where places can build or what advice we would provide. As I say, the bush management overlay would be something that will provide a lot more guidance around that.

MS STEPHENS (YRC): There's a whole lot of work happening in the planning area and our emergency management department around the implementation of the bushfire royal commission recommendation. I was in a meeting the other day with the emergency management team and one of the biggest challenges that we're trying to grapple with at the moment is considering relocation of people in the Dandenongs. That's just a consideration on the table at the moment and it's politically unfeasible at the moment to have those discussions, but they're the types of development constraints that we have. We're dealing with a legacy issues - historical decisions that were made in the past that we have to deal with in the future.

The Dandenongs, as you know, is one of Melbourne's biggest tourist attractions and it's a place of money-making, so it's an incredibly sensitive decision to be making from a government point of view in terms of the political ramifications of that. There are huge challenges ahead for the Yarra Ranges in that regard, yes.

DR CRAIK: Thank you. I think we'll have to wind up now, we're running short of time, but thank you very much for your submission and what you have given us today, and thank you for your comments and input.

MR HARPER (YRC): Thanks for the opportunity.

DR CRAIK: But if you can get back to us with any of that information you promised us, that would be useful.

MS STEPHENS (YRC): Yes, sure, not a problem.

DR CRAIK: Thanks a lot.

DR CRAIK: Our next appearance is from Fiona Armstrong from the Climate and Health Alliance. Thanks, Fiona, if you could state your name and position, and if you'd like to make a brief opening statement we'd be happy to hear from you. Thanks for your submission.

MS ARMSTRONG (CHA): Thank you. I'm Fiona Armstrong, I'm the convener and the president of the Climate and Health Alliance. The Climate and Health Alliance is a coalition of health care stakeholders who have a common agenda around advocacy for policy to protect health from climate change. Our members are organisational members and individual members, and include the Australian Hospitals and Health Care Association, the Public Health Association of Australia, the Royal Australasian College of Physicians, the Australian Nursing Federation, the Association of Social Workers and so on.

We have responded to the draft report on climate change adaptation out of concern that the issue of health protection through effective adaptation has been overlooked in Australia's adaptation responses and in the commission's report. I'd like to draw the commission's attention to the reference that we made in our submission. The international medical journal, The Lancet, in 2009 identified climate change as the biggest threat to global health of the 21st century. However, this risk we don't feel is being adequately acknowledged in Australian policymaking in terms of responding to climate change.

There are serious risks posed to health from climate change, from increasing frequency and severity of extreme weather events, such as heatwaves, fires, flood, storms, and the injuries, deaths and trauma that arise from that require careful planning to minimise harm. Rising temperatures leads to increased harmful air pollution and aeroallergens, as well as an increased risk of food-borne disease. The changing climate affects food and water security. There are increased risks from vector-borne diseases, and psychological impacts of a changing environment, ranging from the loss of the familiar, natural environment to anxiety about our failure to adequately respond to the bereavement, injury and displacement associated with extreme events are all important health issues.

We know that health services are being placed under increasing pressure during extreme events and that there are risks to supply chains of pharmaceutical and medical supplies in those events. Health professionals and emergency professionals themselves may be personally impacted and limiting their ability to respond. I draw your attention to some of the health impacts that we have already seen from climate change with a .8 degree global average temperature rise. We are seeing wide variations in regional temperature during extreme events with a temperature spike of eight degrees above normal, leading to 56,000 deaths in Russia in the summer of 2010.

In 2009, Victoria experienced temperature increases of 12 to 15 degrees above the average. That single heatwave saw a 62 per cent increase in mortality, both from direct heat-related illnesses and exacerbations of chronic medical conditions. The Victorian Department of Human Services reported that during this five-day event, ambulances had a 46 per cent increase in demand, emergency departments experienced an eightfold increase in heat-related presentations. There was a 2.8-fold increase in cardiac arrests and a threefold increase in patients dead on arrival. In those circumstances our health services did manage to cope but anecdotal evidence suggests that it wouldn't take much more for them not to.

Monitoring these risks and preparing for them, as in tracking the health consequences of climate change in assessing the adaptive processes in place we believe is an important priority. The clear accountability for that responsibility is vital, so that the reporting of such monitoring is clear and we understand what adaptation strategies are in place and how effective they are. The fact that there is no submission from any health service agencies to this inquiry reflects the lack of understanding within the health sector and health departments more broadly about the risks posed to health from climate change, and the importance of protecting health through effective adaptive responses.

We acknowledge and commend the submissions from the National Centre for Epidemiology and Population Health, and the Australian Psychological Society, but note there's a lack of broader engagement from other professions and health departments and health service providers. There are some excellent examples of health services demonstrating leadership and helping communities adapt to climate change, such as the Southern Grampians and Glenelg Primary Care Partnership and Women's Health in the north here in Victoria, but too often these initiatives depend upon the passion and commitment of individuals, and much more work is needed to institutionalise responsiveness to climate change across the whole health sector.

We'd like to make the point that this responsiveness requires an understanding of the issue. Despite the serious risks to health and health services from climate change, the understanding of those risks amongst health professionals is limited. One of the key strategies for protecting health from climate change must be to enhance the awareness of climate change and the health risks amongst health and medical practitioners. This requires leadership from government in developing policies and programs to address it.

Despite climate change being the biggest threat there is to public health we face this century, there is no-one in the federal Department of Health clearly responsible for developing policy to protect health from climate change. There is no-one in the federal Department of Climate Change who has a clear mandate for policy development and that acknowledges and reflects the risk to health. So whilst

there's been an energetic public discussion about climate policy for the last several years, there's been little acknowledgment of the health risks and the imperative to protect health through climate policy. The Climate Commission has produced a report on climate change and health, but we suspect that its messages are yet to reach the majority of health professionals.

We'd like to raise the issue of community engagement and how important that is in developing effective adaptation responses. Communities can only effectively adapt to climate change if they understand the risks. One of the reports that we provided as an additional paper to our submission was the Community Engagement and Climate Change: Benefits, Challenges and Strategies, produced by the McCaughey Centre in the School of Population Health at the University of Melbourne. This report states:

> The development of effective adaptation responses to climate change requires assisting citizens and communities to develop an informed understanding of climate change and key success factors in community engagement require government's policy frameworks to support and promote community engagement.

So while there's been some effective engagement among local governments, deliberate and sustained community engagement by state and federal governments has been missing until the recent establishment of the Climate Commission, but much more needs to be done.

We don't know how much health professionals in Australia really understand about climate change. There's been some limited evaluations of health literacy, of climate literacy among health professionals internationally, and those evaluations reveal that public health bureaucrats and public health nurses, who were studied by the Centre for Climate Change Communication in the US are ill-prepared to respond to climate change and have not yet made climate change adaptation a priority. One study of public health department directors in the US suggest that climate change adaptation are not currently major activities at most health departments and that all will require assistance in making a transition in doing so.

We believe that improving climate literacy among health professionals is a key adaptive strategy that's so far been overlooked in Australian policy responses and that this requires the engagement of the existing, as well as the future workforce. So continuing professional development programs about climate change in health are needed for the current health care workforce, but education of the future health workforce must also been made a priority. For that curricula, for all health disciplines on the health impacts of climate change is needed so that all health care professionals are trained from undergraduate to postgraduate level on how to respond to the risks of climate change to health both at population community and individual

levels. Given the role and the status of health professionals in society, we believe that a better understanding among health professionals about climate change in health will contribute to better community understanding.

Health care infrastructure also faces risks from climate change but not enough is known about that. We believe that there are many opportunities for the health sector to respond effectively to climate change but the health sector needs to be supported to implement adaptation strategies to improve its resilience to climate change impacts, improve its capacity to deliver services and to provide an example of leadership in beginning to demonstrate the economic and health benefits of low carbon operations. So health care providers need to be supported to reduce the environmental footprint of the sector in ways that will protect them from future shocks in terms of energy prices, water shortages and resource shortages and that those adaptation measures to create a sustainable and resilient health care sector will provide ongoing benefits to the community.

I'd just like to wrap up my statement by referring to our recommendations that were in our earlier submission in the development of a national plan for health in responding to climate change around both adaptation and mitigation; the need for a national community engagement campaign to build understanding about the risk from climate change; the development and implementation of programs to increase awareness among health professionals; to assist in developing better adaptive responses; an increase in the funding available for climate and health research, including regional health impact assessments, and a specific emphasis on understanding the health benefits of effective adaptation and mitigation.

We need increased investment in research and climate change communication, improvements in disease surveillance, health risk monitoring, early warning systems, emergency response and disaster preparedness. Community resilience can be improved through greater investment in health promotion and disease prevention, given that climate change is a risk multiplier and that the risks to health are largely exacerbations of existing disease. We need to understand better the effective projected health care demand for climate change, the physical impacts on health care infrastructure and what the projected associated costs will be, and increasing health sector resilience, as we said, through initiatives to green the sector will assist.

DR CRAIK: Thank you very much for your submissions and thanks very much for that introduction.

DR BYRON: I was struck by the very long list of things in your submission under Ensuring Adequate Health Risk Surveillance and Response. There's a very long and interesting list of things that need to be improved urgently. I was wondering if you would be brave enough to attempt to prioritise on that list - or are they all very high priority and urgent - and particularly following on from that the observation about

comprehensive evaluation of health sector risk from climate change is needed to identify existing weaknesses et cetera.

In terms of all those areas where improvements are needed urgently, who do you think could do that well and how do we make that happen, because I understand the list of improvements very clearly. You've made that point very strongly. I'm just not sure what the next step is. How do we get the departments of health and departments of climate change to better work together, for example?

MS ARMSTRONG (CHA): That's a very good question and one that we've been wrestling with. I speak to both departments. I don't think there's a strong understanding within the Department of Climate Change at the federal level about the implications for health from climate change. I think they consider health as something that requires adaptation responses, but I don't think they see the importance of mitigation in terms of protecting health. I know in terms of the international negotiations that health falls under the banner of adaptation. That is how they see it. Health, in climate policy, suffers from the same fate that it does in many other sectoral policies areas in that health is considered so fundamental that it's considered to be implied in the development of responses, but unless it's treated and considered specifically, quite often it can be overlooked.

One of the things that we do consider very important in terms of developing effective responses to climate change to protect health is the need for integrated policy responses. I mean, this is less about mitigation, but we know that in terms of effective mitigation - and, to a degree, this applies to adaptation as well, but the implementation of strategies to reduce emissions will in many cases improve health. If we are developing policy responses that consider the impacts for health, then they're much more likely to be effective. We can kill two birds with one stone. If we're looking at the opportunities to improve air pollution, for example, by transforming our energy sector, we will not only reduce emissions but improve our health at the same time.

How we get the two sectors to work together and the two departments to work together I'm not sure. I did raise this with the Department of Climate Change recently and I got the response along the lines of the movie, The Castle, that "You're dreaming." But it is absolutely vital. We understand that it must happen.

DR BYRON: I was very struck in your submission with the comment about how little of the research funds have gone into this phase. I imagine that there are people in the National Health and Medical Research Council and so on who are fully aware of this. I was just wondering - without wanting to put words into their mouth - if they see much more pressing, immediate priorities in other parts of health, rather than thinking about the threats of climate change that are still a decade or two or three down the track. Is that part of the reason that health professionals generally

seem to be much more focused on what's immediately in front of them rather than what's coming down the track?

MS ARMSTRONG (CHA): Possibly. I can't comment on what the understanding is at the National Health and Medical Research Council but I think that the health sector and health professionals as a whole reflect the broader community in their understanding of the risk from climate change. I don't think that it's well understood. I think that they see it as a problem that's distant in time and space and it's something that we have time and can afford to take our time in responding to. I don't think that they understand the urgency or what the implications are of a rapidly changing climate and what those risks are for health and how they can impact on their practice. So I think that largely the funding around research has gone towards adaptation because it's politically more palatable, and that's been a deliberate strategy.

I mean, the National Centre for Climate Change Adaptation Research is set up specifically around adaptation; it doesn't address mitigation. So therefore we don't have much in the way of mitigation research in Australia. What we do know internationally is that there are many opportunities for improving health and protecting health from strategies that also reduce emissions. Emissions reductions are, in a way, public health strategies, but that's not well understood.

DR BYRON: You used the phrase "climate change is a risk multiplier". Can you just elaborate for a few minutes on things like risks of heat stress and so on in extreme temperature events. Do the health professionals need to get additional skills to deal with that or is it just the fact that they will be dealing with it much more often in the future? Does it require a whole new set of skills to cope with climate change, or is it simply that the frequency, severity of occurrence is going to increase?

MS ARMSTRONG (CHA): Well, I'd like to preface my comments by saying I'm neither a climate or a health researcher; I'll respond to the best of my ability. Well, I am a climate and health researcher but I'm not practising that in an academic setting, so there are plenty of people on my expert advisory committee who could answer that better. The fluctuations in heat that we are seeing are much more extreme than people are ordinarily used to responding to, therefore the understanding, I think, among health professionals of how severe that can be is developing.

One of the good adaptation responses that we do have in health so far is strategies to respond to heat. In Australia we have a long experience around responding to heat events, and so responding to the heat events that are associated with climate change is one of the areas where we do have better responses. However, the very dramatic fluctuations in heat that we're seeing mean that we do see much more serious risks to health than we have seen previously and I think that the extent of that is not well understood.

You talked about climate change being a risk multiplier. What that means is that people who are suffering from existing chronic illnesses, that exposure to extreme heat events can exacerbate those quite substantially, and people who are chronically ill - the elderly, infants and so on - people who are not able to well regulate their body temperature or their surroundings to respond, are placed at greater risk. We do have very good research being done into health responses and so we've got a reasonably good understanding of that. That suggests that some of the temperature fluctuations that we are already seeing and that we are likely to see, particularly by the middle of the century, are going to make certain activities - working outside - very difficult in certain parts of the country.

DR BYRON: Can I just come back to the second recommendation about the national community engagement campaign. Would you see that, in terms of health risks, being part of a much broader campaign, or were you thinking of something separate that was particularly focused on health impacts?

MS ARMSTRONG (CHA): I think both is very important. It's clear that the Australian public doesn't really understand the risks from climate change from an environmental, societal, economic perspective, nor do they understand the health perspective. So I think all are important, or we think all are important, but health is particularly important in the context of climate change communication. One of the things that we do understand about climate change communication from some of the good work that's been done at the Centre for Climate Change Communication at George Mason University, who have done those evaluations of climate literacy among health professionals, is looking at how the community responds to health messages in the context of climate change.

What they do find is that when climate change is communicated as a health issue, as opposed to a global environmental issue, people are much more likely to perceive it as an individual risk and to associate it in an individual context, and they are also more likely to support action for mitigation and adaptation as a result. So using the health frame is an important tool in communicating about climate change because of the importance about the health risks, but because of the way people respond to those health messages.

DR BYRON: This inquiry is about barriers that are impeding adaptation to climate change. Are you or your members aware of any specific policies or regulations that are clearly identifiable as barriers that impede health sector adaptation?

MS ARMSTRONG (CHA): Not of specific policies that are barriers; it's more the absence of there being policies to support effective adaptation that's the problem.

MS BUTLER (S): It's sins of omission rather than permission.

MS ARMSTRONG (CHA): Absolutely.

DR CRAIK: Thanks very much, Fiona, for your submissions and your presentation and appearance today.

DR CRAIK: We'll now move on to Greg Hunt from the South East Councils Climate Change Alliance. Thanks, Greg. If you'd like to state your name and position and make a brief opening statement.

MR HUNT (SECCCA): Thank you very much. My name is Greg Hunt. I'm the executive officer of the South East Councils Climate Change Alliance based in a series of councils down in Melbourne's south east. Thank you very much for the opportunity here. You have my initial comments that led to the draft and then the subsequent response we put in to the draft. I'd ask to make a few further comments around the sorts of things that we're saying, that come out of the work that we do down around our area with our local government members, and I'll say a little bit more with a caveat on that one.

Local government has so many of its areas of responsibility with interactions with climate change. Now, whether that's with aged care provision, because we've already heard the health issues and the compromise, thermoregulation of older people; whether it's the extreme events that are causing blow-outs in maintenance budgets for road repair and street repair that cause residents to go spare; coastal planning, particularly around our area in Westernport and Port Phillip, which is a major issue about managing a coastal planning regime that meets with satisfaction of our residents. In 2009 we had the end of the 10-year drought; we had our sporting programs with delayed starts for the seasons because the ovals were too hard to play on. So right across areas of local government there are climate change impacts.

I've always reckoned local government is the level at which these things really do hit because the feedback loops are very short. If there's a problem, a resident is on the phone to someone to complain about it. So local government is acutely aware of the immediacy of these sorts of issues, so that's where the rubber does hit the road on this issue. In saying that I'm speaking on behalf of local government, our alliance is not a specific local government. We're a membership-based incorporated association of eight local governments. So while I might have an email address of the City of Casey, I'm not a City of Casey resident; that's their business. Where we can do a regional approach, we'll then come in and do some work across our councils on issues that they've told us are important to them, or where we've uncovered some opportunity where we might do some work which they then say, "Yes, that's what we want you to do, so go for it." So it's in that kind of context that we do the work that we do.

We are just currently finishing a federally funded project on decision-making for coastal planning under the Coastal Adaptation Decision Pathways Project. How do our councils operate a planning regime that will withstand a scrutiny at the Victorian and Civil Administration Tribunal, for example? They spend far too much time there. It's a great drain on their resources. Often proponents have deeper pockets than the council is prepared to spend, so it is always an unequal battle on that

one. So can we make better decisions that will withstand that kind of scrutiny?

We have just finished an agriculture project where we worked with 50 beef and dairy farmers to improve their environmental performance at the same time as they lifted productivity, so as the pasture species were needed to change or the external prices were going and they were under more pressure for fuel or fertiliser et cetera. What can they do? They don't run charities. How can they improve their economic performance at the same time as they can still farm successfully?

We are doing a project at the moment that's the interplay between mitigation and adaptation of our sustainable homes where people might go out and buy a six or seven-star home but if they're living a two-star lifestyle within it, they're not maximising the benefit. So they're getting hotter houses that they need to either pay airconditioning to cool or their discomfort or whatever it might be. There is a whole range of interplay here so there is a mitigation adaptation continuum that we can work across on that.

Just the week before last I attended the NCCARF conference and I can recognise a couple of the speakers here and I walked away with a real sense there is an adaptation community in Australia. It has been going now for a number of years. NCCARF has been a major contributor to that hosting those sorts of gatherings where we can discuss the issues of importance and find other responses that shed light on what we're doing. I've got a good example of that. I was talking to a young woman from the city of Onkaparinga in Adelaide who works with about three councils down there. She is about to start work on a regional adaptation plan and wondering, "How do you start this?" and so I was able to put her in touch with the Goulburn Broken Greenhouse Alliance, a grouping of councils up in Victoria's north, where they have just done a similar project.

So there is a sense of we're all in this together, what can we learn from that's already been successful that will shed light on how we might go and so I think it's been a great benefit that we've had. I think someone at the conference made the observation you couldn't have a conference on adaptation in too many countries but you can in Australia. In part it's probably because of the variable climate that we have always had and now with those variations going in one direction, it's all the more important that we have these sorts of conversations.

I was just listening to my colleagues from the Shire of Yarra Ranges before talking about the need to convince people that at some stage in the future we may have to get them out of living in the Yarra Ranges. I don't know what kind of engagement program is going to lead people to willing move out of there - and I will make some more comments about that in a coastal context later. But it's that kind of diabolical issue that we need to confront and part of the adaptation community issue I referred to would be, say, listening down to Leo Dobes from ANU talking about

what are the possible models of buying out people. In our case in coastal areas, in their case maybe in forested areas. Is there some scheme whereby we buy the house which is now under threat, they lease it back while it's safe to do so or, if they choose not to, they've got the money from the purchase and they can go and buy themselves somewhere else and then we defray that expense by leasing to someone who is prepared to take that risk for as long as the threshold is reached beyond which we can't live there any more.

These are hard issues to confront but we're going to have to confront them and some people in fact already area. The sense I got out of that conference is people are just getting on with it. Despite what we might see on the front page of the Australian or the Herald Sun in Victoria, people are getting on with it and that's a very important thing of national gatherings where we can share those ideas and so we're not feeling like rabbits in the spotlight, we've actually got something we can do and it's sensible and it has an evidence base behind it - which leads to another point I'd like make in a moment - and that's the role of NCCARF.

Before that though you asked a question before I recall to one of the other people appearing, how do we get, say, the Department of Health to respond to these sorts of issues. How do we get any government to take up an area which they mightn't see as their core business? I always think we've got a lot of talking about a whole of government approach and joined-up government and all the sorts of euphemisms around the traps. A whole of government approach I think is where you my say, "What's the long-term policy objective that we're after and what are the tools at our disposal to achieve that across all of government?" I always think of the example of the first home buyers grant which when it was first available some years ago I think under the Howard government it probably got to 21,000 or something which is a pretty big incentive for people to go ahead and commission a house. Had that been made contingent upon sustainable design, we might have changed the mind-set of the design industry and the building industry to think of sustainability as the social norm, that's just what you did. That's the kind of thinking we need to get.

Where do we get the multiple benefits from a particular policy program? I think in the current schedule about the only government spending I can see at the moment that is coming out of the Regional Development Australia Fund that Simon Crean administers. Is there a climate change adaptation criterion in the set of criteria to which people apply when they're going for RDAF funding? There is an easy get by suggesting to DCCEE get in touch with regional development and make sure that you're going to get an extra benefit when you're doing your big infrastructure projects. It's that kind of thinking we need. We've been far too long looking at fragmented approaches rather than whole of government approaches.

You also made a reference before I think to the health area within National Health and Medical Research Council. Part of the problem I reckon with the way

that that particular stream of NCCARF funding was in the health area was administered through the NHMRC which meant that clinical projects got preference against social health projects and that was the problem. Again, we weren't seeing the really big picture in the way that we were approaching things, I believe. With regard to the comments that I made - I've got a few extra comments to make about four recommendations.

DR CRAIK: If you can do them briefly. It just cuts down the time we have questions, that's all.

MR HUNT (SECCCA): I'm watching the time. Clarification of respective roles of each sphere of government: local government operates a planning process, so can we insert conditions on permits that will withstand scrutiny? That's really the challenge that we've got at local government, I think, when it comes to operating a planning scheme. But we look for the state government to provide some policy context and in a recent inquiry that was held here in Victoria a lot of us argued very strongly for a coastal hazards overlay. We've got land subject to inundation and we've got erosion overlays, all these sorts of things, had we had a local coastal hazards overlay that would have been an immediate trigger to, "Let's get serious about have we got all the climate change impacts built into what we're thinking."

Then from the federal government perspective we need that research base that gives us the evidence on which we can make these claims and that's a fundamental role for NCCARF and CSIRO I believe that will continue well after this current round of funding ceases. We really need that kind of national leadership particularly there and I also made reference in the submission to the standards so that someone has to set those standards and monitor against them and that needs to be a federal issue.

The second comment we made was about local government receiving resource support. The city of Casey, where I am based, has had about 20 local coastal hazard assessments required of permit applicants for coastal building applications. Now, they don't have the expertise, I believe - and they would say this - to make a proper review of those local coastal hazard assessments that coastal engineers are sending into them. I suspect in their honest moments they might say, "Well, this is a measure of laying off some of the risk." If they are prepared to put their name and credentials to a report, that gives us some kind of solace that we can go ahead and give out a permit. It's that kind of knowledge and expertise base that they need. So if they're going to be giving the responsibility of operating a planning system as they are, they need that kind of further support. It's not recognised in the constitution, not having their own funding base other than a paltry rates base, they're at the bottom end of all sorts of things which the federal government and state government are requiring of them with limited capacity to deliver on that and it's a continuing call that we hear.

The third point we made was about the Australian government leading the natural research effort. I made reference to that. If it wasn't CSIRO and/or NCCARF, who else is going to do it? We absolutely need that national leadership to give confidence in what we're all doing. The last comment I made some reference to this was the relocation of people in the Dandenongs. We have the same thing down around the coast as well. In the original submission I put into the Productivity Commission that led to the draft report I made reference to Mornington Peninsula Shire's climate community conversations where they had an aggregate of 3000 people attend to our seminars on local data as it affected them and it's that kind of really intensive, locally oriented engagement program that we need.

This is not going to be a black balloons campaign and your kind of future in a 16-page booklet. It is people being able to engage with information, clarify its meaning for them and work out, in collaboration with those around them, what's their best response to make to that. It's much deeper thing than information and awareness. So just to finish up. Our challenge, I think we need a funding stream for adaptation measures. We've got a funding stream for mitigation coming off the carbon price. Where is there some kind of way that takes the funding needed for adaptation out of the, "He said, you said, 10 per cent efficiency dividend shaved off your budget this year, thank you very much." That's what leads us to short-termism which militates against the whole area that we need to spend a lot more concerted effort in.

So just to finish Stephen Dobes at ANU has this lovely line that regional groupings of people where there are three and a half levels of Australian government - well, I'd like to say we're three and three-quarter please. It's a very effective level at which to work, we interrelate with, say, the Hunter group of councils, Sydney coastal councils, I have already given you the Onkaparinga thing. It's a very useful exercise at which to work. NCCARF has got its open government portal that does this sort of thing. We also need the human interaction with that though. Thank you.

DR CRAIK: Thanks very much, Greg, for your comments, they were very helpful. One of the things that you said was that it would be really useful if the Victorian government produced a coastal hazard overlay a bit like we saw from the Yarra council, they have various overlays for bushfire and erosion management and land subject to inundation overlays. If those sort of overlays exist, what does that actually mean for local government. What would a coastal hazard overlay look like and what does it actually mean for a local government? What does it enable them to do that they can't currently do?

MR HUNT (SECCCA): It would be a trigger that would say the moment an application is being proposed for a parcel of land which falls within the line on the map which says, "This is where there is likely to be a hazard," then that must be built into the application that the proponent puts forward.

DR CRAIK: So the proponent has to respond and say - - -

MR HUNT (SECCCA): "This is how we're going to do it." The shire of Wellington, for example, requires of people in a particular estate a climate change response plan before they'll consider a permit. Now, that's something that the council has put up. It's possible that - don't quote me on this, please - that a QC might be able to knock that off on a specific planning application because of the characteristics of the response that they might put in. The coastal hazard overlay would say, "This must be done."

DR CRAIK: Because it's a state instrument.

MR HUNT (SECCCA): Yes, it's enforceable, the overlay is enforceable whereas at the moment a council is left to its own resources to defend the permit conditions it is putting on applications.

DR CRAIK: So why doesn't the state do it given they have these other overlays?

MR HUNT (SECCCA): That's something you might want to direct to state planning minister, Guy, for example, who recently - - -

DR CRAIK: Presumably local government has raised this with - - -

MR HUNT (SECCCA): There was a Wimbush committee of inquiry that did a coastal issues and options paper and in that there was a very strong recommendation that there be a coastal hazards overlay. The state ministers recently released a response to that in which he's not supported it. It may well be - it's not fruitful to conjecture on why that may be the case.

DR CRAIK: Okay. The issue you raise is it should be the federal government providing the evidence base. My understanding is both the federal government through, say, CSIRO, Geoscience Australia and those agencies will continue to provide information and evidence for climate change and you suggest organisations like NCCARF and research organisations are important as well. But we understand also the states have also - particularly Victoria - they've had their own research facility and they do provide a fair amount of information as well.

MR HUNT (SECCCA): The Victorian Centre for Climate Change and Adaptation Research, yes. Their budget is much smaller of course and they do more locally oriented projects. For example, in the Coastal Adaptation Decision Pathways Project, the one that we're doing is using the same consultants who are also working with the Hunter, where there are a similar set of councils but looking at slightly different coastal issues and operating within a different legislative regime. I reckon

we get a lot of benefit because of the consultants and the Hunter group and us working together on that. Now, that's something that wouldn't have come out of an VCCCAR but it doesn't come out of an NCCARF or, sorry, a DCCE in this case. NCCARF are similar doing their barriers to adaptation to sea-level rise in local government that John Barnett at Melbourne Uni is doing down in some of those areas.

So it's a national issue that we're engaged upon and the whole problem, I think, has been that we've approached it in a piecemeal fashion and while VCCCAR is doing very good work in its local area, it's a national endeavour. How you protect yourself from climate change doesn't respect state boundaries.

DR CRAIK: You described it as diabolical - and I think that's probably the right word - the issue of moving people and the Yarra Ranges Council people raised moving people out of the Dandenongs as a possibility and you raised the issue of coastal issues. We have seen in New South Wales some pretty fraught issues of people getting vulnerability assessments on their coastal properties and some councils actually withdrawing those in the end because of the responses of the community. We had a recommendation about how we thought these issues ought to be dressed in our draft report. What do you think is the best way to deal with this issue? How do you think you go about dealing with this issue because it's not an easy one and it's going to play out in different ways in different places but it is a potentially a universal issue in some areas.

MR HUNT (SECCCA): Clearly it's a fairly major community engagement issue in the first instance to understand that we do have a problem and it's not helped by those running interference out in the public media for all sorts of other purposes. We just need to get on and be very clear about what that is and with the best evidence base possible support the work of, say, the climate commission in their hearings around the traps, support the work of local governments in having those 3000 people attend that kind of interaction with the data as it relates to them locally. Ultimately these are going to be economic decisions that people are going to be making and that is where that kind of thinking that Leo Dobes is doing about how do you buy out people so they can make choices themselves?

There is other local research going on. When we had Cyclone Yasi a fisherman was lost for three days, he walked out of the mangroves after that third day because he had gone into mangroves which absorb coastal energy whereas a sea wall simply reflects it so it will deflect it somewhere else. There is a biomimicry research that NCCARF might want to pick up actually. But it's those sorts of measures and how do we solve the problem rather than just redirect it but in the first instance, we've got to get people to understand what it is and then we need that range of policy options or economic options, a number of which will come out of that kind of thinking about what does it mean to implement a real options approach now and how

long do we discount our payments into the future to put off the decisions that we actually do need to really engage with now.

DR CRAIK: Do you think there needs to be some kind of national approach to this or do you think it can be developed here and there and through bits of research here and there and each local council kind of tackling it on its own which is sort of which is happening now?

MR HUNT (SECCCA): It's said all politics is local but we do need - I mean, where is the best range of models that we can choose from and from right around the country we will get those. What actually gets selected from that suite options will be the locally appropriate one but where is the thinking that gives us that broadest range from which to choose? That's where we need that kind of research base, we need the Leo Dobes and Stephen Dobes and those sorts of people developing that range of options and the best results I think are when local government practitioners and other user groups are embedded in that research so that we could be recalibrating what's been done against need on a continuous basis.

DR CRAIK: Okay. In terms of behavioural barriers you raise this issue of people either not believing in climate science or whatever and that is a barrier to people adapting because they don't believe it so it's not going to affect them. So what should government do about that? How do you go about dealing with that if that's a fundamental issue?

MR HUNT (SECCCA): We've got accept that 100 per cent is not what we need to worry about here. There's some people we're never going to bring to the table. What we do need to do though is just keep - that sense of, as I said, came out of that conference the other day - of just getting on with it. People look at their insurance premiums and they understand issues there. Ultimately, we just need to keep on reminding people that this is the sort of thing we're going to get. What have we got record floods in Japan at the moment, we've got all sorts of stuff going on around the world, the tornado that has just hit Poland. These are places that are seeing stuff that hasn't happened before. We can't make every one an extreme weather event, therefore evidence of climate change. It doesn't work that way. But what we can say is, "Look, here's an issue that seems to be going further. In the one direction we need to deal with the possibility that this might be the case."

I was just watching TV sport on the weekend and seeing the household assistance package ads, and not one reference to climate change, carbon pricing whatsoever in that ad. The government cannot whinge when they're not getting a return on the money that they're giving out to people when they're not even drawing that link themselves. That's short-sighted in the extreme, I believe. It gets back to that idea, that fragmentation, where is the whole of government - we've got a policy direction - all the different things we're doing that might help us achieve the policy

result that we want, and yet for another political reason they're not mentioning that bit of it. It's little wonder the public is confused.

DR CRAIK: Legal liability in Victoria, how is that addressed? In New South Wales there's a provision in the Local Government Act which limits legal liability. In Victoria, what's the story there, and what's the response of your council?

MR HUNT (SECCCA): We've got the Wrongs Act 1985 which said, "If you've acted reasonably on the basis of evidence that you have, you do have the protection against negligence in the law." That's really I think still what are councils are relying on. They don't have the indemnity that New South Wales governments have. I do know that if I need to get a briefing up in front of the CEOs of my member councils, I'll usually put a paragraph in there about legal liability and risk exposure as a way of getting their attention.

Up until a few years ago most of the conferences I was going to were on the climate science. Within the last 18 months most of the conferences I go to, there's always a strong measure of legal liability and risk. It's only in the last six months or so people have been talking much more about psychology and communication. I reckon that's almost a maturing of the debate as we've gone along. We've got our science reasonably understood among those who need to deal with it. It's a risk management approach that councils are used to taking, so let's work out what our exposures are there. Now, how do we communicate this to our communities in ways that they will understand - which is I think maybe the psychology and communications exercise that we now do.

DR CRAIK: Okay. One final question: are you aware of any community or any local government, other than, say, New Zealand, with the earthquakes, that's actually had to move a community from point A to point B? I know they did it in outer Minami.

MR HUNT (SECCCA): Outer Minami, yes. Well, Yallourn, for - - -

DR CRAIK: That's a long time ago though. People have changed since then, I think - - -

MR HUNT (SECCCA): Was it Yallourn to mine brown coal? In one of my councils, in fact, Bass Coast Shire down on Phillip Island, I think it was the Kirner government that decided that the Summerland Estate needed to be kept for the penguin colony, rather than for humans - there's probably other reasons as well in that - and they put a covenant on the transfer of any titles on those holiday homes on that estate. So as the owner of that title no longer wished to exercise it, or the choice was taken away from them, it couldn't be passed on to anyone. I understand the last of those houses was given up about three or four years ago.

DR CRAIK: Did they get any compensation?

MR HUNT (SECCCA): Yes, they were given market price for that. That was for biodiversity purposes they closed down where people were living. One of the councils at the Bellarine Peninsula, down at Queenscliff - they have decided that one area of their council, because of rising water tables, is no longer going to be habitable over the next 30, 40 years or whatever. Sea walls aren't going to help, it's coming out from underneath. What they need their community to understand is in years to come that is not a place to inhabit. Clearly there will be design solutions they can implement. At the moment they're saying, "We're not going to give any more permits for building there because we need to get people to understand in years to come this is going to be resumed for climate protection, coastal vegetation, whatever it might be, it's not going to be a residential precinct." That's a long-term exercise and it needs to be started now.

MR COPPEL: A question that relates to the previous point, in your submission you make a recommendation that the Australian government should lead a comprehensive education and engagement program.

MR HUNT (SECCCA): Yes.

MR COPPEL: Which agency or which body of the Commonwealth do you think would be most appropriate for that?

MR HUNT (SECCCA): In my private life I'm involved with the Australian Association for Environmental Education where we have long railed against the federal Department of Education because they never see environmental education as a curriculum issue. It always seems to be an environmental issue. Right around the country - whether it's in state government or federal government - you always get far better education for the environment, coming out of environment portfolios, than you do out of education portfolios. It's a blinkered view about curriculum that education portfolios have that people charged with managing environments, who want to see community support for what they do, are usually a lot more active in bringing about the communication and engagement programs that are more likely to do that.

Now, whether it's the right way to do it or not is another matter. That's the reality that we've been dealing with in this country now ever since the first international conferences on environmental education back in the 70s. It's always been the case here in Australia.

DR CRAIK: Thanks very much, Greg. That's very helpful.

MR HUNT (SECCCA): Thank you.

DR CRAIK: We'll have a brief break for morning tea and we will resume at 25 to 11.

DR CRAIK: Now we have the Australian Building Codes Board. John, if you and Matt could state your name and position for the record, please, and if you'd like to make a brief opening statement we'd be happy to hear from you.

MR THWAITES (ABCB): John Thwaites; I'm the chairman of the Australian Building Codes Board.

MR McDONALD (ABCB): Matthew McDonald; I'm deputy general manager, major projects and research.

DR CRAIK: Thanks very much and thanks for your submissions and for coming along today. John, could you perhaps clarify whether your submission is from the ABCB. It was from you but I wasn't quite clear it was actually an ABCB submission or from you.

MR THWAITES (ABCB): This is the method that the ABCB adopts for making submissions to inquiries like this, and that is that the chair puts in a submission. It is the chair's submission, it's not a formal submission of the ABCB. The reason for that is, having all jurisdictions in Australia on the ABCB, the time frame to get approval for something would be impossible. What we do do, though, is we prepare the submission and it's prepared by the office. I then review it and make any changes that are appropriate. It's then circulated amongst all the jurisdictions; if there are any major problems, they advise. There's been no major problems advised by the offices, but it's not appropriate to bind the jurisdictions without giving them an opportunity to consider it, and we just couldn't meet time lines.

DR CRAIK: I understand.

MR THWAITES (ABCB): I thank the commission for this opportunity. Can I start by saying the opportunity has been of benefit for me because I reread the Productivity Commission's draft report again, and that was of benefit because just looking at the first key point that you made in chapter 8, Planning and Building Regulation, that is that some predicted climate change impacts are being considered in planning and building regulation in Australia but this is not occurring in a systematic or coordinated way within or across these regulatory frameworks, that is a very important general conclusion with which I would agree and would strongly support a greater level of national coordination between planning and building and between jurisdictions in this space. That would be my major submission for the day.

So leading on from that, it's worth noting that the Australian Building Codes Board is in a governmental agreement between Australian government and the states and territories and our mission is to address issues of safety and health, amenity and sustainability. We should point out, we don't have climate change as a specific

objective but we believe that the objective of sustainability, together with the other objectives, sufficiently enables us to consider adaptation to climate change when we regulate, or propose to regulate.

Just going on to the general comments we've made, the first comment - this is on page 5 of our submission - relates to how we've traditionally, as a board, relied on historical climate and weather data in setting standards; and that is the situation, we've traditionally relied on historical data. However, more recently the board has sought to utilise scientifically-based climate change projections in its review of cyclone-affected areas. That indicates the way that we're going to move forward, where the board will in future be utilising climate change science wherever it's available.

Interestingly when we did the regulatory impact statement on cyclones, the science on cyclones was not entirely certain, but we did seek to synthesise the opinions of a number of experts, and the net effect of that was that climate change would not have a major impact because the increase in intensity of cyclones was cancelled out by the reduction in frequency in the latter part of this century. Now, that may be a scientific area where there will be continual development, but the actual regulatory impact statement did include a calculation for the end of the century based on the scientific evidence that was available, and the interesting factor there was that the intensity and the reduction in frequency cancelled each other out.

The other point that is interesting from that regulatory impact statement process was the big difference between the cost benefit analysis in the consultation regulatory impact statement, which indicated a positive cost benefit for regulation, and the final regulatory impact statement, which indicated a negative cost benefit. I think what that indicates to me is, one, that the regulatory impact statement process is pretty closely scrutinised by industry and players; and, secondly, that regulatory impact statements have an element of subjectivity and the final cost benefit is something that there can be quite a bit of debate about.

The first recommendation we make in our general comments is that the draft report ought to note the difference between building and planning, and, where appropriate, ensure that the final Productivity Commission report avoids any confusion over what action is required in building and what action is required in planning. Having said that, it's acknowledged that there is a fair deal of overlap and grey areas. From that point of view I go back to my initial statement, overarching statement, which there does need to be close integration of a framework for building and planning in adaptation.

Turning to the specific climate change impacts on the building code, the Productivity Commission has referred to the 2010 report that the Australian Building Codes Board did on possible adaptation measures for climate change. The Board will

consider the recommendations of the 2010 Report for the ABCB on possible Building Code adaptation measures for climate change. However the Board has not at this stage made any commitments to implement specific recommendations of the report.

It is worth noting, just in terms of practically, the sorts of things that this might mean, in that changes in the building code are referred to, to better adapt to climate change. Examples are set out at page 5 and it could be things like improved thermal performance of the building shell to meet increased temperatures; improved chain of fixings from the roof to foundations and better bracing resistance and weather tightness to counter more intense cyclones; increasing the capacity of guttering and improved detailing of roof and wall flashings to cope with increased rainfall intensity; avoiding location in flood-prone areas or locating vulnerable services above flood levels.

I guess this is a good example where there's quite a big overlap with planning, where the planning system will either allow or not allow development in particular flood-prone areas or areas that may be subject to sea level rise, but then the building system will have a role in determining where vulnerable services may be placed - electricity meters and the like - and the classic area where there's a real overlap is floor levels, where both the building code and the planning system could conceivably cover the same area. Now, traditionally the building code has not covered flooding, but we now have out for comment a flood standard and guide, which is going through a process of regulatory impact statement and comment now. Matt, did you want to comment on that at all?

MR McDONALD (ABCB): That's correct; it's out with the public comment draft of the BCA, which is available through all of June and July for comment.

MR THWAITES (ABCB): So I'm just going through some of the building code adaptation measures. I've just mentioned adapting to flooding and sea level rise, where it would be around avoiding location or using water resistant materials or locating vulnerable services above flood levels. The other very significant one is bushfire and the key role for the building code there is in the design of building in these areas to be more bushfire resistant and in setting standards for the type of buildings in bushfire areas. The area that we're now considering is bushfire shelters. There are two bushfire shelters: there's private bushfire shelters that people might have in their homes; and then there is community-based shelters. We're starting with the private and then we'll move to the community-based shelters.

So they're some of the things that we can do in the building code and that is set out in this report, which was done in 2010 and which we will seek approval from the Building Ministers' Forum to implement. I think the recommendation by the

commission that we do that is a helpful one. Our second recommendation, though, that arises out of what we can do is how we do it, and that is we need to go through a proper regulatory impact statement process. In order to do that - that leads to recommendation 2 - is that additional research and more reliable data is required on specific climate impacts such as cyclonic events, bushfires and intense rainfall to ensure that standards can be adequately reviewed to take account of longer term trends.

That also is encompassed in our recommendation 3, that the report recognises that probability density functions for a broader range of climate-related hazards - including cyclones, floods, bushfires, hail and intense rainfall - in different regions would help in setting standards for buildings to make them resilient to climate change. So essentially what we're saying is we have to regulate according to the COAG regulatory principles. They require an evidence-based approach and the net benefit. If we're going to do that, we need to have the best research and best information available about the climate hazards. There are, as we know, uncertainties and it would certainly assist, though, if we could develop probability density functions for some of those hazards, which we would then be able to utilise in our regulatory impact statement process.

Just moving to the next area, which we have discussed a bit, which is on page 8 of our submission, section 5, Building and Planning Delineation. I think it's fair to start by saying that the BCA - now the National Construction Code - has moved from a traditional safety and health-related focus to a broader focus that includes sustainability and societal issues. The examples of that: the obvious example in sustainability is energy efficiency; in societal issues is disability access. So we've moved beyond straight safety to that broader range.

At the same time, the Productivity Commission has found that where local governments, through their planning approval processes, imposed regulations on building, then that added to building cost and compliance costs. So the IGA that is the basis for the building code boards now endorses an approach to minimise that inconsistency across jurisdictions and across levels of government, and we would support that in this case. So in adaptation we would not want to see a situation where you had a plethora of different regulations at local, state and national construction code level which are possibly inconsistent. That also demonstrates why we need that national coordination that I started with, because without a level of national coordination we are going to go down the track of inconsistent regulation.

What the submission has is recommendation 4, that a central body be established to coordinate national planning matters in this area. Now, there can be some flexibility about that type of body and what it would do, and I note that the Productivity Commission in its draft report has recommended that the COAG Select Council on Climate Change should be the body that's essentially responsible for this.

In my view that body is not necessarily the right body because it is made up of energy ministers and climate change ministers who don't have the involvement in planning and building, and historically there was a Local Government and Planning Ministers Council and a Panning Officials Group which coordinated national planning around these areas. They have now been abolished which means that there's really a gap in the coordination.

Our submission is that there needs to be some body, and it could be a re-establishment of the Planning Officials Group. Another option would be to have a national coordinating body for adaptation, a bit like the National Water Commission, and that could be a joint venture of the states and the Commonwealth and that would be able to be a repository for research knowledge policy development and coordination. Like the National Water Commission it would not need to be a binding body - so the states wouldn't have to agree to be bound - but at least it could be a body that could be a place to bring together all of that work.

Just to give an example of the sort of problem we've got now - even since your draft report was released - two states, Western Australia and Victoria, have now gone down pretty different paths in their planning approach to sea level rise. For example, in Victoria a recent announcement by the government is that within township boundaries the sea level rise that will be used will be 0.2 metres by 2040 and, as I understand it, the Victorian approach is not to have notification of risk or hazard on title.

In Western Australia they recently released a draft approach which endorses notification on title. Now, the Productivity Commission has previously indicated that there's significant benefits in our national approach to building regulation and indeed quite considerable savings in building costs. By analogy one would expect you would have the same type of benefits by having a more coordinated and consistent national approach to planning and building for sea level rise and other adaptation. That doesn't mean you necessarily have to have the same sea level figure, whether it's 0.9 or 0.8 or one isn't the issue. It's the approach that's much more important. Whether you have notification on title is something that could be very significant where in some states there will be a push for much greater private responsibility and others, not.

By having a national body - through something like a National Water Commission, a National Adaptation Commission - where the states and the Commonwealth can discuss these matters, there's more likely to be greater consistency. I think the other problem that's occurring is that there's a bit of a tendency to pass the buck. The Commonwealth would say, "We'll leave it up to the states," and then the states will say, "We'll leave it up to local government." In Victoria the Coastal Climate Change Advisory Council recommended that the state government commission legal advice from the government solicitor on the liability

of decision-makers to consider coastal climate change, and the state government's response to that was that insurance is a matter for individual decision-makers, not the planning system, as is any relevant legal advice.

On its face that's not an unreasonable thing to say, except that what means is that every local government will be going off and getting its own legal advice and maybe taking different views on liability. Once again, if there was a more national approach to issues of liability there would be much reduced compliance costs for government and probably reduced costs for business and industry as well.

Moving on to the next point, which is on page 10 of my submission - point 6, Challenges Around the Regulatory Impact Statement Process - the National Construction Code must be developed pursuant to COAG best practice regulation guidelines. We've got a recommendation here that -

> The draft report recognise that the need for regulation to be cost-effective under the code best practice regulation guidelines may not always result in a regulatory change to deal with adaptation to climate change.

I think implicitly the commission probably does recognise that, but there was a comment in the draft report that our consideration of cyclones didn't result in a change. The situation there is that we're still considering one possible change but the point we make is that if the regulatory impact statement doesn't show up in that benefit then we're not able to make a regulation.

I would just note - and nuance that recommendation a little - that I do believe we may need a more sophisticated approach to cost-benefit analysis in regulatory impact statements, especially where risks are uncertain but potentially catastrophic. The two areas where this is potentially an issue are bushfire and sea level rise. Currently, the regulatory impact statement process does tend to focus very much on getting one final NPV - net present value - of a cost benefit which as we've seen from the cyclone case can be very different, depending upon what impacts you put, both for costs and for benefits. Where the potential damage is catastrophic then we may need a more nuanced approach than simply a final dollar figure or ratio, and more research should be done on best practice regulation in this regard.

Certainly I'm aware that there are a range of different ways of measuring approach, and the commission has referred to some, including the real options approach, but that is not the only one and it may not necessarily be appropriate in the catastrophic cases. It may be in some cases that more of a precautionary principle approach is applied, or there are tools such as the Bayesian strategies or minimax strategies or other strategies that were referred to in the VCEC inquiry on environmental regulation, at page 360. I would refer you to that.

The other point I would make about this is there's a bit of a debate that has come up, I notice, from the secretary of the department, Blair Comley, in his recent speech where he talked about path dependency. I have to say - and this is now using my experience as a former minister for both planning and climate change - that that's a very powerful argument. Once a decision is made to allow a development in a particular place, according to particular rules, politically it is very hard to change that later. That needs to be recognised. So theoretical approaches about flexibility and adaptability are certainly worth putting but they have to be matched with the real world experience that where there's political pressure to change things, generally politicians respond. That means the result of that is the whole of the community pays for something which they didn't expect to pay for; or the other more dramatic result is people die or are injured. I think we're seeing that in a fairly obvious way in bushfire, where recommendations in a policy sense, for example, are made not to build in certain places and the community goes ahead and builds in those places, I suspect once the fire comes through that liability will then, again, fall back on government to compensate.

DR CRAIK: John, could you wind up soon so we can do a few questions. Thanks.

MR THWAITES (ABCB): They were the main points I proposed - well, I suppose just quickly I refer to existing buildings too, and that point is made in the commission report. Certainly we would agree that a far greater focus needs to be placed on how existing buildings can be made more resilient to the effects of climate change.

DR CRAIK: Thanks very much, John.

MR COPPEL: Thank you, John. Thank you also for the submission. In your submission you've made a number of factual points and a number of points of clarification which we will be taking on board for the final version of the report. There are a couple of questions that actually relate to such points. We wanted to get clear whether there's any formal requirement of the Australian Building Code Board to take into account climate change in their work.

MR THWAITES (ABCB): I think I attempted to answer that right at the beginning when I said our objectives in the IGA are safety and health, amenity and sustainability. So where climate change would have an impact on safety and health, amenity and sustainability, then there is a clear, formal requirement. So, for example, bushfire, sea level rise would impact on safety and health and therefore need to be taken into account. In addition to that, our view is that sustainability as an objective provides a sufficient general cover for taking adaptation to climate change into account.

MR COPPEL: You mentioned also in your submission, and there's an annex that

actually gives some examples of the work that links to climate change adaptation and the Australian Building Code, that you've had, over the past five years, a program of work that relates to that. We were wondering if you could say a little bit about that past five years of work and whether it's actually possible to get a copy of the work program.

MR THWAITES (ABCB): I should say I only took over as chair last November so I can't speak from great experience, and I'll pass to Matt in a minute on that, but the work program has included consideration of bushfire, cyclone and now flood, and all of those matters are matters that are impacted by climate change. Does that answer your question?

MR COPPEL: What have been the outcomes of that work? Has there been any link between the work and the actual code itself, or is there something that's in the pipeline?

MR THWAITES (ABCB): In relation to cyclones, we're nearly at the end of that process. There's been a final regulatory impact statement. The regulatory impact statement showed that all the options had a net cost and therefore generally it's unlikely that you would regulate. However, one of the options the net cost was very small, it was a couple of million dollars, and so that option, which involves an extension of the cyclone boundary to Broome and Derby in Western Australia, is still being considered.

The other options which were originally considered, including extending the cyclone boundary south in Queensland down to Sunshine Coast, in the second regulatory impact statement had a significant cost and so that has not been proceeded with, and there were other options to increase the uncertainty factor around cyclones, which essentially would have required a greater level of resilience in buildings in cyclone areas, they also had net costs and were not proceeded with. So the answer to your question is we've been through the process, it's been analysed and, on a regulatory impact statement net benefit, didn't stack up, so, except for one small thing, we're not proceeding.

In relation to bushfires, there have been quite significant steps forward there. So the Australian standard for building in bushfire areas has been now changed and a new standard implemented. We are now under way with a development of a new performance standard for the construction of private bushfire shelters. We've commenced work investigating the suitability of expanding bushfire provisions in the National Construction Code to non-residential buildings such as schools. The standard for buildings generally has been tightened as part of the Standards Australia review and we're undertaking work on bushfire shelters and non-residential buildings.

In flooding, unlike cyclones where we're at the end of the process, in flooding we're closer to the beginning where we have put out a consultation regulatory impact statement for a flooding standard and that is being considered now. The next step in that process will be presumably a final regulatory impact statement. The way that will operate, as proposed, is that there will be certain standards for flood-prone land and it will be up to local government or state government to define the areas. We would expect that that would include consideration of climate change, since they're doing that work.

The general comment I'd make is that if you're looking at how far things progress - I mean, if you looked at it in an historical sense, the way regulation has tended to be implemented is following major catastrophes. We did major building regulation to meet cyclones after Cyclone Tracy; I think the bushfires in Victoria did accelerate the speed of action on bushfire; the Queensland floods certainly didn't slow down the work on floods. So from all of that one might conclude that the standard process of regulatory impact statements and cost benefit analysis doesn't always lead to regulatory change at the same speed that a catastrophe does.

MR COPPEL: In your submission you make strong points about the need for information in terms of reviewing your processes for the building code and you make a point, for example, on the need for probability density function for particular climatic events. Are there any other types of information that you think are needed that are absent at the moment in terms of doing that work?

MR THWAITES (ABCB): I did refer to one: more work on regulation and methods of determining cost benefit where there is a level of uncertainty and potentially catastrophic events. Now what happens, a consultant does the report and they have to sort around and work out, "Well, what are the costs and what are the benefits," and we come up with this number, but in terms of these catastrophes, like bushfires and major flooding, it might be, as I said, a more nuanced approach is needed. There are some theoretical approaches that are being developed, but the board and the system would benefit from having greater research and dissemination of those regulatory approaches.

MR COPPEL: At the moment are you using any of these sorts of approaches, even in a preliminary form, to take into account potential catastrophic impacts?

MR THWAITES (ABCB): I think the answer is "no".

MR McDONALD (ABCB): There's no major projects currently under way.

MR THWAITES (ABCB): Just say, for example, the cyclones case, the cost benefit of that was very much just the building cost impact, wasn't it, on the costs side, and on the benefit it was the avoided physical damage. There might be

approaches that took account of some of the other potential damages, human societal, the work included in that, and a robust approach to those things is necessary. I mean, an associated issue we've talked about on the board a bit is the cost of injury and death, and there are calculations that can be made with that, but there's a societal cost associated with that which can sometimes be different than a more actuarial one.

Certainly, once again using my political experience, if there's a disaster that involves 10 or 50 people, the cost is many times more than 10, or 50 times the cost of one life that's lost in a motor accident. Society responds - and to give you a practical example, say, the bushfire shelter, you could do a cost-benefit but I'm quite sure that if someone died in a future fire in a bushfire shelter there would be re-regulation.

MR COPPEL: In terms of the research work that you're suggesting be done, do you have in mind who should be doing that work? Who would be the appropriate institution or body?

MR THWAITES (ABCB): I really supported the work the National Water Commission was doing until recently when it had its research role taken from it where it then got either consultants or academics to do reports on particular issues - water pricing, water markets and those sort of issues. I found that a really good system where you could get the best information available that could then be disseminated Australia wide and it would cut costs for governments. At present, governments will all go off and do their own thing and it would make sense for a single body with the involvement of the Commonwealth and the states to commission some of this research. So in the scientific area obviously you've got universities and the CSIRO; in regulation you'd potentially have academics and consultants who could have an input.

MR COPPEL: A question on the relationship between planning and building, noting your submission where you said there was a joint working group developed a framework called the National Implementation Model to delineate planning and building and this was never formally accepted by governments. Why was that? What were the arguments for rejecting it?

MR THWAITES (ABCB): I don't know that it was ever formally rejected. I suspect it just went into the black hole. The reality is that the Australian Building Codes Board has been an outstanding success. It's a fantastic example where the states and the federal government have actually got together, and the reason it's a success is it does have a real statutory regulatory role; whereas in planning there had been committees but they haven't been listened to sufficiently. Planning ministers change and there hasn't been enough priority put on having a level of coordination and planning.

DR CRAIK: Is that because it's non-statutory, do you think?

MR THWAITES (ABCB): Yes, it hasn't had a focus. Prior to this role I attended a workshop on adaptation that was coordinated by this Planning Officials Group and we had a whole suite of recommendations. They had academics from around the country turn up and, frankly, I'm not sure whatever happened to it. I suspect it just went into the big black hole. The advantage of the Australian Building Codes Board is that everything gets done through a pretty robust process and you come up with a technical regulation and that is either approved or not approved. We're not suggesting there has to be a national planning system because that's a whole other political issue, but if you had a body, as I've suggested, which was ongoing and coordinated, then that would in my view be more long lasting than expecting the planning officials themselves to coordinate something, just because there's an organisation that has a life beyond the planning official who comes and goes.

MR COPPEL: Which sort of people would be represented in this body?

MR THWAITES (ABCB): I would think it would be pretty slender. I mean, obviously you would have a CEO and two or three - if you had the National Water Commission model you'd have a couple of commissioners who would be appointed by the states and the Commonwealth, and then they would employ a small staff who would coordinate the work, and presumably the states and the Commonwealth would agree on a work plan, an annual work plan and a budget. I should say, as I understand it, the current government had a policy when they came into office to have a national adaptation centre of some sort. As I understand it, that's now just part of the department. It was never actually acted upon. There is NCCARF, which is a total research organisation and it does a good job but it's research. What we need is an organisation that's got the people with decision-making power on it to coordinate the work that's done.

MR COPPEL: Okay. One final question on recommendation 8 in your submission which relates to existing buildings and you say there should be a greater focus on how to make them more resilient to the effects of climate change. Do you have any ideas on how one could go about doing that?

MR THWAITES (ABCB): I do. There are - and I think you refer in the report to some of them - but the first thing to say is it is possible to regulate for existing buildings and we do do it in certain cases, for example, where there's a major issue of safety: smoke alarms is one; pool fences is another; fire safety in aged care facilities is a third. Interestingly, fire safety is another example where we had a catastrophe in New South Wales, and now New South Wales is looking at regulating, and potentially that could apply to existing buildings. I think Queensland does apply to existing buildings.

That's the first thing to say: it is possible to regulate for existing buildings.

There is a big political impediment to that, and a cultural impediment. Interestingly, there is no legal impediment to it as far as I can ascertain. It may be that one response to climate change would be to say, "All right, we'll allow buildings in certain areas, or to do certain things where we're uncertain in the response but have some form of caveat that retrospective regulation may come at a future time on those existing buildings." That's one potential response. I have actually done a paper separately with someone on the subject and I can forward that to you if that's of any assistance.

DR CRAIK: That would be great, thank you. Thanks very much, John and Matt, that has been very helpful you coming along today. If you could forward those things that would be appreciated.

MR THWAITES (ABCB): Thank you.

DR CRAIK: Our next appearance is from the Australian Institute of Architects and ASBEC, David Parken. Thank you. David, if you could state your name and position for the record, and if you'd like to make a brief opening statement we'd be happy to hear from you. Thank you.

MR PARKEN (AIA): Thank you for having me today. My name is David Parken. I'm the CEO of the Australian Institute of Architects but I also represent the Australian Sustainable Built Environment Council and chair the climate change task group of that council. I would like to make a few introductory remarks.

ASBEC is the peak body of organisations that are committed to a sustainable built environment in Australia. We have members from industry, professional organisations, academic institutions, other non-government organisations and government observers who are involved in the planning, design, delivery and operation of our built environment and who are concerned with the economic, social and environmental performance of the sector. ASBEC has a series of task groups and I chair the climate change task group, as I said in my introductory opening statement. ASBEC members can self-nominate to join a task group and contribute to the task group projects through providing funds and in-kind support. We currently have a series of task groups.

Over recent years ASBEC has made a significant contribution to climate change mitigation and abatement issues as they relate to the built environment, specifically with the publication of The Second Plank report, Building a Low Carbon Economy with Energy Efficient Buildings, in 2008 and its update in 2010. These reports clearly quantified the significant emissions abatement potential of the built environment and proposed energy efficiency policy initiatives, some of which the Australian government has moved to implement - which we are pleased about.

In turning its mind to climate change adaptation, it quickly became apparent to the ASBEC climate change task group that while some adaptation activity in the built environment was occurring, it was happening piecemeal across the country. In addition, our new buildings and suburbs are being built based on past climate information, not on a predicted future climate change, these risks leaving a legacy of urban communities being underprepared for future climate change impacts. With an overall replacement cost for Australia's built environment estimated to be in excess of $5.7 trillion, the economic, social and environmental risks posed by climate change are indeed significant.

The built environment adaptation framework and report Preparing for Change was initiated by the task group as a result of a need for a coordinated strategic response to the issue. We've witnessed a number of extreme weather events within Australia over recent years and the toll that these have had on our community, our

built environment and our economy has been significant and long lasting. It is incumbent upon all levels of government, industry, community and other stakeholders to work together to enhance the resilience of our built environment and community to extreme weather events and predicted future climate change impacts.

Whilst ASBEC recognises the positive steps towards mitigation being undertaken by Australian governments, the organisation also acknowledges a level of locked in climate change as a result of past and future emissions. Significant action is required, not only to ensure that our regulatory framework adequately consider and respond to projected climate impacts, but that as a community we become better prepared and our buildings, precincts and infrastructure are designed to withstand the increased intensity and frequency of extreme weather events and future climate change.

The framework for climate change adaptation in the built environment and the accompanying report Preparing for Change have been developed to act as a guide for action by government, industry and the broader community. The framework offers a strategic, coordinated approach to adaptation in the built environment and consists of a multifaceted 10-point plan seeking government leadership, targeted research, incentives for action, improved regulation and increased tools and information.

I wish to acknowledge the members of the ASBEC climate change task group and those who help fund this project: the Australian Institute of Architects, Consult Australia, the Green Building Council of Australia, the Property Council of Australia, the Department of Climate Change and Energy Efficiency at the federal level and the WA Department of Finance, Building Management and Works. ASBEC is seeking Australian government commitment to work with industry to progress the framework's recommended activity.

A summary of the framework and key calls to action is: the framework aims to protect the wellbeing of communities through targeted policy initiatives and better urban and building design; ensure appropriate institutional arrangements to facilitate adaptation; realise economic benefits from earlier adaptation through effective strategic planning and risk minimisation; advance sustainability through better resource and risk management strategies; increase community education and awareness about climate change risk and adaptation.

The Preparing for Change report outlines the case for change and the need for a coordinated government action. The key calls for action in the report include: government to identify built environment as a priority sector for climate change adaptation; establish a national built environment council; commission research into the cost benefit for adaptation action; increase adaptation funding; and respond to the ASBEC report and framework. They are my introductory remarks.

DR CRAIK: Thanks very much, David.

DR BYRON: Thank you very much, David, for the submissions, both of them - three of them actually. The points you were just making about what the Institute of Architects would like to see as a role of the Australian government, would it be fair to say that it's already doing many of those things in terms of facilitating research, communicating adaptation, raising awareness, looking to address regulatory barriers once we've identified them? Do you see anything new or different in what the national government needs to be doing, or is it really just to do the existing agenda better?

MR PARKEN (AIA): Well, we recognise that there has been some action. I guess what we would say is most of the effort or the focus, has been on mitigation, and I think that's been talked about plenty and we could go on for hours about that. We think that the adaptation side of the equation has actually been underdone. The work that's been done at the federal government level, from our understanding, actually commenced about five years ago. There was about $126 million of funding put in place by the Howard government and that that funding, at the end of the financial year just past, expired and we've dropped to something like $3.2 million in the current year for this work. So, yes, there has been work.

We are looking at new knowledge here, we're looking at a new challenge and we need innovative solutions. I think for the federal government, of whichever colour it is, to walk away from this would be a great disappointment and so we would encourage them, but equally we're saying, "Let's do it collaboratively." We think industry has a lot to offer here. We design, build and operate the built environment that the community lives, works and plays in. $5.7 trillion, that's the replacement cost of the current built environment; some nine million dwellings, over 300 million square metres of commercial property. That's a huge number. So some of that is at risk and we need to act in a coordinated way.

The 10-point plan has behind it a series of suggested actions, over 30 suggested actions, and we basically would like to - what ASBEC does is it brings together all of the interested parties at the peak level. Individuals or individual companies are not members, but groups, industry associations, professional associations, government departments come together to talk about these issues. So it's significant and we think there is an opportunity for better coordination. So, yes, we do acknowledge there has been some work but there is a heck of a lot more to do.

DR BYRON: Coming to the ASBEC submission, I was particularly interested in the one providing incentives for early action within the built environment and it caused me to think about the potential scale of that action and you can look at everything from individual properties or households through to a suburb or a city or a region and I was just wondering if you had any thoughts on the appropriate scale of

action that you're talking about.

MR PARKEN (AIA): That's obviously something that needs to be explored. But you heard from the previous speaker, the chair of the Building Codes Board, the dilemma that they have with the existing building stock and apart from a few situations where they can require upgrades, basically we're looking at the built environment being refurbished, between 1 and 2 per cent of the built environment, depending on the economic conditions are actually being refurbished and depending on the nature of that refurbishment, then the building code comes into play. So you have a huge asset out there, in fact most Australians if they did their balance sheet I would put to you that their biggest asset on their balance sheet is in fact the building that they live in and sometimes they go beyond that and invest in buildings which is great and we welcome that.

Our message is regulation is not the only thing in the arsenal and incentives are effective. As to the scope, whether it goes down to the individual landholder or whether you incentify local government, for instance. It's pretty clear that local government doesn't have the resources on an individual basis, council by council. We have over 550 local government councils all trying to deliver public services and in the main run the planning system which is a complete failure I'd say in Australia.

DR BYRON: The reason for asking that question is that I was going to ask firstly the question of what do you think is preventing property owners from undertaking adaptation investment? Do you think it would be in their own self-interest? Then I thought, "Well, maybe there are some scale of adaptations that are broader than just the individual property owner." Coming back to that question, do you see barriers that prevent property owners making adaptation investments to existing property?

MR PARKEN (AIA): Lots of them.

DR BYRON: Please elaborate.

MR PARKEN (AIA): Access to knowledge is one. Having confidence in what you're doing is another because the risks - what we would say is the risk depends on your location. We think that the work being done by the Australian standards for a risk management approach is worthy. What's missing, of course, is a central database with a one-stop shop and the fear that we would have from the Institute of Architects is that some clients will just simply tick the box and say, "We'll now just comply with that standard, that is another thing that will add to the brief," so one of the barriers is access to the right information. I will give you an example of where there is quite - people struggle to understand, "What will it really mean in the real world? What does a more resilient building look like? Does it look like a bomb shelter? Do we build everything underground? What does it really look like?"

Geoscience Australia has done some work on hardening of roofs to resist higher wind loads mainly through cyclones at pretty high wind speeds. They have concluded that actually by basically doubling the number of fixings on the first two purlins has a significant effect. In fact they've done studies that show before and after in the real world effects.

DR CRAIK: Can you translate that into English.

MR PARKEN (AIA): The screws that hold the roof down, if you put twice as many in, you more than double the resistance of the roof to blowing off.

DR CRAIK: Thanks.

MR PARKEN (AIA): That is something that the general public could understand. So you don't actually need a PhD to get that message across. So an incentive solution could be local government rolling out in their area a hardening of the roofs in that population. So that is an example of some specific action that could be taken in a geographic area which was subject to high wind speeds. Equally you could incentify the commercial property sector to do things like harden their buildings, eg, shopping centres and there's a good example of Stockland where they went through voluntarily this process in Cairns, they hardened their roof and then that shopping centre was actually used as a public safe gathering point during Cyclone Yasi and, touchwood, the engineers and the architects got it right and the roof didn't blow off. I guess what I'm saying is we need these sorts of examples to demystify what we're really talking about.

DR BYRON: I was wondering if there was any existing regulatory practice that in some way inhibited innovation adaptation. I'm particularly thinking of things like the basic system or even the star rating schemes that may discourage innovative new designs that might have great future potential.

MR PARKEN (AIA): It depends how you look at that. What we would say is we're actually pretty happy with the National Construction Code and the Australian Building Codes Board. They have moved to a performance based code. Some of the barriers to innovation were probably the deemed to comply information which treated everyone like a simpleton and in fact innovation comes when you've got a performance standard and you can use your design expertise to satisfy that. I will give you an example, we now have shopping centres that have five and six-storey atriums that are connected. That was never permitted under the old code but under a fire engineering solution and innovation you can do that with quite a lot of confidence, you can have a real-time, three-dimensional model show how the smoke is extracted and how safe egress is provided for the occupants of that building. Now, that is true innovation.

So I think there is plenty of capability and capacity in the industry to innovate, it just needs the right things in place and incentives. That's why we're very strong on incentives and you will see from our mitigation work, the second plank report, the first three policy suggestions there are all incentives. But we do support the carrot and the stick and upgrading regulations and code. The problem with adaptation is that it is a bit undefined and you really need to get down and define it based on the real risk that applied to your geographical location and you need real solutions. I think one of the concerns we've got with regulation is particularly in the planning system and we have real barriers there where we can end up with 550 different solutions dreamed up by 550 different local governments because they thought it was a good idea.

DR BYRON: That's a perfect segue into my next question about the intersection between our planning system and our construction codes that seem, in many states, to be run by different people according to different rules. They obviously intersect in practice but not very much in administration and we've been talking about that previously with the Construction Codes Board. But do either ASBEC or the Institute of Architects have views on how to makes these two different systems that clearly need to intersect much more smoothly - how to achieve that?

MR PARKEN (AIA): We would certainly support a national approach and that's why we're a great supporter of the Building Codes Board for all of its - I could, you know, start on criticism but I'd rather start on praise because it has worked. We've got an inter-government agreement, we've got the nine governments and the local government represented through the local government associations. So we have the 10 parties agreeing on something, we have an independent board, it acts and it's a national code. Sure sometimes the timing of the take-up by some of those different states we could quibble about, sometimes the fact that they've added to the appendices that were actually a transition pathway we could quibble about, but overall, on balance, it's a model of success.

Compare that to the planning regulation in Australia - and this is why I say it's a complete failure because (a) there are no national principles coming out from the federal government which is really its true role to just set the principles and then let the states and territories get on with it, let local government administer it but have a set of principles; (b) there's no cost benefit analysis done when they do change the rules and changing the rules is a very interesting topic because our experience is that some local councils can google the adaptation guide from Switzerland, put it up to the local council and have it passed on Tuesday night at 11 o'clock and before you know it we've got another 110-page document that we're reading through to comply with. It's gone through no statutory process, it's just, "Oh, it's just a guideline," but on the ground in implementing that that is why we get into a mess because we have 550 local governments doing that.

I sound like I'm bagging them - and in a way I am - but I would like to support them with incentives so that they actually have, you know, some national standards coming through. The federal government has shown with the data on the sea-level rise and the coastal inundation that they've got the chequebook and the power and the principles to get the best data on the table. They should be providing the data, providing the principles and let the delivery happen but in a coordinated and consistent way. I think it's that lack of coordination and lack of consistency that ultimately costs consumers, the mums and dads who pay their council rates, they're not getting value because there isn't that coordinated, consistent approach.

DR BYRON: There is no downside to that coordination and consistency that you can see there?

MR PARKEN (AIA): I think there is enough checks and balances in place. My view on that would industry is pretty active and pretty smart and we're not going to let - if we got our wish of a nationally coordinated scheme, I don't think we're going to let that run off the rails. Equally that's why we put in so much effort to support the National Construction Code and the implementation of everything that they're doing because we see the opposite side of the alternative world and that is not one that we would like to go back to in terms of the building regulations.

DR BYRON: My final question is about timing because I think there is a tension in this whole debate about taking early action which is preventative, precautionary and potentially much cheaper than doing things at the last minute as opposed to the other argument of, "Well, if we can defer very expensive actions until we have much better information, we may construct fewer white elephants, for example, or we may construct something that's far appropriate to what we actually need rather anticipate in advance." So this tension that we've been going through this whole debate about now, soon or later, where does ASBEC come out on that?

MR PARKEN (AIA): What we would be saying is, yes, there are those tensions but buildings have a long life and with the new stock you really only get one chance to get it right and then you're stuck with it for 50 years. You may paint it in the meantime or do something but basically the structure, its location, its floor level, you're all pretty well locked in and so I think the first build is important. If you think of the Queensland floods, for instance, the institute offices in Brisbane in Merivale Street were flooded with 700 mils of water and $400,000 of damage that we had to pay for because we didn't have insurance, of course; no commercial buildings could afford it.

But next door was a build that had carparking on the ground level and was not huge, it was a three-level with ground level carparking and the only thing that they suffered was the lift overrun pit flooded and they got hit obviously by the Brisbane-wide blackouts. But they kindly lent us meeting rooms and they let us use

their toilets and whatever and it really became clear, again, real-world evidence on the ground that there is a design solution that could come up with a typology. It's interesting that Queenslanders were built on stilts for a good reason. It works, you could put parking and you could put short-term storage down there if it's flooding or if you've got a bit of notice you can put stuff up on the upper levels.

So what we would say is with adaptation your first act of building should be well informed. It gets a bit complicated obviously if you're going to declare whole areas as unsuitable for building. That is a big deal and that would need to be well thought of because you may say, "Well, actually what we will do is we will let that be a caravan park for the next 40 years because really it's going to go but it's not going to go for this distance." But we would say not taking any action is not responsible but we see the tension. As I said at the beginning, we need to get the research done, we need to get back to testing outcomes, that's why I quoted the Geoscience Australia in terms of the hardening of the roof example and we certainly don't want to all end up, you know, living either below ground or 50 metres in the air because we're afraid of these things and I think that's where the risk management approach comes into it.

If we look at the mitigation side of the coin, there are lots of things that are happening in buildings now that, you know, when they first started being considered and particularly under the voluntary schemes, under the Green Building Council six star schemes. The commercial office sector has moved enormously and at the beginning you would say, "This is going to cost 20 or 25 per cent more." I can tell you it doesn't anything more at the moment. I mean, the industry has adapted. Materials have to cut it. They will raise to the standard. You know, you look at the solar panel thing, the drop in the solar panel price is being driven by market demand. Double glazing is a similar example. So I don't think we should be too worried about that. We should be getting the regulation right and the standard right and the market will respond and if double glazing becomes the norm, well, guess what, it becomes the affordable norm because competitive pressures are there and they will sort it all out.

DR CRAIK: Thank you very much, David.

MR PARKEN (AIA): Thank you. My pleasure.

DR CRAIK: Thank you for your submissions on behalf of both organisations and thanks for fronting up.

MR PARKEN (AIA): Excellent.

DR CRAIK: You're lucky you can speak one line for two organisations.

MR PARKEN (AIA): My apologies from Tom Roper. The Honourable Tom Roper is the president of ASBEC, he is away at the moment.

DR CRAIK: No, that's fine.

MR PARKEN (AIA): Thank you.

DR CRAIK: Our next appearance is from NCCARF, National Climate Change Adaptation Research Facility. Jean and David, thank you. If you could state your name and position for the record, and then if you would like to make a brief opening statement, that would be great. Thank you.

MS PALUTIKOF (NCCARF): I'm Jean Palutikof, I'm the director of NCCARF.

MR RISSIK (NCCARF): I'm David Rissik, deputy director of NCCARF.

DR CRAIK: Thank you very much for coming along today and for your submissions.

MS PALUTIKOF (NCCARF): Thank you. There are four points I was going to make and then I was just going to hand over to Dave to talk a little bit more about NCCARF. The four points were these: first of all, the market doesn't always deliver in fact to adaptation; secondly, the government has a stronger role to play than the Productivity Commission report suggests; thirdly, whether it's market based, private or public sector, whichever appropriate, effective adaptation can only happen if knowledge barriers are overcome and, finally, an organisation like NCCARF is needed to deliver that knowledge. As I said, when I finish, David will just say a little bit more about what NCCARF does.

If I just take those each in turn. Why then can't the market always deliver - and I think there are three reasons. The first of these is to do with a large infrastructure. If we consider something like Australia's transmission grid for power, for electricity, the grid was built to deliver very large amounts of power from single sources to a distributed network. Under climate change, if we're going to successfully adapt we're going to need very large amounts of power which will come from unconventional distributors and small-scale sources in the grid is entirely unfit for this purpose. What's to be done? Somehow I don't see the private sector solving that problem for us.

The second reason is that the market will tend to adapt incrementally and piecemeal and under certain circumstances and certain conditions of climate change. There's no doubt that transformational change will be needed, and there's considerable literature on this. Examples of this would be the need to abandon agricultural land where conditions become much drier or hotter, and to move elsewhere. A second example would be the Grantham relocation after the flash flood in the Lockyer Valley in Queensland which needed a local council to undertake that activity.

Thirdly, the market will tend to adapt to current climate change rather than to future climate change. I think there are two problems there: firstly, to adapt to current conditions in the expectation that future conditions will be the same as your

current conditions is likely to deliver a maladaptation. There are good examples around flood control in the Mississippi Basin in North America where they just continually built up the levees without taking into account that flooding was going to become more frequent and more severe over time. You see examples in Australia around the rebuilding of houses in the bushfire zone.

We need to adapt now to future climate change. What is the reason for that? Well, there are four really: firstly - and it was referred to by the previous speaker - large infrastructure has very long time scales to deliver and it lasts for a very long time, so you need to start planning for it now and you need to take into account that the planning horizons are very long, something like 30 years, for the flood defences in the North Sea. It took them 30 years following the 1952 storm to complete the flood defences, both in the Thames Basin and in the Netherlands. Those time scales are quite typical. Those infrastructure elements are in place for 50, 60 years, so again you're having to plan them to take into account future climate change.

Secondly, I think there's a sense in the Productivity Commission report that climate change will be well-behaved, linear, orderly and that we'll have time to adapt. I think that's a falsehood. Empirical evidence suggests that this isn't the case. If you go back in the paleoclimate evidence you can find things called Dansgaard–Oescher events and Bond events where very rapid transitions take place which were sufficient to bring down empires and civilisations. Even if your climate change was linear and well-behaved, that doesn't tell you that your impacts will be linear and well-behaved because we all have read, I'm sure, there are thresholds and tipping points and ecosystems would be an example where there are many such thresholds and tipping points, and we need to increase our resilience in order that we're ready for those thresholds and tipping points.

Lastly, it is possible to implement low-regret strategies now which will build resilience to current as well as to future climate change. That just says something about why the market won't always deliver effective adaptation. My second point was why does government need to play a role? I've already covered some of those points - to provide large infrastructure with very long time scales that the private sector maybe wouldn't be interested in, such as transmission grids; to identify and implement transformational change and to establish frameworks which will encourage adaptation now to the future challenge of climate change.

There are some other roles and we identified three: one is around the management of ecosystems. There wasn't a great deal in the draft report around ecosystem services, and I didn't see any recommendations around ecosystems. I did feel that was a little bit of a gap. There's also a role for government around monitoring and evaluation, and understanding whether Australia is building resilience or is becoming increasingly vulnerable. This is an activity that the UK government is currently engaged in, but we don't really have a baseline here in

Australia to understand what the current situation is and what direction we're moving in with respect to our vulnerability and resilience to climate change. Finally, the role of government is around understanding the international context and undertaking active management of Australia's trading partners, trading patterns and national security. It's probably the case - although we don't know - that the principal threats to Australia will not come from climate change acting within national boundaries but from climate change impacts overseas affecting Australia's trading patterns and national security. In this respect, as in many others, we're not really understanding this because we're not doing the research but it's something that is really a gap.

My third point is that we need knowledge for effective adaptation and this knowledge in turn needs to be communicated effectively. Just as an example of that, much effort and activity is being put into the generation of scenarios of future climate change - so we're busily generating scenarios at very high temporal and spatial resolutions - but what we're failing miserably to do really is to help people to understand how to use these scenarios; we're failing to deliver data in a user-friendly manner for people like local governments to use, and we're failing to deliver accompanying socioeconomic information. Knowledge is also needed on vulnerability - where and who; resilience - how to build it; and impacts - where, when and how much. This knowledge needs to be delivered as policy-relevant evidence, ie, it needs to be tailored to the requirements of the user.

I could only find one recommendation in the draft report about knowledge and information transfer which is about flood risk information. In contrast, 41 of the submissions made to the issues paper refer to a lack of knowledge or inadequate knowledge as a barrier to adaptation. Do you have any questions for that or would you like Dave to continue?

DR CRAIK: We will let David go and then we'll ask some questions, thank you.

MR RISSIK (NCCARF): Basically I was going to talk more about what NCCARF does and how we are placed to address, and what we're doing to address some of issues. Essentially, NCCARF is a small organisation based at Griffith University on the Gold Coast. We have a very large outreach across Australia through our networks, which is our first big activity. We have eight networks in eight thematic areas ranging from biodiversity through to settlements and infrastructure and socioeconomic issues. Those groups basically have a task of building capacity amongst the research community and the end-user community to deal with climate change adaptation, and they do quite a lot of activity around that.

Our biggest area of activity in NCCARF is our research program that we run, so we have two areas of research, one is the Australian Adaptation Research Grant Program and the other is the Synthesis and Integrative Research Program. We've developed nine Australian National Adaptation Research Plans, or NARPs, and these

deal with nine thematic areas, and we have undertaken a significant research program to address some of the research gaps that were identified in those adaptation research plans.

We've got 96 projects that are currently being completed or under way in that area. We augment that with our Synthesis and Integrative Research Program where we recognise that often end users need information in shorter periods of time. They often will ask a question and if we take three years to answer it, by the time we come up with the answer they will say that the question has changed. We recognise that we've got a shorter program where we typically take six months to a year and we focus on specific needs where we've gone out and canvassed with end users exactly what their needs are, what tools they need provided to them and I guess more practical applications they need from these research programs.

We've got 54 projects that are under way in that area. Quite a few have been delivered. We've tried to be more flexible and nimble there too. For instance, when the Queensland floods happened and it went down to New South Wales and Victoria, we were able to undertake some fairly rapidly conceived projects to learn from those particular events, and those projects are coming to an end now and I think will be very valuable to people like the Queensland Reconstruction Authority and others who are dealing with those issues.

When we last met with the commission we were heavily engaged in actually getting those projects under way. That was our main area of activity. Since then we've got the money out the door and we're now busy getting the information in and working very strongly on how we engage end users and get the information across to the people who need them. That's a big area of work that we're undertaking at the moment through our knowledge and communication area. That means we have a lot of workshops, a lot of seminars, a lot of developing, lots of fact sheets and policy relevant documents that we can provide to our end users. We're trying to expand the breadth of the end users that we get the information to. I'd say we're doing fairly well in that.

Some of the evidence that we're doing fairly well in that space is we attended recently an adaptation conference in Arizona and there was something like 80 or 85 Australian people at that conference, most of whom had some sort of link into NCCARF in some way, shape or form. It was very clear that we were driving the international capacity in research in this area too. I think the stand-out thing was that most of our research - in fact all the people who are funded through NCCARF who spoke about the research, talked about needing to get the information across to end users. It was a very clear indication that it wasn't research for research sake, it was applied research that was being done for a reason and with outcomes in focus. That was something that certainly got conveyed back to me by people from other countries. They felt we were leading the pack from an NCCARF perspective.

The challenge for us is that the end-user community is so broad that to get the information out to everyone who needs it is a big job and will take some time. We have basically a year left in this current phase of NCCARF, and most of our projects we will be delivering early next year. We will have something like three or four months to get information out from 148 projects to a very broad range of end users. We see that as a big challenge. If we do not manage to get further funding from NCCARF it will mean that a lot of projects get put on shelves and gather dust and don't actually get taken up. I think that would end up being a significant waste because not only has the government contributed quite a lot of money, our partners from various universities and from Queensland state government have contributed quite a lot of money.

Also all the research institutions and groups and private companies - in fact some of them who have been involved in our research projects - have in turn committed significant in-kind funding into the project, and in our submission we've got some figures there that you can have a look at. I think it's quite an impressive body of work that's being done around the adaptation space. I'll leave it there, if you have any questions.

DR CRAIK: Okay. Thanks very much to both of you for that. That's really helpful. Can I ask, the NCCARF research programs that you've talked about and involving the end users you've talked about, have you got evidence that they picked up the findings and incorporated them into policies? Have you got an evaluation of that, in your evidence, actually occurring?

MR RISSIK (NCCARF): It's one of the hardest things to gauge at the moment because, as I said, we're still getting the message out there, and that sort of translation of research projects into policy takes time. But at the moment we've just started a series of eight projects - one for each state and territory - where we're working with the actual government end users in those states and territories to integrate all the information that's been generated through NCCARF's research program, and other relevant ones in those states, to deal with particular issues that they have. Our feedback is that for statewide adaptation strategies and so on there will be uptake.

Queensland - before the recent change of government - had put out an issues paper and they were developing an adaptation strategy, and it's very clear if you look through that particular issues paper that they put out the amount of work that they're going to be depending on from NCCARF and that's why they came into the partnership in the first place. But to actually say, "This particular project resulted in this particular outcome," it's a little early. We do have what we call our research impact assessment that all of our projects need to do as part of their contract with us, and that will go through not only what they did, not only what they produced but how their work was used. I think the evidence will come up when we get that sort of

feedback from our researchers.

DR CRAIK: Do you ask the end users if the research that was done in their program was useful to them, or do you just ask the researcher, because there might be a different view.

MR RISSIK (NCCARF): Yes, absolutely. We have an annual evaluation that we do where we have an Internet based survey that goes up. We do it through an independent body. Nielsen Consulting have been doing it for us. We did the first one last year, and the second one is just recently completed this year. We're getting a presentation on the outputs tomorrow. The early information is that there is an increase from last year to this year about how end users see the value of NCCARF's projects. Next year we will do it again and we hope to see that increase because we do make a significant effort to identify stakeholders and to get the information to them.

DR CRAIK: Is that information available or will be it available?

MR RISSIK (NCCARF): It ultimately will be, yes.

DR CRAIK: Is it possible to be available for us - even last year to this year - for our inquiry? Is that possible?

MR RISSIK (NCCARF): Certainly last year's will be available, I guess.

DR CRAIK: Okay. If this year's is available - - -

MR RISSIK (NCCARF): If it's in time for you, we can get it across.

DR CRAIK: That would be really good if that's possible. From all the research that you funded, are you aware of any examples where things have been picked up by departments, agencies, organisations?

MR RISSIK (NCCARF): Anecdotally, people are picking things up. For instance, we did some work on historical case studies of heatwaves in South Australia and in Melbourne a few years ago, and there's certainly anecdotal evidence that those reports have been picked up and used at a South Australian government level and local government level to influence their policy regarding heatwaves. Certainly with some of the other work in that historical case studies area where we did some work around inland flooding and storm surge and emergency management, some of the committees that are set up nationally and in Queensland have asked for presentations on the work and listened to the outcomes and have tried to engage with them.

The thing that really does work, I think, is generally through our research

projects, it's not a matter of giving people money, they go off and do it and come back and most of the work is done in conjunction with end users. We really push that quite strongly. The journey is often where their lessons are learned, rather than the actual output. I think back to another body of work that was being done after the cyclone and flooding in Queensland last year and the team that did the work had a whole lot of questionnaires and they went out and asked people about how they felt prepared for the events and what they did in terms of insurance and so on, and emergency management. They worked quite closely with the Queensland Department of Community Safety. There was engagement throughout. If the department wasn't getting what they wanted from that particular study they wouldn't have engaged so strongly throughout, all the way to the end of it.

DR CRAIK: Do the end users have a say in selecting who does the research and kind of the nature of the - - -

MR RISSIK (NCCARF): Absolutely.

MS PALUTIKOF (NCCARF): It's also worth saying that we had an approach from the Federal Emergency Management Agency in Washington. They're interested in our work and we're hoping to meet with them through the Attorney-General's Office next month. With respect to end users then we identify our research projects through open calls. The proposals that we receive are evaluated by independent science review panels, and those panels always have representation from end users. So typically they would have at least one member from the state government and one member from the Department of Climate Change and where appropriate we'd have someone from the private sector as well. All projects are expected to have a steering committee. That would be a more active group in the sense there's an integrative research program.

The adaptation research grant program is slightly more, as you might term it, academic and certainly more thematic type of research, whereas it's the synthesis and integrative research projects that are expected to really deliver immediately to end users. So synthesis and integrative research projects will have a very active steering committee which will have a large number of end users on it. For example, we did a forest vulnerability assessment which had a steering committee which was almost entirely end users coming from the private sector, from commercial logging companies and so forth, using the forest for commercial purposes, as well as recreational purposes. There's end user engagement right down the line.

DR CRAIK: One of the things you said is that future funding is needed for NCCARF to roll out research findings from the first phase. Given what you've said, it's not quite clear to me why it hasn't - I mean, it seems to have been occurring as you've been going.

MS PALUTIKOF (NCCARF): We have at the present time something like 90 active projects. They will begin to deliver their draft final reports towards the end of this year. Those will go out for review. In the case of the synthesis and integrative research projects, one of the reviews will be done by an end user. Their final reports will be finalised typically around about March. There isn't really the opportunity for us to communicate the final results of those projects until April, May, June of next year and then we're finished. That's really quite a short time.

Also there are secondary products arising out these research projects. Certainly for the Adaptation Research Grants Program, really the outcomes from those projects are not immediately deliverable to end users. I think you'd agree with that.

DR CRAIK: Yes.

MS PALUTIKOF (NCCARF): They really need to be taken by NCCARF and tailored to address end user needs and that takes time. Whereas synthesis and integrative - Dave spoke about the historical case studies and they came under the Synthesis and Integrative Research Program and they are immediately transferable typically to the end user community, but this would not be true for the Adaptation Research Grants Program, the thematic research results. We are currently looking at how we're going to package them. We are looking at creating nodes or packages of projects that address particular themes. I think we have one on tools for decision-making.

MR RISSIK (NCCARF): Yes, one on tools and heat, for instance. We've got something like 15 different projects that deal with heat in some way, shape or form, and independently they're all pretty valuable projects, but when you combine them together and you start thinking about what people need to know in various types of places around Australia and the various needs, we might have a number of different products that would generate from a series of research projects. I think that's where you really start to get the value of the breadth of work that's been done.

DR CRAIK: How do you evaluate the effectiveness of your research and activities? I know you can count the number of projects but how do you actually evaluate the effectiveness of these things?

MS PALUTIKOF (NCCARF): Dave has already referred to the Nielsen survey which would be a principal tool for us of evaluating the effectiveness of the work that we've done. You refer particularly to the research, but one of the things - - -

DR CRAIK: Sorry, I'm using a - - -

MS PALUTIKOF (NCCARF): - - - that we've not touched on is that a very major role of NCCARF is to build capacity in the research and end user community. That

Nielsen survey looks also at our performance with respect to building capacity. I would say at the present time it's rather easier for us to evaluate, but only in a rather subjective sense - a qualitative sense - our performance with respect to capacity building than it is with respect to the uptake of our research outcomes for precisely the reasons that we've dealt with, that many of our research outcomes are not currently available and will not become available until 2013.

What Dave has already referred to, things like the Arizona meeting where the sense of the meeting is very much that Australia is a leader in adaptation, and a very clear indication of what's been achieved in Australia. I don't know that NCCARF would take all the credit for that but there have been a number of initiatives. For example, there's the work that's been done in the Department of Climate Change and Energy Efficiency which has also contributed towards capacity building. A large proportion of the international recognition of what's being done here in Australia is coming through the work of NCCARF and our activities both here and overseas.

DR CRAIK: Okay. You said something like NCCARF needs future funding, and you talk about the need to investigate or find targeted knowledge for adaptation that needs to be developed in the future. Do you have any particular thoughts about what that targeted knowledge ought to be. Do you know what it is? Do you have any idea of where you think funding should go?

MS PALUTIKOF (NCCARF): I'm not following you.

DR CRAIK: You refer in the papers, I think, to "there is a need for targeted knowledge for adaptation that needs to be developed in the future." What would you see the research funding going to? Have you got examples of targeted knowledge?

MS PALUTIKOF (NCCARF): I think when we said "targeted knowledge" we meant who are we going to deliver that knowledge to.

DR CRAIK: Okay.

MS PALUTIKOF (NCCARF): You thought we meant?

DR CRAIK: I thought you had some idea of what actually needs to be developed.

MS PALUTIKOF (NCCARF): No, I think what we were referring to - and Dave can correct me if I'm wrong - is who are our primary end users. Who is it that we're trying to reach with the knowledge that we have developed in order to enhance Australia's adaptive capacity, readiness and ability to adapt.

DR CRAIK: Okay.

MR RISSIK (NCCARF): We would always not claim to be the ones who would set the research agenda ourselves. We contribute to that from what we've learned in what we've done in the past. But in any sort of research agenda we would need to engage really strongly with the people who need the information.

DR CRAIK: Okay. If you got funding for another phase and you roll out the results of the information you've got, what would the plan be beyond that?

MS PALUTIKOF (NCCARF): The need for a body like NCCARF in Australia isn't going to go away. It isn't the case that you can develop all the knowledge and then that's all you need and then you're set for the next 20 or 30 years, you can just carry on and merrily adapt. I think what we're trying to set out in the paper that we submitted to the Productivity Commission is our understanding of the current barriers to adaptation around knowledge, and how those can be overcome and how, in an ongoing sense, there is a need for a continuing stream of knowledge around adaptation issues.

The role of NCCARF, I would say, over its four years of existence has shifted quite considerably from - and I would say that it shifted initially from being rooted quite clearly in the researcher community, to a position now where it's much more a bridging organisation between the research and end user community, where initially we were developing knowledge and there was very little consideration of the communication of that knowledge to a situation where communication of that knowledge has now become central to our activities. I think we're moving now towards a situation where we consider that that knowledge needs to be packaged as evidence based policy advice. That is a very long way from the place where we started out.

We don't entirely have a full understanding at the present time of how we're going to deliver that evidence based policy advice, but it's something that's central to our thinking at the moment and we're going to be moving to deliver in the next two to three months.

MR RISSIK (NCCARF): One thing that we are fairly sure of is if we're going to a new phase of NCCARF we'd need to start expanding a little bit beyond Australia's boundaries because of the interaction that a lot of things that affect Australian adaptation has, with the international environment - things like food security, food prices, climate change migrants and so on, which do affect Australian communities. We do need to start to understand that and be able to feed that information effectively to policy-makers as well. That would be one step that we need to be talking to probably a different set of stakeholders in some sense to what we have today.

DR CRAIK: How will you operate if you don't get funding from the government? What will you do?

MR RISSIK (NCCARF): Our board has been pushing us quite strongly to engage with business and industry as potential investors. We've done a lot of talking to a lot of different groups in business and industry which is great because it's outreach for NCCARF but it's frustrating in that no-one opens their chequebooks.
It's understandable. I mean, the discussion from them has been that they're pretty keen to be involved but they want to set the research question and they don't see themselves as funding what they see as a public good facility. They would be very happy to engage on a project-by-project specific basis in general. Then there's also this whole issue of competitive advantage over their colleagues in their industry and how we'd get through that. We're listening - - -

DR CRAIK: They're focused on the competitive stuff.

MR RISSIK (NCCARF): Yes. We're listening quite strongly and there's opportunity but I think they want leverage, we need leverage, and so our argument would be made a lot easier, and I think we'd be successful in getting quite a lot of engagement if we had some core funding to be able to argue with.

DR CRAIK: Yes.

MS PALUTIKOF (NCCARF): The bottom line with this is if Australia doesn't understand that there's a need for an organisation like NCCARF then there is really no point in NCCARF continuing, so you would close it down. There is a point at which you would say that if the country doesn't see the need for this organisation then there is no point in this organisation continuing, because so much of what we do is around the communication of knowledge. If nobody is listening, then there is no point in continuing.

DR CRAIK: When is the review of NCCARF going to be made publicly available?

MS PALUTIKOF (NCCARF): That's not a question for us to answer because we were reviewed, and the review is the property of Department of Climate Change and Energy Efficiency.

DR CRAIK: Okay. In the submission and in your intro remarks, you made some comments about sudden and catastrophic things which have dramatically changed the climate, and you didn't think our report had really taken that sort of event into account. You suggest - correct me if I'm wrong - we needed to increase our resilience, and things like low-regrets actions would be the best way to go. Beyond doing that, is there anything that we can do, is the first question and the second question is, did you not think that our no-regrets suggestions would actually lead to that approach anyway?

MS PALUTIKOF (NCCARF): I think they're slightly different, so I think with respect to the nonlinearity of climate change, and even if it's not nonlinear it's certainly accelerated. That being the case then, there is a need to build resilience and to reduce vulnerability. It's a little bit different, I think, from no-regrets actions, although they can be part and parcel of the same thing. Do I think what you said about low-regrets actions was sufficient to address the long-term, potentially nonlinear aspects of climate change, I think probably the answer is no. One of our problems is that we don't understand our exposure. We don't understand where, when and how our vulnerabilities sit, and we don't understand how to build resilience. Our limited understanding that we do have fails to take into account nonlinearity in climate change.

DR CRAIK: What should we be doing to increase our understanding of what's needed to build resilience?

MS PALUTIKOF (NCCARF): NCCARF is making the first step with the state based studies that Dave referred to, so it is very much a first step. What we're doing is we're going out and taking the available literature; not just the literature that's generated by NCCARF but the total available literature, and we're trying to synthesise it to build - I hesitate to say compete, but in an ideal world a complete understanding of what the vulnerabilities are for individual states in Australia; what the knowledge gaps are; what could be the policy advice about addressing those knowledge gaps; about addressing the vulnerabilities and about moving to build resilience.

This is a new venture for NCCARF, we haven't done this before. But having said that we haven't done this before, nobody else has done this either in Australia. We're trying now to essentially blaze a trail around this building of resilience and this building of understanding at a state level.

DR CRAIK: I don't know if you can do this but is it possible to translate that into an example? You talk about nonlinear effects and catastrophic impacts. I guess I'm struggling with what sort of things the research might come up with that would provide an effective response to these longer-term things - - -

MS PALUTIKOF (NCCARF): Okay. I think a good example would be south-west Australia and the water supply for Perth. It's raining a little bit in south-west Australia but they're still a long way from restoring their water resources. I think I gave a figure in there which I just took off a map in iPhone which was 22 per cent at the time I wrote that. The bureau and CSIRO together have indicated that they think the continuing drought in south-west Australia is linked to climate change. There are good reasons to think that south-west Australia might be facing the kind of - "catastrophic" I think is not a word I use but this kind of nonlinear effect and a situation where it's unable to continue in the present structures and the present

infrastructure; it's unable to continue to deliver a secure and clean water supply for the population of south-west Australia.

What do you do? One of the things that the state based studies can explore is various adaptation scenarios which will address this long-term shortfall in water resources for south-west Australia. What do you do?

DR CRAIK: With that particular example I guess my response would be they have already built three desalination plants to deal with just that issue because they are actually pretty much on top of it.

MS PALUTIKOF (NCCARF): So what are you going to do with the brine that's generated by these desal plants?

DR CRAIK: Well, I don't know what they do.

MS PALUTIKOF (NCCARF): Where are you going to find the power for these desal plants? You're just added to the problem, aren't you?

DR CRAIK: I guess the point is from our urban water report they are aware of the issue, they have planned for it and I suppose in our view we felt that the costs have exceeded the benefits of - - -

MS PALUTIKOF (NCCARF): The effects on ecosystems and the effects on the carbon dioxide loading of the atmosphere would lead me to say that addressing that problem through desal plants is a maladaptation.

DR CRAIK: Okay. I can understand where you're coming from on maladaptation. You made a comment in your intro remarks about the electricity grid and I think you said it's unfit for distributed generation. Is that what you were saying?

MS PALUTIKOF (NCCARF): Yes.

DR CRAIK: Can you elaborate on that? The reason I ask you partly is because I'm doing an electricity inquiry as well.

MS PALUTIKOF (NCCARF): I was in Adelaide last week and we were talking about electricity supply in the Adelaide CBD - and I need to go away and read more about this - they tell me it's what they called an island network and this means that they can and have installed trigen plants in some of the refurbs to some of the buildings and to some of the new build but those trigen plants cannot operate successfully in the sense that they cannot feed electricity back into the grid. The grid cannot handle it.

DR CRAIK: Okay.

MS PALUTIKOF (NCCARF): So that is just one example for you.

DR CRAIK: Thanks. Just going back to the water one, if desal plants are contributing to further greenhouse gas emissions - and, yes, of course they are - they're very likely to be depending on the nature of the power source, so what's the response to that? Are you talking about something like in New South Wales where the Sydney desal plant is powered by wind power. Is that the sort of - - -

MS PALUTIKOF (NCCARF): I think one of the Adelaide desal plants is powered by wind power as well but the other two, I understand are not. If you're unable to build a wind turbine within two kilometres of a domestic dwelling, then your opportunities for installing wind power are severely curtailed now anyway. The onshore wind power industry in New South Wales and Victoria is more or less dead now and in South Australia they're anticipating, although they're unsure as yet, that it will be a two-kilometre rule for them as well, that spreads into Western Australia and until the wind energy industry here goes offshore, as it has in much of Europe for similar reasons, then there won't be a lot more wind power in Australia. But that's the bottom line.

DR CRAIK: So given the cost benefit framework that we put in place for evaluating projections, would you suggest that we probably need another framework if we're going to take that sort of thing into account?

MS PALUTIKOF (NCCARF): Well, I would but I'm not an economist. You would expect that from me anyway, wouldn't you?

DR CRAIK: Okay.

MS PALUTIKOF (NCCARF): But I pointed to one or two things. I didn't find much on ecosystem services in the report. I found that quite sad really.

DR CRAIK: There was a reason for that and I guess it was because our terms of reference focused on human adaptation.

MS PALUTIKOF (NCCARF): Yes.

DR CRAIK: That was the reason.

MS PALUTIKOF (NCCARF): But then ecosystem services are around the services that ecosystems deliver to human society. So it's an attempt almost, to pull ecosystems into economic framing so I guess that was what made me a little bit sad. Then coming more from a physical sciences background, I did feel that you were

taking the approach of a well-behaved climate that I did feel might be a little bit unrealistic and dangerous.

MR RISSIK (NCCARF): One of the things we have picked up quite strongly from the work that has been done to date is this need for really doing a lot more integrated work and looking beyond sectors and the interaction between sectors because that prevents maladaptation in different areas but from an end user's perspective helps you make better policies on a broader scope, but also challenges societies values as we get more climate change taking place. So to use the Western Australia water example - and we've got work going on in wetlands over there looking at wetland risk and the declining water table is already having a severe response on wetlands but also the karri forests and those sort of things which are really important to local society and it's, "What can we do about it?" and then, "When do we actually have to change the way we think about these things and make different decisions," because we would rather have a glass of water to drink than have wetland waterfowl. It's those sort of changes that we will be faced with.

DR CRAIK: Thank you. Thanks very much, Jean. Thanks very much, David.

MR RISSIK (NCCARF): Thank you.

MS PALUTIKOF (NCCARF): Thank you for your time.

DR CRAIK: Our final appearance before lunch is Uniting Communities, UnitingCare Australia. We've got someone by telephone. When we're all sorted out, if you could state your name and position. Hello, Susan, it's Wendy Craik here, the presiding commissioner and I've got Jonathan Coppel and Neil Byron here as the other commissioners with me. We're going to ask both of you if you could state your name and position immediately for the record and then if either of you would like to make a brief opening statement - perhaps I will ask Mark first and then you - we would be happy to hear from you.

MR HENLEY (UCA): I'm Mark Henley and I'm responsible for the energy project within UnitingCare Australia and I'm based in Uniting Communities, a Uniting Care agency based in South Australia.

MS HELYAR (UCA): Hello, this is Susan Helyar. I'm the director of services development for UnitingCare Australia and UnitingCare Australia is the national advocacy voice for the Uniting Church and the network of social services under the auspices of the church and we look at social policy issues broadly.

DR CRAIK: Thank you very much.

MR HENLEY (UCA): I think our plan is that Susan will go briefly first and then I will come in second.

MS HELYAR (UCA): We are just going to give you a bit of background on who we are as an organisation and what our interest is in climate change adaptation issues. The UnitingCare network of services is about 400 agencies and we work in over 1300 sites across Australia. We have 35,000 staff and about 24,000 volunteers. So just to give you a sense of presence in community, that's about double the amount of sites that McDonald's has and it's about the same amount of staff as Australia Post. So we have a breadth of coverage and a connection in communities all over Australia, including rural and remote indigenous communities and regional communities in metropolitan areas.

So in terms of climate change adaptation, we provide emergency relief, financial counselling. A number of our services are provided on the HESS scheme and one of our services is UnitingCare Kildonan, which is in Victoria. The HESS scheme was built on and used some work Kildonan has been doing for several years in Victoria, a model of work they have done with working with families and low-income households to try and build financial security, including access to energy security. So we also provide family support, disability support, aged care both in accommodation services and in community based services.

So it's a big organisation with a big presence and with a quite strong interest in the whole climate change issues, both from a theological perspective around the need

for generations to maintain the health and integrity of the world for others because we can just see the significant impact that both the issues around energy access and cost are having in low-income households in terms of their capacity to participate but also just as a major driver of cost of living pressures for the households we're concerned about. The other thing is - I don't know if this is of interest to your inquiry - the fact that we run a number of residential based services, the high exposure that social services has to increasing energy costs and also the high exposure we have in places that are likely to experience severe weather events and significant risk associated with changing weather patterns.

So particularly in Queensland and Victoria during the floods of the last couple of years there has been enormous cost to services, both in terms of having to deal with those circumstances but also to manage the fallout over - particularly in Queensland over the last couple of years, of just households that are falling apart as a result of the impact of those severe weather events in their lives and on their financial security. Then probably it will be useful for Mark to talk to you in his role of leading the National Energy Advocacy Project that we do. I'm not sure if you have seen our notes that we have sent through.

DR CRAIK: Yes, we have thank you.

MS HELYAR (UCA): You may want to ask us questions on those but it might be useful for Mark just to explain what his role is nationally in this area.

DR CRAIK: Thank you.

MR HENLEY (UCA): Just very briefly. Sue, I just note that time is a bit tight so we will try and be brief here. My role is to coordinate UnitingCare Australia responses to national energy policy issues. So we've been heavily involved in input into the white paper, a range of EMC rule changes, development of the National Energy Customer Framework, those sorts of processes. So I have been bringing the experience from the UnitingCare network into those processes.

DR CRAIK: Thank you.

MR COPPEL: UnitingCare has a large network as you mentioned and I'm wondering whether through that network you've been able to develop a picture of where the disadvantaged are geographically and the scale of the number of disadvantaged to what particular sorts of risks or inabilities to adapt. I was just wondering if you could give us a bit of an overall picture of the nature of disadvantaged groups in Australia facing climate change.

MS HELYAR (UCA): I will just talk about that generally and Mark may have some other things to add. Our sense is that there are some places where people are at

high risk. There are places where they are more prone to natural disasters, so coastal areas and certainly places where there's extreme weather events and there are more extreme weather events happening. Those places are often in regional areas where there are very - whilst there might be affordable housing, as long as you're not in a resource boom location, there is not a lot of work opportunities. There has been a decline in the local economies around agriculture and as communities have shrunk the small business opportunities have shrunk.

So there are a lot of people living in regional areas where the access to income doesn't match the costs of living even with cheaper housing, so they're highly at risk. From work we did earlier this year looking at a number of places across Australia we found that very few people are insured. As their income doesn't match changes in cost of living, insurance is one of the first things to go, so there are enormous numbers of people are uninsured. More recently in Queensland there are places that insurance companies have said they won't insure because of their exposure so those places are highly at risk.

People in regional areas that are part of the resource boom, their housing costs are so out of control - and that includes some of the metropolitan areas that are feeders for resource boom areas - anybody in the bottom three income quintiles is accessing our financial help and emergency relief services. So the fact that you have a job is not any protection against the crazy house prices that are happening so those people are highly at risk. They uninsured, they are at risk of homelessness and the social support networks are breaking down because older people or people without work in the resources industry are leaving those towns as a result of housing costs, so that's a whole area of high exposure.

The other place where we're seeing the disadvantage is in the kind of more traditional, metropolitan areas, so there is multiple disadvantage and that's often associated with a couple of generations of poor education outcomes or poor employment outcomes and in those places you see the combination of - you know, if you have access to cheap housing then it's a discouragement to getting increased income because then you lose access to your cheap housing. If you haven't got access to cheap housing, you just spend your life sorting that out, you haven't got time to do anything else. Almost no contents insurance in those households and no buffers for if there is some kind of disaster, if your house floods or if you're dealing with some kind of natural disaster or if you have a storm event, those people just completely fall over.

MR COPPEL: You have mentioned affordability of insurance several times in your response and I note in your submission that you are calling for a means-tested safety net in relation to insurance provision. Have you done any work on how that means-tested safety net would work in practice in terms of design features?

MR HENLEY (UCA): In short we haven't done a lot of modelling and that's obviously an area of expertise to the Productivity Commission. A disability insurance scheme is something that obviously you have done a lot of work on as a commission recently, that is one sort of model. Medicare rebates is another. I suppose we are wanting to, at this point, make the point that insurance is a luxury effectively for a significant number of lower income households. So we are needing to start at least some reasonably serious work about how the lower income households get insurance, particularly with the increased likelihood of adverse weather events.

So it's the principle we're wanting to raise here, some sort of universal insurance scheme which would obviously have to be means tested but which is ensuring that all households have some basic level of insurance support, bearing in mind our overarching observation which is that climate change impacts most heavily on lowest income households and disadvantaged households. So we are seeing this as very much a crucial safety net measure which frankly needs some more work on it.

MR COPPEL: The idea has been proposed, I think by the Insurance Council of Australia as well, that one feature that is different is that the argue that it should be time limited and they also argue that it should also be coupled with stronger incentives for mitigation works. So rather than looking at the affordability side, look at measures that may act to increase affordability through lower premiums.

MR HENLEY (UCA): I suppose the issue about mitigation is the incidence of the mitigation costs and our experience through financial counselling across the country is that the poorest people are least able to spend money on mitigation, they're renters so they're least able to modify their housing environment, their low income stress means they're unable to afford dental cover, health cover and insurance more generally. Look, it's fair to say that there needs to be some incentives for lower income households to take out insurance but I think an income baseline rather than a time limit is going to make more sense.

MS HELYAR (UCA): The other thing we note is this issue around when you're - the insurance is part of it but it's also that getting back on your feet period of time. So what we're seeing is post the 2011 floods and post the cyclones that were in the mid-2000s in Queensland, what the UnitingCare community in Queensland found - who run a very large financial counselling program - that people were taking two to three years before they were back on their feet again, so I think it's - and these are communities where everybody - because everybody in the community is affected the insurance system needs to provide people with enough time to really get themselves back on their feet, not just the immediate response to the disaster.

MR COPPEL: Looking beyond insurance affordability and some form of

means-tested insurance subsidies, are there other actions that you would espouse in terms of addressing disadvantaged groups, and increasing their resilience and ability to respond to climate change?

MR HENLEY (UCA): Certainly a couple of the things that we've raised briefly is, first of all, just the quality of housing stock. I think this is one of the real issues, both shorter and longer term. If you accept the observation that a majority of the poorest third of households in Australia are renters, they are price-takers, they really have very limited opportunity to actually negotiate in the rental market. They are generally highly unwilling to negotiate with landlords who often are unwilling to negotiate much as well, meaning that our lowest income people are in the poorest quality housing stock. This means that their costs of basic energy are very high because of inefficient design, high heating, high cooling costs et cetera.

We're seeing that one of the first priorities in climate change adaptation is simply energy efficient housing stock. We start with, as a matter of some urgency, some good design standards around energy efficiency for all new housing stock, and then obviously we're needing some retrofit work as well. That's where we would expect the emerging programs like the Household Energy Saver Scheme and the Low Income Energy Efficiency Program that we're involved with, and other agencies are involved with, to play a role in supporting retrofit in those sorts of areas. But there remains to be broader issues of income support.

We won't go into that question here, that's a separate inquiry, but housing stock is an absolutely crucial issue, and renters have the worst stock and the highest costs. There's been discussion here today about cost-benefit analysis. One of the observations we make, of course, is that poorer housing stock means that landlords and developers can really push the ongoing costs - energy costs et cetera - on to renters. Saving a bit of money in the housing construction costs up-front - and they're minimal savings - is really a very short-term illusory benefit. In fact the incidence means that the full implications are pushed on to generally lower income households who are renters.

MR COPPEL: How would you achieve a retrofit? Would it be targeted to particular disadvantaged groups, or is it through regulation, through changes to the building code?

MS HELYAR (UCA): You could tie things, the way they have done with the social housing funding, like government co-investment to pricing arrangements for a period of time. You could make sure that the co-investment between government and landlords in retrofitting houses that the quid pro quo for that is that the house would be rented at a - in the social housing program they had it at 80 per cent of market rent, so that it means you increase the affordability of your housing whilst improving the climate change - its energy efficiency. That's one approach.

MR HENLEY (UCA): I also think it's worth highlighting that we have a whole suite of relatively new programs coming on stream through climate change energy efficiency and facts here. There have been a number of programs - some of our agencies, Brotherhood of St Laurence - others have been involved with going into households and doing home energy audits, that sort of stuff. There have been some retrofit programs, there have been some white certificate schemes through state governments. Those have all played a small role but now I think we're seeing a significant increase in the number of people with energy efficiency experience who will be going into households, giving advice and support to households.

I think that provides a mechanism for delivery of quality and appropriate retrofit programs. Don't talk about the ceiling insulation program. That wasn't a failure of the program, that was a failure of implementation regulation. With the sort of community based programs that are now coming on stream being able to provide some control and some measure for those sort of programs, then in fact there is capacity through some new service infrastructure to provide the mechanisms to bring it into play; things like ceiling insulation and a range of other energy efficiency applications. I'm saying that the scenery is changing, the programs are changing to provide greater opportunity for retrofit into the near future, but there still is the issue of liaising with landlords in rental situations. That is an ongoing dilemma.

MR COPPEL: If you give an incentive to landlords for cost sharing in terms of making improvements to the energy efficiency or low cost housing, do you not see a risk that those benefits are captured by the owner of the property and manifested through a higher rent which would in some senses underline the point of the exercise in a sense?

MR HENLEY (UCA): I think that's what Susan was addressing in saying that if landlord gets some advantage from a retrofit program, then part of that deal is that rents are capped at a certain rate for a negotiated period of time, so the landlord gets some benefit but the renter gets benefit through capped rents for a period of time.

MS HELYAR (UCA): The way that has worked in the social housing scheme is that the rent is capped at 80 per cent of market rent for 10 years, I think.

MR COPPEL: Okay.

MR HENLEY (UCA): That's a model by which there are benefits for both renter and landlord.

MR COPPEL: In your submission you make the point that there's a considerable lack of understanding of climate change adaptation in the community, particularly among disadvantaged groups. Have you done any work on how to raise awareness

of the impacts of climate change among these groups? If you can give us a sense of how effective you think you've been in that exercise.

MR HENLEY (UCA): Clearly for us, our first starting point has been through our emergency relief, financial counselling services, where energy bills in particular are a major factor in people's financial stress at the moment. People coming into those services are very keen to find out about energy efficiency, climate change adaptation, taking the broader perspective. On a one-to-one service provision basis there's scope to provide quite a bit of information.

MS HELYAR (UCA): Can I just add to that, Mark. I think our experience has been the best way to get information into households, particularly those that are disadvantaged - you often see that the issues spoken about in the broader media don't relate to them, don't reflect their life circumstances - is to train up the people that are going into that household anyway, so they're going in for family support or they're going in for emergency relief or they're going to provide some other social service, is to train those people up so that when the crisis is over to be able to start to have conversations with people about, "Here's some other options for you. Here's some information that you will need to know in terms of making decisions in the future."

What works best is not to have another new person coming into a disadvantaged household but to train up and resource the people that are already going in there to support people with issues that are the priority for them and to be able to bring information about energy efficiency and how to build financial security into those existing conversations rather than another program or another information process.

MR HENLEY (UCA): Then another way to go - and I think Susan's point is really important - is in terms of raising awareness. I think we Would note that the political climate is difficult at the moment for a good understanding about climate change adaptation risks because the whole carbon pricing issue - I'll make a personal observation - has skewed public perception in many instances, making energy efficiency, climate change adaptation, those sorts of responses harder to implement. Having said that, apart from direct approaches to people, the other way that people are going to become more aware of what can be done, we suggest, is through demonstration projects in local community facilities.

A child care centre which is able to implement some energy efficiency or climate change adaptation measures and makes that known through simple signage to every parent who drops their child in, so, "Your child care centre has saved this amount of money by this measure." That sort of demonstration project in child care centres, in schools and community centres, we suggest is a really helpful way of raising awareness about the practical and specific things that can be done at a community level.

MS HELYAR (UCA): The other thing, Mark, I'd like you to speak to is the stuff I think we've spoke about before, about how you link in with the NEC and what you think might be useful through that process, the data collection we think will happen there and how that can be fed back to people in ways that make sense to them.

MR HENLEY (UCA): I think this is another point and this is a sort of segue into another issue we wanted to make which is to say that with a whole range of new programs coming on board - again we've already mentioned the Household Energy Saver Scheme and the Low Income Energy Efficiency Program. I think this is partly the point NCCARF presenter previously is that we are now in a position where through a range of programs we're gathering some good information, some good data, at local level and more broadly. The communication methods from those programs about lessons learnt, back to local communities, is really important so that they can see that this local service is providing these services in this area and we've learnt this, this and this.

That's a useful way of providing feedback to communities through newspapers, through radio programs, all sorts of things. It is building on the information that is being collected from communities at the moment. I suppose I'd make another general point too which is a point we've made in our energy white paper presentations that there appears to be quite an explosion of new information that's going to be available over the next couple of years, through NCCARF, through diverse programs we've mentioned which are just being rolled out at the moment. Some of the work that's being done by distributors and energy companies.

What we're concerned about is this information may remain quite diffuse, so we've put to the white paper that a body like the Productivity Commission should be charged with bringing together this vast array of data and making some sense of it because again there's lots of new information we suggest is going to become available in the next couple of years and it's going to be crucial that that information is captured and made available for public policy development.

MS HELYAR (UCA): The other thing we learned from the survey that we've done a few times - a general population survey - is that there's a certain amount of people that the best place to get information is on their energy bill. Mark, can you talk about that?

MR HENLEY (UCA): Sure. People can take in simple messages from the communication they get. Energy bills is a classic example. Again there's a real balancing act here between not enough information but not too much information. Certain people can be pointed there to some key messages, key web sites, key information sources through energy bills et cetera. That's just another simple mechanism. The whole issue of broader communication is a big issue in itself.

MR COPPEL: I think we have time for one final question. You've raised the issue of affordability as an obstacle to disadvantaged groups taking action in response to climate change. I was wondering if you had any views on whether there are specific regulatory or policy barriers that act as constraints on disadvantaged groups responding to climate change?

MR HENLEY (UCA): I think the immediate issue for so many households is simply the rapidly escalating costs of utilities - particularly energy - and that's clearly an area we've done a lot of work in. Our view is that responses to affordability are crucial to be able to move people into a broader understanding of energy efficiency, climate change adaptation et cetera. First of all, I'd say there's no magic bullet for energy affordability, but the responses need to be made across four different levels: consumer protection, energy efficiency, good tariff design and, when they are all operating most optimally, then concessions come in for people that simply can't cope otherwise. We think there's some good work happening around the National Energy Customer Framework to deal with the consumer protection side of things.

We, however, believe that tariff policy is the area where - it's probably been underdone in Australia over the last two or three years in the energy policy space. This is where there are potentially some impediments. We're well aware that there's a number of processes under way at the moment looking at energy network costs, and the Productivity Commission's own work, the Australian Energy Market Commission's network rule change is substantial. The AER is doing a whole lot of information work as well. We're suggesting that whilst there's a lot of work happening in those areas, it's crucial that in fact the best interests of consumers - and that's an objective - is brought into play and that actually means looking at ways to reduce at least a rate of price increases.

We're suggesting that there's fluidity in the public policy and regulation space for energy at the moment and that the outcomes of that in terms of prices that customers pay, or the outcomes of those processes in terms of the costs that customers are going to pay, are really substantial. We're not quite sure how that's all going to play out at the moment. I suppose that's why we continue to be actively involved in those places.

MR COPPEL: Thank you.

DR CRAIK: Thanks very much. Are you going to put a submission into our electricity inquiry?

MR HENLEY (UCA): We intended to and then it got very late. If there's still time we'll put something in.

DR CRAIK: There's still time.

MR HENLEY (UCA): It was one of those classic cases of everything happening at once - the draft energy white paper, three different AEMC submission processes, some state based stuff was all happening at the same time. Our writing ability was hamstrung. There is a broader issue here about capacity for consumer voice to engage in plural or multiplicity of processes.

DR CRAIK: Yes. We'd like to see a submission if you can. That would be great.

MR HENLEY (UCA): I'll talk to you separately.

DR CRAIK: Thanks very much, Martin and Susan. Thanks for your submission that you put in and for being available today.

MS HELYAR (UCA): We look forward to the outcome.

DR CRAIK: Thanks a lot. That finishes this morning and we now have a break for lunch. If everything is going according to plan we'll resume at about 20 to 2.

(Luncheon adjournment)

DR CRAIK: We might resume. Neville, if you would like to take the chair and when you are ready, if you would like to state your name and position for the record and then if you would like to make a brief opening statement that would be great.

DR SMITH (BOM): Thank you very much. I'm Neville Smith, I'm from the Bureau of Meteorology. This week I happen to be the acting director of the Bureau of Meteorology. In my normal job I'm the deputy director for research and services which covers all of our observational and computing infrastructure. Just for the information of the commission, I am also a member of the 30-strong IPCC bureau and in particular for the impacts, adaptation and vulnerability part of the working group of IPCC. So relevant to this work the Bureau of Meteorology does have a broad set of responsibilities covering weather and climate and just over the last five years we have also taken on large responsibility in water services and water information and, as of the 2010 budget, also for environmental information and in a sense our submission really targets some of those new responsibilities and potential relevance to your work.

I would point out that the bureau has no formal responsibility in climate change services, let alone in climate change adaptation. We do do work in climate change research, mostly funded through the Department of Climate Change and through various state agencies. On our submission - I won't go through that in detail - I guess the themes in here are that our role in environmental intelligence - and we use that in the very broadest sense, bringing forecasts, whatever across the broad environment of climate, weather and water - is in fact a very relevant task to climate change adaptation. We focus on two specific areas, one is in early warning systems, whether that is to do with weather, tropical cyclones, other forms of severe weather like hail or heat waves or in seasonal prediction. Both of them are just different forms of early warning systems.

The second area we focus on is improving environmental monitoring and analysis and the sort of information that we think might be relevant to discussions here, one part around flood forecasting and the other part about environmental information and it's a very general sense and the submission gives some examples of that relevance. There are two aspects that weren't covered in this rapidly prepared submission which I would just like to refer to in case you would like more information. The first one is around what we in the scientific business call reanalysis. For a number of years now a number of agencies around the world have been re-analysing all of the weather and physical data that have been available and some of those re-analysis stretch back at least to the start of the satellite ere, so it goes back at least 30 years and in some cases have gone back more than 70 years.

We have never completed such a re-analysis for the Australian region. One of the ideas would be that going back over all of the information bringing modern data analysis systems to bear from numerical weather prediction - and we now have one

of the best in the world - you would go back and re-analyse Australia at about a resolution of 10 kilometres. So all tropical cyclones, all extreme weather events, anything that has happened in our weather over the last 30, maybe 40 years could be captured in such a re-analysis. I think this has been an idea we have discussed on a number of occasions without being able to take it further. But I think as an evidence base behind climate change adaptation, particularly in assessing risks and the likelihood of different hazards, a uniform analysis of all of the extremes that we've had in the recent past I think could be very useful.

The other aspect which is more a general observation about the bureau is that in one sense we are seen as the authoritative source for climate information. If you want to know what the climate record has been doing, you would come to the bureau and look into our archives. At various stages the discussion has been around, "Do we have the equivalent of an authoritative source for climate change?" For the climate record in our sphere of observations I think we do but one of the uncertainties about the future often arises because there are multiple sources for the same set of advice, whether it's different models or different down-scaling systems, and none with the hand of government saying, "To the best of our knowledge this is our best guess and these are the likelihoods of these scenarios and these environmental scenarios emerging." I think that is also something that perhaps might be relevant to your discussions. I will leave my introduction there.

DR CRAIK: Thanks very much, Neville. I might hand over to Neil. I just wanted to say that both Neil and I were interested to see your reference to eReefs in your submission and the bureau's role in it and neither Neil nor I - and both of us are involved in that program up in Queensland - were aware or the bureau's involvement, so there you go, you live and learn.

DR BYRON: You learn something every day.

DR CRAIK: Over to you, Neil.

DR BYRON: Thank you very much. I thought the environmental intelligence services line in the submission was a really useful concept and a good description of the BOM's new wider role. The line in the submission about, "Early warning systems have proven time and time again to be the most effective and cost-efficient approach to mitigating economic losses and loss of life arising from severe weather," struck me as extremely important. But then I started to wonder, does that conclusion about being the most effective and cost effective rely on there being a good response capacity, in the sense that if there wasn't that ability to do something about it, just having a better forecast per se wouldn't get you very far.

DR SMITH (BOM): Of course that is true. One of the reasons we think we have a very good emergency response for severe weather is that we work very closely with

emergency management agencies at the state level and at the Commonwealth level and that partnership, both in the preparedness side and the response side, is critical. All the bureau can do is give an early warning of the hazard, it's not acting on the other side and so that partnership is critical and we've seen that through the bushfires in Victoria, through the floods in Queensland. Without the other that would be a very blunt instrument indeed.

DR BYRON: I'm not sure if I'm verballing you here but do you think the balance in that partnership is about right at the moment?

DR SMITH (BOM): It's difficult to say. If it was perfectly right we perhaps wouldn't have had some of the issues that were the subject of the inquiry in Queensland. Clearly, everything is not perfect and in the submission Rob Vertessy pointed to some of the issues around flood data, for example, the fact that we just don't have a national approach and a uniform approach to those is a bit of a weakness. We have seen that also in Victoria. In the bushfires I think we've almost gone through a paradigm shift in the way we now work with emergency services, the fact that we have skilled forecasters inside the emergency response centre to me has been one of the biggest and most significant changes over recent time, that the decision-making process is no longer a hand-off from someone sitting at a bench and producing a forecast but there is an interactive process and I guess we saw that also in action through the Queensland floods where we were constantly briefing the emergency management group with the premier in the lead. So I think fundamentally those have changed. As always there are things that can be improved.

DR BYRON: You referred in your opening comments to the progressive expansion of the mandate for the Bureau of Meteorology from all things weather, to weather and water, rivers and now environmental information systems. It seems to me there's an increasing demand for the bureau's environmental intelligence services. Do you think the bureau has the resources to respond to those increasing demands, particularly the increasing frequency of extreme events with climate change?

DR SMITH (BOM): I'll answer that fairly carefully. Perhaps the best reference here is actually Chloe Munro's review of the bureau which is now public, as you're aware, and in fact this very issue arose in the discussions in our preparation for that review. Clearly to some - and I guess Chloe Munro was one - looked at this broad scope, looked at the issues we faced in the Queensland floods and said, "Well, have we got this right? A bureau which is stretched to the limit in providing the services that are required to save lives, versus a broad mandate in environmental information." So she legitimately raised that as an issue, and I think that's still one that we are thinking through ourselves, but in the bureau and where we're sitting with environmental information, we certainly believe that this is an important area for us to work. It's only a small part of our tasks at the moment. It's only about $4 million a year out of a total budget of 280 to 300 million. We don't want to overemphasise

the work we're doing there.

As I think you can see from the eReefs proposal people are now alert to the fact that over a broader spectrum perhaps, or early warning services that we can put into other domains, in this case for the Great Barrier Reef itself, that would be useful and have high impact. So we're quite excited by the opportunity to have a look at some of those with CSIRO and the Great Barrier Reef Marine Park Authority and others.

DR BYRON: We've read and talked a bit about upgrades for the bureau's computer capacity, would that result in substantial increases in the ability to predict extreme weather events, even down the scale of the individual storm cells. I guess I'm thinking of that very expensive insurance event which was a hailstorm that went over the more affluent suburbs in Sydney and did a great deal of damage, even though it wasn't the biggest storm we've ever had.

DR SMITH (BOM): Those sort of severe storms, particularly where hail is involved, are still some of the biggest insurance claims from severe weather. The same sort of small cells were an issue with flash flooding. As we outlined with the attachment in the submission, we believe we're at that threshold now where we can start to look at some of those and we included in there some examples of the highest end of what we do in numerical weather prediction now at very fine scale.

Perhaps one I'll refer to is one on the front that came through in February of 2009 for the bushfires. At the time our operational service gave very good forecasts but they just weren't capable of capturing the sort of details of a front and its timing where minutes, quarters of an hour, really matters. It matters to saving lives, to moving people. This work that was done with Melbourne University is now showing those models can probably capture some of those at the sub-hour, and timing in this case is often everything, and also some of the scales. For severe rainfall we seem to be able to point now to the modelling where we can capture at least the probability of extreme rainfall, if not a specific event, and provide much better advice on the likelihood of hazards.

In the natural extension of this, with the right knowledge and vulnerability of exposure, you can start to contemplate now providing forecasts of the risks and the hazards the community is facing. In our sister agencies in the UK, for example, that's exactly what they're doing now. Every road, when a major event is coming up, has a warning attached to it that's hooked into the forecast and immediately says, "This is what the likelihood of flooding on your particular road is like." They have extended that to a whole lot of other different domains. We're interested in talking to attorney-generals and a number of other departments about how that might evolve in the Australian context. In a round about way I'm saying we're getting close but it's not going to be prescriptive, I think it's going to be probabilistic.

DR BYRON: Is that likely to be very expensive or not terribly expensive to be able to give that flash flooding ability?

DR SMITH (BOM): Getting down to that fine resolutions unfortunately just does cost computing time and it's just one of the realities in this business of numerical weather prediction, and particularly the modern system where you don't just do one forecast and say, "This is what the weather is going to be like," you actually issue 40 or 50 different forecasts to try and catch the probability of certain events. To get that into our system requires super computing which is in our next generation. We can go so far now but like other agencies around the world we are, if you like, beholden to the amount of super computing we have available to do those high resolution forecasts. The judgment is the value you get at the end. We try to give some indication of what we think the value might be from running very high resolution forecasts in Australia.

DR BYRON: I guess if it hasn't been done yet, it's hard to convince people of how fantastic it could be if that information was available in real time.

DR SMITH (BOM): That's one of the things we've changed. Your statement would have been very true five years ago, or as recently as two years ago, because all our research was done on exactly the same computers as we use operationally. As of early January next year we will have access to 1.2 petaflops - that's a very fast machine; the fastest in the world is about 10 - at the ANU. So we're shifting those research calculations now on to a high-end machine to do exactly that, rather than saying, "This is what we might do if you trust us, and we're lucky," to running it on a machine and saying, "This is what you can do on high-end computing."

Many other agencies are already there - Korea and the UK Met Office which are our two closest collaborators now. They're both there in terms of the sort of computing power. We know from the Met Office, for example, who is a very close partner of ours, that a lot of these things are possible. But, of course, there will be nothing better than demonstrating it in our region on our scales.

DR BYRON: Okay. Changing the subject slightly, the Australian government's portal for flood maps and so on, has the bureau been involved in those discussions, that initiative?

DR SMITH (BOM): We've been involved in a number of ways. We work a lot with Geoscience Australia now in the water information role, but they built up considerable expertise in the risk mapping in some of those areas and, as I understand it, the portal is basically directed to some of those. Our exact relationship, that is something we're still discussing. Again we give some background to the sort of skills and knowledge that we can bring to it. The reality is for predicting floods and quantifying those, you do need the sort of systems that the

bureau has. For early warning systems as distinct from mapping risk beforehand, the early warning is with the bureau, the mapping of the risk I think is more something that Geoscience is equipped to do.

DR BYRON: You've actually got the actual data where the water moves in flood events, as opposed to assuming that it just flows to a contour or bathtub model?

DR SMITH (BOM): Yes, we have access to a lot of the information on river flow, even though we don't operate a lot of the systems that are doing the monitoring. What we certainly have access to is both the real time and the forecast levels of precipitation of various regions, whether that's from models or from satellites or from radars. Increasingly, radars are the instrument we're bringing to a lot of these problems. Where Geoscience can bring real value, it has a lot of the geospatial information that's required to do the mapping, again a basis of satellite data images, direct images of flooding and things like that. They can do a lot better job. They've got the facilities that we don't have to do some of those parts of it. They come together but I think they're complementary, rather than overlapping at the moment.

DR BYRON: With climate change on top of that, the intersection between predictions of climate change and flood mapping, is that again something where BOM and Geoscience Australia are cooperating?

DR SMITH (BOM): I've got to be a bit more careful here because I don't know where Geoscience's long-term strategy is going, but clearly we work very closely with CSIRO in all of our climate change work and we do believe there's a lot of things we can bring to the table, both from our knowledge of seasonal outlooks, from our work with tsunami. Ironically there's a lot of overlap, even though tsunami is completely different from climate change, the inundation mapping that Geoscience Australia and we do, the forecasts there have a lot in common with what you would require in the event of climate change and sea level inundation.

There's a whole lot of different skills, I guess, these areas. What we've learnt as an Australian community is that we probably need all of these skills, whether all the agencies are brought together to properly address them, I don't think the bureau is ever going to have all the skills that are needed any more than probably Geoscience Australia or even CSIRO, despite the size they're going to bring to it.

DR BYRON: As long as all the parties are cooperating, it doesn't matter. None of them have all the skills. As long as there's that functional cooperation.

DR SMITH (BOM): Certainly with CSIRO, I think it's been one of the big changes in the bureau over the last six years, from a time when we worked with CSIRO in a sense because we had to, versus now basically running the joint centre, developing joint partnerships with the Met office, joining all of our research and

even exchanging information at the service level. Our relationship with CSIRO has just gone onto another plateau from where we were before. We certainly value their research input very highly in the bureau. With Geoscience Australia we've also gone through a major change, running the Australian Tsunami Warning Centre. That's a joint operation, 24-hour operation, and it's only six years ago where we didn't even have that capability. Yet between us we've now developed a capability that's second to none, and that's probably the leading capability in the Indian Ocean region. I think we have changed a lot. We certainly are very open and active in looking for all those opportunities to cooperate.

DR BYRON: I don't have any other questions.

MR COPPEL: I noticed in your submission that you do mention extensive end user requirements analysis. I was wondering whether you have any concrete examples you can give us on how you are going about that in relation to the season forecast information that you mention.

DR SMITH (BOM): There's at least two or three strands. We've always done a routine analyses of our user community, just getting feedback about once a year - it might be once every two years, I forget how frequent it was. We found that was just a little bit too incestuous in that the only people that fed back to us were the ones that we were giving information to, rather than the ones that weren't accessing information. In the work that went behind the study you're referring to, we actually did a much broader analysis going out to a lot of the potential stakeholders, as well as the existing stakeholders, asking how they viewed the products we gave them, what sort of value they attached to them.

More recently we were starting to deploy what you'd call more sophisticated market analysis techniques and going out to all of the market, based on what we know of the use of seasonal products from analysis of the Web and other places. We're now starting to get a much deeper appreciation of where it's used. For example, we found out, I think it was the second-ranked use, or maybe it was the third, was in fact in public education. Prior to that, if you'd asked any staff member in the bureau they wouldn't have even ranked public education as one of the key users. We also found out that a lot of the products weren't really fit for the purpose we thought they were. We thought we were providing services in seasonal prediction which were fit for the purposes of the broad sectors. But we began to find out that wasn't the case. The timeliness was an issue in some cases; the form of the products; the lack of spatial products was an issue in other cases. We're trying to learn as best we can how better to provide those services and be more responsive to what people require.

DR CRAIK: Neville, you talked with Neil about the super computers and things, what sort of cost is involved in that?

DR SMITH (BOM): We went through a number of exercises for the Munro Review, and if I can just lay out the sort of approach that we took there, in the light of the Queensland floods we thought that the priority probably was unambiguously in severe weather and that sort of area. What we did is go out and scope what sort of computer you would need to do the sorts of things we were discussing before. I think in broad terms it's not dissimilar to what we're now putting into ANU. It's been commissioned up at ANU which is a 1.2 petaflop machine. In the sense I wouldn't be very content going past that because, just as I had this discussion before, I would like to be implementing an operational machine which is in fact similar to the one we've been using in research, and by the time we implement that then research might be on to the next generation.

The 1.2 petaflop machine up in ANU cost $100 million all together, although there is a lot of investment there in buildings. It was part of the budget in 2008-2009. One component of that was building a completely new computer centre. That wouldn't be something that we would have to do because we've got two centres now. We run our own centre in the building but because of the risks associated with that, we're moving out of that. In fact as of today I'll sign the contract for a secondary data centre in the north of Melbourne. Other than that, that's probably as good an estimate as I can provide at the time. It's in that sort of 60 to 100 million dollars, depending on what sort of things you wanted to go with it.

In our case, compared at the research facility, we do need to have a higher category of storage, a higher category of communications, more redundancy, just simply because we can't afford for that facility to go out and not be available for a week. We're also very concerned around security and all of those things now. That's the sort of figure, probably over a five to six-year period you're looking at, that asset would last now. In the old days it was four years, I think. Now we're looking at a business where you would be replacing the whole thing perhaps in the order of five to six years, rather than four to five years which was the practice before.

DR CRAIK: Were you saying that other countries - say the UK and Korea - have something like this?

DR SMITH (BOM): Korea went through this stage about three years ago. I think they spent about $120 million on their super computing facility. They have come from an also-ran in this game to now being one of the leading agencies in the top 10 in the world. They're now in fact going to the next stage, replacing that. It's a machine more like the one that's in ANU. So it's in the order of a one to 1.5 petaflop machine. The UK Met Office isn't quite up to the petaflop but it's about six to 10 times more powerful. They run much finer resolution models than we can afford to run. They also run ensembles - about 40 ensembles for every forecast, season forecasts as well - and we can't. At the moment we struggle to be able to deliver

those ensembles. In fact they're still not part of our operational suite which makes us an outlier in the whole world in fact.

DR CRAIK: When all the water functions are brought together under the Water Act for the bureau, distributed around all the states and hither and thither, why wasn't more of the flood stuff gathered to the bureau at that time? I mean, you may not know the answer here, but it's always intrigued me that that part of water was omitted.

DR SMITH (BOM): I guess it has intrigued a lot of people. Again if Rob Vertessy was here he would give you a very concise and precise answer. The water information role doesn't in fact include any of the flood forecasting. These were considered as separate. It was considered a vicinity between that role that we already had, and water information was seen to be a strong attribute and was one of the reasons I think that government went to the bureau to implement it. As we touch on in the submission, clearly - at least, certainly on the data side but also on some of the forecasting side - there is a lot of synergy between what we do on flood forecasting and what the water information role is.

The inquiry into the Queensland floods, this was a discussion point in there and remains part of the discussion point about whether the bureau is actually formally seen as the agency for flood forecasting. Depending on which state and territory you go to there are slightly different arrangements. I think, you know, some are unit moneys. I think that we don't have that landed yet but that was a discussion in the Munro Review and I think one of the recommendations was in fact about trying to normalise and harmonise this a little bit better. But I don't think I would be rooting any blame back to the information that was sent at the time. That was responding to a very different set of issues and at that time floods weren't very common.

DR CRAIK: That's right. Everybody thought we had seen the last of them.

DR SMITH (BOM): That's right.

MR COPPEL: Is this point in your submission where you were referring to certain barriers to sharing information on rainfall that you had encountered?

DR SMITH (BOM): There are certain barriers in there and again because the holders of the information range from states to private sector, there are a whole lot of different agencies that hold it. Not all of those agencies are as comfortable as others in sharing that information for various numbers of reasons and in some cases in the private sector it's seen as proprietary information, for example, if you were running a power generation business and you were relying on this, sometimes that information is seen to have been something that you shouldn't be sharing widely.

I think in general though if that message in there was negative - I think in general we have been very, very pleased with the willingness of agencies to share data. Most of the ones who have been a bit reluctant have had very good reasons and it has just been a matter of working through and working within the Water Act and the regulations to make sure that we can do what we need to do under the water information role but work with those agencies who have some issues around that.

DR CRAIK: They are required to under the Water Act.

DR SMITH (BOM): That's right, so they're required to.

DR CRAIK: It's pretty strict as I recollect.

DR SMITH (BOM): Yes, but there are some exceptions there around private companies. I think in general in Australia, of course, we don't quite have the data sets that we need in many of the domains and being able to exchange them and have them in places where there is an authoritative source for the data is, I think, seen as something that is in the national interest, the national good to do that and thankfully for the water role I think we are moving towards something now which has a set of standards that in fact are probably world leading in the work that they have done thus far.

DR CRAIK: I don't know if you were here when John Thwaites was talking but he was talking about the desirability of having probability density functions for rainfall in certain areas and various other things in relation to building standards. You guys are doing some work there, aren't you, in terms of - - -

DR SMITH (BOM): Certainly in a lot of the weather area that is really the new norm or the new paradigm is that every forecaster - all forecasters now, even this year, would as a matter of course be producing probabilities and we already produce some products where the probability of rainfall is just a standard part of it. One of things - and without reading what John Thwaites was talking about, I think having that proper listing information for planning purposes into the future is also something that everyone would see as highly desirable. Weather forecasts today aren't prescriptive. There isn't a single weather forecast that I can issue now and know that that's what the weather will be like in five days. It is subject to uncertainty.

Climate change is no different. Some of it is the butterfly effect and some of it is because we don't know our emission scenario pathways. So we're quite accustomed to working in that of light of uncertainty. What you call and I call uncertainty, we would just call probabilistic scenarios and certainty. Some things we can forecast with great certainty and some things we can't. Again, it's an area of our business which has changed remarkably in the time that I've been working in the field. I think you have to go no further than, say, Tropical Cyclone Yazi and Lua

where the forecast from these high-end numerical weather prediction models were just outstanding.

It was something I didn't dream we'd ever get to. Five days to seven days out you were predicting with hundreds of kilometres where these tropical cyclones would or not cross the coast. It is just a remarkable transformation in the skill of those but, again, it's in a probabilistic sense. We will give a map of the probabilities of it going here or going there and sometimes there can be exceptions. In, say, for example, some of the forecasts for Lua, some of the early forecasts from other agencies had it going in completely different directions. So it's one of those things where I think we have grown up as an industry and now quite comfortable with giving probabilistic forecasts as a matter of course.

DR CRAIK: Neville, thanks very much for coming along today in Rob's absence and thanks very much for the submission.

DR CRAIK: If we can try contacting our last person who is by telephone, Garry Middle from Curtin University. Garry, it's Wendy Craik. I'm the presiding commissioner on the inquiry and with me I have Jonathan Coppel and Neil Byron. Garry, do you think for the transcript you could state your name and position.

DR MIDDLE (CU): My name is Garry Middle and I'm course coordinator for the bachelor of arts course in urban and regional planning at Curtin University.

DR CRAIK: Would you like to make a brief opening statement.

DR MIDDLE (CU): Just way of introduction, I come from two avenues, one is the kind of work, the research and teaching I do in the area, but also I sit on the Western Australia Planning Commission and I also the chair the Coastal Planning Coordination Council which is the peak planning agency and also the CPCC which is the peak coastal planning agency. So I guess I come from both a research and also a pragmatic decision-making perspective as well and I've also done a fair bit of work with local government who I actually think are the frontline for all this stuff. Certainly in Western Australia here the number 1 issue for local government is that statement government have yet to pick up the ball on climate change adaptation, whether it be coast, whether it be water or fire, that kind of thing. That is the thing that local government are feeling the most and it is what I actually observe when I talk to people about it from a planning perspective. That's the starting point where I come from.

DR CRAIK: Thanks, Garry. In your submission you make the comment that because there's no WA climate adaptation strategy that's a barrier for local governments. We would be interested just to hear off the top of your head what do you think such a strategy ought to cover.

DR MIDDLE (CU): I guess a number of things. The first thing in fact would be that the state government actually sees climate change adaptation as being something it should address. At the moment there is a kind of - we use the expression here, it's the Voldemort of public policy. We dare not speak its name. It would just give a sense of leadership about what's going on and would help identify the role of both statement government and local government in dealing with adaptation. That's the number 1 priority of having a policy. Local governments would feel therefore that they are not alone in making decisions.

What we currently have is effectively an adaptation strategy for the coast. That is pretty much all we have and that is a planning policy and it deals pretty well with greenfields sites by setting a reasonable setback but it doesn't deal with brownfield sites and doesn't deal with all the broader issues about how communities - whether it be at the coast or whether it be in a fire-prone area or flood-prone area - how they're going to deal with future risk of things and whether or not they need to adapt and

what that adaptation actually means. So that's a long answer to your question but I think primarily it would give us all - both local government, state government, everyone - the knowledge that state government actually sees this as being something worth public policy.

DR CRAIK: Thanks. You have an interesting suggestion there that we hadn't heard before about differential rates for home owners in high risk zones. We had certainly heard of differential insurance premiums but you're talking about differential rates for people in high-risk zones. That might be a good way to fund defence measures. Are you aware if that's been done anywhere in the world?

DR MIDDLE (CU): I'm not aware it's been done anywhere. This is something that has been at the back of my mind for a while but never really said much about it. But I went down last week in fact to talk to the shire of Busselton - and you're probably aware that they're part of the Peron Naturaliste alliance. I went down there to talk about some coastal research I was doing and when it came to Q and A time all they wanted to talk about was climate change. If you know Busselton, pretty much the highest spot in Busselton is the primary dune - it's probably about 1.5 metres above sea level - and beyond that it's very low lying. Under a scenario of 1.1 metre sea level rise and/or significant storms, a lot of Busselton would be under water. So they're very concerned about it.

They asked me about differential rating because it's something they have been considering doing. It's been used in, for example, places like Mandurah for canal estates so that you identify those areas that the additional cost for maintaining the canal estates is actually used - it comes out of the differential rating scheme. So it's been used in other circumstances but I'm unaware that it's been used to address climate change defence-type mechanisms.

DR CRAIK: How would you see rates for climate change defence mechanisms actually being set? What sort of things would you expect a council to have to take into account in doing that? That would mean identifying the sorts of defences, I guess, that you were going to put - - -

DR MIDDLE (CU): I guess my view about climate change and how we deal with it is, it's really that - I'll just wind back a little bit. Using my students we've done over a thousand surveys of beach users from Geraldton all the way down to Gracetown, which is pretty much most of the south west, and one of the questions - we asked them a whole range of things but I'll just focus on climate change - one of the things we asked them - a series of questions about climate change. The long and short is that over 85 per cent of respondents - remember nearly a thousand, so it's significant - say that the climate is changing. Of those, over 85 per cent say it's either completely or partly due to human impacts. Then when you ask them, "What do you think government should do," and over 60 per cent say, "Defend," and only

40 per cent say, "Retreat," I guess that's where the community is at.

What it said to me as a kind of a coastal planner is that the first step is to think about how you're going to defend the coast, and clearly it would be things like building walls, groynes, replenishment of the beach, that kind of thing, but it has to be case by case. I look at Busselton as an example, that there will be some places in Busselton that you would not only defend, you would actually build up a wall, and the really important parts, the central parts of Busselton where the jetty is and where they're planning to do some further coastal development with cafes and that kind of thing, what you would do there, that would be highly defended and you'd actually build it up so you would retain that. Other places you might let go and do no defence.

Where you've got private property I think you would allow sea walls in the first instance, but I think in the long term it's got some problems with it, and I'm not telling you anything new about this, but when you build a wall which protects private property, it works okay in the short term, but the medium to longer term you lose beach access, so you've taken away public access. These are the problems that council face and I discussed it with Busselton. You can come up with ideas and defence mechanisms in the short term, but you then will be faced with a problem of losing public access to the beach and potentially moving erosion further down.

So at some stage you've got to think seriously about retreat options, but in the short term defence - in fact Busselton as an example, they're getting probably one or two applications a month from private landowners wanting to defend their beaches, so they've got to make decisions now. These people are coming up with building proposals to defend; so it's a private action, they need building approval to do that.

DR CRAIK: Is Busselton giving some of them approval?

DR MIDDLE (CU): They don't know what to do. I think they're under pressure and they're giving some but they just don't know what to do - "What's the long-term strategy?" They know they're under pressure and to some extent it might be consistent with their scheme to give approval, but they also know that this is not sustainable in the long term - they're under pressure right now. They're worried about things like if they don't give approval to it, they could end up in court and they don't have any defence mechanism against that; and they're worried if they do give approval to it, what does it actually mean for the neighbour. To put it shortly, they're a bit lost about what to do. A combination of lack of expertise, lack of resources and no direction from state government about addressing those longer term issues.

DR CRAIK: This sort of issue has come up a number of times in this inquiry. Do you think there's any need for the Commonwealth to get in there and try to coordinate some response about trying to develop a range of appropriate responses

for things like coastal inundation and climate change hazards, where we're talking about existing properties in the first instance?

DR MIDDLE (CU): The politics is always going to be the turning factor about how the Commonwealth - or what it decided to do. I've had a little bit of involvement with the COAG agreement and about streamlining environmental approvals processes, looking at that and how federations work, how difficult it is to get agreement between states and Commonwealth on having a single environmental approvals process and the complexity that comes with having a federation. These things will be played out exactly the same way here.

It seems to me that in the first instance I think what Commonwealth could do is go on like a softly, softly thing to avoid getting political conflict with the states about them coming in and telling the states what to do. The thing they could do is provide money certainly to the coastal areas, but not just coastal but also fire-prone areas and flood-prone areas, to do the risk assessment, the vulnerability assessment, and to provide local government and state governments with the resources to do that so we then have the information. In that way the debate gets pushed along a bit further. This whole debate is fraught with politics and you've got to go gently with this, you've got to bring the public with you. It's got to be an adaptive process, an interim process more to the point, to do that. I think what Commonwealth could do is provide resources for that kind of vulnerability assessment I think.

DR CRAIK: The chair of the Australian Building Codes Board was here today and one of the things that he suggested was, given there's no longer any ministerial forum of planning ministers, which there used to be and then that was abolished in the restructure of ministerial councils, there's no real inter-governmental forum to deal with it. He suggested something worth considering might be setting up a Commonwealth agency or an agency like the National Water Commission - I don't know if you're familiar with that?

DR MIDDLE (CU): Yes.

DR CRAIK: Basically it has commissioners who are appointed by states and the Commonwealth. So the states have a say in who's on it and the commission basically reports to some kind of inter-governmental forum, even though it's set up as a Commonwealth agency. Such an agency might deal with planning issues and the planning-building intersection - and adaptation clearly would be an issue here. An agency like that would commission research, put out papers on issues as they happen, do the sorts of things they've done in water in relationship to planning and planning and building without actually having any determinative power in the sense of telling anyone what to do, but raising the issues, getting them discussed in a less heated environment. Do you have any thoughts about something like that?

DR MIDDLE (CU): I'm a planner rather than a builder and the way I'd see it would be that I think there's already a mechanism, a forum which already appears for that, which is the National Urban Policy. The Commonwealth has put out a number of papers and I think it's the 2011 national urban policy that actually deals with infrastructure, sustainability, liveability and climate change comes up there. I would have thought that that's probably a way in which you could take an existing thing which already has COAG agreements, there is money already set aside for stuff in that as well. I think it needs to be integrated rather than a separate, stand-alone thing - to look at the whole issue of productivity as an example of cities and most of our cities are coastal anyway and they're vulnerable to climate change impacts, whether it be flood, fire or coastal erosion and that does impact on the productivity of those cities and I think that's a good place to plonk it, as it were, in an existing structure. But buildings are different and I understand that building is like a fine-tuned part of the process adapting and I can't really comment on that but I'd see from a planning perspective the National Urban Policy is the place to put it.

DR CRAIK: One of the other interesting things you suggest is a climate change adaptation levy so that the costs of climate change adaptation in new sites, greenfield sites, are actually internalised in high-risk areas. Again, are you aware of that being done elsewhere?

DR MIDDLE (CU): No, I'm not aware. I've only done a limited kind of research into that, so I would have to say based on the limited I have done - I don't think it's done anywhere else but I'm not sure about that. But I think it's similar to things like a congestion tax or whatever. It's building in the price of future actions or whatever into the cost of a property. I think developers - the nature of what they do is to clearly look at what they've got, that they price or they work out the cost of what they have and basically it's the usual stuff which happens because of the infrastructure, all that kind of thing and they don't look at those externalities and it would be a difficult thing to do but I think it's something worth exploring to build that in. Then what you do with the money would be interesting and where it would sit are the issues you have to deal with, but I think there are ways around it.

If you look at things like we do in things like biobanking where development, for example, knocks over important vegetation and they offset that by either buying a piece of vegetation which is similar and put that in the conservation reserve or they put money into a fund and an agency actually administers that. You have to think in this sort of case local government may well be the place where that money might sit and they use that money there to either defend or at some stage fund, retreat, whatever is appropriate. There are some implementation questions to think through but I think there are some models that you can apply it to.

DR CRAIK: I guess it could be like infrastructure levies for developments.

DR MIDDLE (CU): Yes, the old headworks idea. It's around and that we use it here obviously as well. It would just be an additional headworks, if you want to put it that way.

DR CRAIK: Yes, something like that. Do you think that you would need to have differential rates or differentiated rates before you could bring in such a levy or do you think - I know you say you haven't done a lot of work on it but have you given any thought - would you need to think of differentiated rates first?

DR MIDDLE (CU): It's almost like this is where you need the data about vulnerability, the kind of stuff which is immediately vulnerable and you wouldn't make that freehold land, you would probably reserve that. But there is the places which would be - an intermediate area would be vulnerable and, again, you wouldn't freehold that, you probably would lease it and then you would monitor what happens with impacts on the coast or whatever and if the impacts aren't as severe as what you thought, then you could perhaps extend the lease a bit further or maybe freehold it, depending on what happens. So you might give people a 25-year lease in an intermediate zone and as part of that lease agreement there will be a differential rating as well.

So that would work for greenfields sites but it's the brownfields sites which I think are the ones we have to put our mind to a lot more because they're the tough ones. So there you could bring in in those areas where you have development differential rating to fund those areas for protection measure. Now, it obviously wouldn't be very popular but I think it would recognise that, in effect, instead of the whole community, through their rates, paying for the protection or defence of the coast, it's those who derive most benefit from it which will be the ones - so they get the economic benefit of staying there, therefore they should pay the cost of doing it. That's how you could sell it I suppose and that's the moral justification for it.

DR CRAIK: Someone who presented to us the other day put the thesis that those properties that are in the front-line, say, of coastal inundation are providing a service to the rest of the community that sits behind that front-line as an actual form of defence, a kind of defence against coastal inundation, therefore everybody should pay.

DR MIDDLE (CU): I guess that's an argument, but then you look at how much benefit people are getting. Certainly people behind are getting some benefit from protection, but the people in the front-line are getting the primary benefit because of property values, views, amenity, all that kind of thing, access to the beach. That's a much more significant benefit than would be the protection benefit for the people behind, I would suspect. So I think that's how you'd argue it.

DR CRAIK: One of the other things in your submission you raise is the need for

additional information on coastal vulnerability and the risk of erosion. We suggested in our draft report that there was a need for downscaled projections climate change impacts. Are you talking about that sort of information or are you talking about other sorts of information, additional sorts of information?

DR MIDDLE (CU): Certainly downscaling it definitely, and it may be the same thing we're talking about. On the coast here it's the coastal vulnerability stuff, which is which areas of the coast are most vulnerable and working out the rates of erosion and that kind of thing. So it is that more fine detailed stuff and then you prioritise where your action is for that. So it probably is the same thing.

DR CRAIK: I think when you're talking about rates of erosion that's probably an additional step probably.

DR MIDDLE (CU): I guess it would be. I mean, that's the kind of thing from a coastal plan that you need information so you can work out your most vulnerable areas and least vulnerable and that kind of thing.

DR BYRON: I was really impressed with the comments in your submission about flexibility because over the last few months I've been thinking about the tension between the need for flexibility and adaptive management and our legal system and planning system, which has all sort of evolved in a static climate where consents are perpetual and zoning, freehold ownership, et cetera. So you seem to be exploring the same issue there; on the one hand there's a case for flexibility, but our system basically doesn't have any flexibility built into it. Where do we go from here?

DR MIDDLE (CU): Good question. I think we're thinking along the same lines. The only way to deal with this issue with all this uncertainty is - I mean, you look at it in terms of environmental management. If you're doing an impact assessment of a major project, you build into your conditions monitoring and constant feedback work, and therefore you change, and we can do it there. Planning just seems - as you correctly say, I think it's so set on providing certainty - it's what developers want and I think there are so many people driven by what developers want, which is they want certainty so they can work out where they're going to buy the landfill and that kind of stuff.

How we build it in: we're starting to get kind of some of the models. Instead of having rigorous zones of things like commercial, residential, schools, that kind of stuff, we're starting to look at now what you might call development zones. So you zone something development zone and then following from that becomes kind of structure planning and that provides flexible planning but in the end you still get a very fixed product for that. The other part of this is culture of planning. The culture of planning means it doesn't think about these kind of things. So we have to work on the kind of culture to help planners, and the students we put out, for example, to

think that way as well.

That's why I think, in a sense, I didn't have an answer to that, except to say I think it's almost like you need the planning system to start thinking about it, having the debate and finding ways in which it would be more flexible. The simplest stuff is the things like instead of going freehold in those vulnerable areas, is actually to lease it for 25 years and do that instead. That would be an example of something which is quite flexible. To answer your question, I'm as much at a bit of a loss as you are, except to say that I think we need to do it and I'm not sure, other than the planning system itself taking it on, having a debate about it and, constantly, people in the planning system like myself raising it, that's probably as much as we can do at this stage, which is not a good answer to your question, I'm sorry about that.

DR BYRON: Thanks, Garry.

DR CRAIK: Thanks very much, Garry. We really appreciate your submission and your comments. It's certainly given us things to think about.

DR MIDDLE (CU): Thanks for the opportunity to do that.

DR CRAIK: No, thanks for being available slightly earlier.

DR MIDDLE (CU): That's fine.

DR CRAIK: That concludes today's proceedings. For the record, is there anyone else who wants to appear briefly today before the commission? Okay. Well, I adjourn these proceedings and we'll resume at 8.30 am in Canberra on Wednesday, 18 July. Thank you very much.

AT 2.41 PM THE INQUIRY WAS ADJOURNED UNTIL
WEDNESDAY, 18 JULY 2012