LEGISLATIVE ASSEMBLY FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ENVIRONMENT AND TRANSPORT AND CITY SERVICES

(Reference: Inquiry into nature in our city)

Members:

MS S ORR (Chair)
MISS C BURCH (Deputy Chair)
MR J MILLIGAN

TRANSCRIPT OF EVIDENCE

CANBERRA

WEDNESDAY, 1 MAY 2019

Secretary to the committee:
Ms B McGill (Ph: 620 50124)

By authority of the Legislative Assembly for the Australian Capital Territory

WITNESSES

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Amended 20 May 2013

The committee met at 3.00 pm.

GIBBONS, DR PHILIP, Associate Professor, Fenner School of Environment and Society, Australian National University

BRACK, DR CRIS, Associate Professor, Fenner School of Environment and Society, Australian National University

THE CHAIR: Good afternoon, everyone, and welcome. I declare open this fourth public hearing of the Standing Committee on Environment and Transport and City Services inquiry into nature in our city. The committee announced this inquiry on 6 December 2017 and has received 71 submissions, which are available on the committee website. This is the fourth of seven hearings that will be conducted between March and May 2019.

Today the committee will hear from the Fenner School of Environment and Society, Canberra Urban and Regional Futures, the Woodlands and Wetlands Trust and the CSIRO. On behalf of the committee, I would like to thank all the witnesses for making time to appear today.

Before we begin, on behalf of the committee I would like to acknowledge the traditional custodians of the land on which we are meeting, the Ngunnawal people, pay my respects to their elders past, present and emerging and extend a welcome to all other Aboriginal and Torres Strait Islander people who may be with us today.

We will now move to the first witnesses appearing today, Phil Gibbons and Cris Brack from the Fenner School of Environment and Society. On behalf of the committee, thank you for appearing today and for your written submission to the inquiry. I remind you of the protections and obligations afforded by parliamentary privilege and draw your attention to the pink-coloured privilege statement before you on the table. When you are ready, could you confirm for the record that you understand the privilege implications of the statement?

Dr Gibbons: Yes, I do.

Dr Brack: Yes, I do.

THE CHAIR: Thank you very much. I also remind you that the proceedings are being recorded by Hansard for transcription purposes and are being webstreamed and broadcast live. Are there any opening remarks that you would like to make?

Dr Brack: I have been studying urban forestry for over 30 years. Canberra is iconic for its urban forests. It is one of the fundamental principles of the city, but those forests are more than just the trees. They are also more than just a static environment. For the urban forest to maximise its value and maximise its resilience, we have to realise that there are other parts of the forest we have to consider: the trees, the shrubs, the ground layers, a whole bunch of other aspects like that which are vitally important.

We also have to realise that it is dynamic. The trees grow up; they change at different parts of their life cycle, and the corresponding shrubs also do that. So there is a very

dynamic, diverse environment in a forest. The city has simplified that dramatically. We have lost a lot of those potential values and opportunities.

We also know that when you have good forest cover or canopy cover with its other components around it, there are a whole bunch of very important benefits that derive to us. Some of that we have quantified. We know that there are property values. The closer you are to a forest, the more valuable your property is. The closer you are to forests that have good cover, the healthier your people are. They are less likely to be obese; they are more likely to be active commuters; there are a whole range of things like that that are out there. The more people associate themselves with their urban forests, the more they gain ownership of them.

There are a whole bunch of other social values that come into that, including things like getting a community. This is our community. We are proud of our forests. As Canberra intensifies and those urban open spaces become more valuable, they are increasingly valuable to the social, to the health side. We have to consider the dynamics, the species diversity, of those to make sure they are resilient into the future.

THE CHAIR: Dr Gibbons, did you have anything you wanted to add?

Dr Gibbons: Yes. I quickly want to go through the key points of our submission. All greenfield residential development in the ACT impacts upon matters of national and environmental significance. More than that, they also remove a large number of pre-European eucalypts that effectively cannot be replaced because they are in excess of 200 years old. Compact rather than sprawling residential development is generally better for biodiversity.

As Cris said, there is sufficient evidence about the health, economic and environmental benefits of urban green space that it should be considered essential infrastructure for Canberra and play a central position in Canberra's city planning. Any contraction in urban green space should be offset by improving the quality of that space. If we are going to have to infill our city to support a growing population, we feel that that any loss of urban green space should be offset by improving the quality of the existing, the remaining, green space.

There are indicators that urban green space in Canberra is not sustainable environmentally, economically and socially. I can elaborate on this later if you want. We suggest that converting large areas of exotic mown grass to native plantings, or delineating areas that are dominated currently by native grasses, has the potential to reduce the costs of maintaining our urban green space, improve environmental values and stimulate greater engagement by the community in their urban green spaces through volunteering and citizen science. Indigenous burning is an option for managing those spaces or providing new recreational opportunities such as natural play spaces. Finally, there are several barriers to change that must be overcome for this to happen, and I can elaborate on this later if you like.

THE CHAIR: Thank you very much. I think we might jump into questions, because if there were not a lot of them before those statements there are definitely more to explore after those statements. I have a very big open-ended question. How do we achieve a healthy urban forest?

Dr Brack: There are a range of things in there. The forest looks at the entire environment—the trees and the associated vegetation that has to be under them. So we have to look at the soils; we have to look at compaction; we have to look at water. One of the big issues we have in Canberra will be water and how that moves through the system—how you can compact the soils or actually stop them from being so compacted, with infiltration. Water is going to be a big problem for us into the future.

There are ways of improving water management in the city. Canberra is already doing a lot of that with improving its waterways management and what have you. But there are other things as well. Removing impacted, boring grasses and replacing them with shrubs and other layers of vegetation would improve the water management. Allowing the integration of the other fauna and flora within the trees will also improve that.

If we can get these areas where there is the management of other parts of the vegetation and the animals, the fauna generally, then we can substantially improve our health. But we do have to realise that they are dynamic. Some of our trees that we have planted in the streetscapes are old. They are approaching the point where there is deadwood in the canopies. We have to make some decisions about how to do that. If there is deadwood up there and it is risky, we either have to work out ways of keeping people away from that risk or remove and replace those trees.

So there are some big decisions that the city would have to make about that sort of thing, how we manage the dynamics of the forest. If we just plant whole new suburbs to new trees, we end up with monocultures that are inherently not resilient. We need to change our way of planting and expanding the city estate.

THE CHAIR: On the question of monocultures, I hope that segues into species of trees. We have had quite a few views put before the committee as to what species we should be looking at. I think the thing we have heard most is that they should be climate adaptive. No-one has necessarily come up with a species they can suggest. Do you have a view on what we should be looking to for species of trees and the reasons why we should be considering those types of species—natives, non-natives and so forth?

Dr Brack: We were involved in a consultancy last year to TAMS about selecting trees that would most likely survive into the future. To an extent, we did not make social judgements of our types of trees, exotic versus native. A lot of natives are likely to survive into our climate future but there are also a lot of exotics that could do that as well. So there is a balance.

Then, different trees have different uses. The eucalypts have a fantastic ability to take out airborne pollutants, but they are not so good at providing shade. Some people love eucalypts because they are indigenous. Some people hate them because they are ugly. So it is a real balance, but you need to get the diversity. The diversity is the big thing in whatever scale we are talking about.

THE CHAIR: What opportunities are there to have a mixture of natives and non-natives?

Dr Brack: I think there is huge potential for that because when people talk about monocultures they think of whole landscapes of 10,000 hectares. When we talk about monoculture, it is a street. You can get 10 eucalypts on this side of the street and then have 10 of something else on the other side of the street or down the road. So you would start to get that diversity within a streetscape.

Ten trees in a row is fine for resilience purposes. I think we can nicely balance those up, but you do have to make sure that you have brought the community on board and explained to them that the trees have different values and different purposes and that diversity is good for the residents as well as the cityscape.

Dr Gibbons: I think the plantings should be fit for purpose. So your deciduous trees are really important for solar access in Canberra. Having the right side of the street or park planted with deciduous trees I think is important. But one thing that has tended to happen in Canberra—you will see it along Northbourne Avenue—is that we replace a lot of our eucalypts with the more manageable eucalypts. They are brittle gums down Northbourne Avenue.

There has been research that has come from the Fenner School that has shown that they are a cleaner eucalypt and they are not as good for biodiversity as, say, our indigenous yellow box or Blakely's red gum. That is because some of those indigenous trees like yellow box and Blakely's red gum are more difficult to manage. They drop more limbs and things. But then it is down to the context in which plants will protect those trees. If you plant around the base of those trees, they can drop their limbs with no problem whatsoever. You do not have foot traffic underneath a tree embedded in that type of landscape.

THE CHAIR: How then do we manage all these considerations so that we can keep nature in the city? One thing that has been proposed is that we have a landscape plan for Canberra. That can take many various forms. In your view, how can we put all these considerations in the mix so that we are making good planting choices, if that is what we choose to do?

Dr Gibbons: I have a list of things. I have actually asked that question of just about everyone in the committee—

THE CHAIR: Yes, it is a particular interest of mine.

Dr Gibbons: Can I make a few comments about the landscape plan? I think high-level planning is beneficial to articulate a vision for our urban green space. But I think it has to articulate objectives and keep performance indicators as well. It must also offer something different to the plans of management for urban open space that are already created under the Land (Planning and Environment) Act.

It is probably useful for determining a vision for the different parts of Canberra's urban open space. I think some of our urban open space should be a more formal grassed European-based sort of culture, identity or theme and other places should be more native based. So I think that is fine. But I think a high-level plan should outline a preferred funding model for urban green space.

I can talk about some ideas around that later. A high-level plan—this was also mentioned by the representative from SEE-Change—must find a compromise. It must give enough agency to communities. It cannot be totally top down. I think a high-level plan must be suitably flexible. I think it should really be based on the principles of adaptive management. Adaptive management is that you try a few different things. You accumulate an evidence base. You monitor those things. You can work out pretty quickly what works and what does not work. I do not think it should be rigid. Is there anything you wanted to add, Cris?

Dr Brack: Active management actually has a nice history in Canberra too, because when we first started developing Canberra we did not know what would grow here. The early landscape architects and landscape managers experimented. So we have a nice history of experimentation. Some of it did fail. Some of it we are still living with. Some of it is quite successful.

But it is difficult then to bring the population of new residents alongside, because we do have a population some of whom are temporary. Seven to 10 years is a long-term Canberran. Then there are other Canberrans who live here for a long time. So you have to bring them along in different ways as well. I think that ownership of the trees is fundamental to making it work. We have to make sure that our residents own and understand that the trees are there and they have ownership in some form or fashion of that, yes.

Dr Gibbons: I thought it was interesting that, I think it was Edwina Robinson—is that right?

THE CHAIR: From SEE-Change?

Dr Gibbons: Yes. She mentioned that it took them a long time. When they dealt with TCCS, it took a long time to go through the process. I have been working with Ginninderry to get an MOU between TCCS, EPSDD and Ginninderry on—

THE CHAIR: I think we have Ginninderry appearing next week.

Dr Gibbons: Good. It took us 14 months to get the MOU. If it was not someone with that commitment or resources, they would have dropped it. Another developer would have given up.

THE CHAIR: I note that Ginninderry is appearing next week; so we can drill into some of the questions there. What do you think are some of the challenges that actually took that period of time? In SEE-Change's case, there were the normal challenges plus a very big flood event that then added a level of complexity to what they were doing.

Dr Gibbons: Yes. They asked us to present to them. TCCS asked us to present what we were willing to do for them in a formal presentation. One thing I detected is that they have mountains of standards that they work to. They apply those standards fairly rigidly. I think there needs to be a bit more flexibility in that approach.

For instance, I am trying to get fairly high-density plantings, because I know they are good for insectivorous birds, which is one group of bio that is really knocked out of our suburbs. TCCS has a standard. If it is too dense then they think there might be people hiding in there who could jump out and scare people, or whatever, whereas you can see around Canberra that in places, informally, that has happened anyway in an unplanned way. So I just feel as though some of those standards are applied too rigidly. That was one of the issues.

I do not think they have a process for someone else coming in and initiating a different idea. I think it is not usually done that way. I would like to see a process whereby that can happen so that people like the SEE-Changers of this world can initiate change. There are also some broader barriers to change I have, if you want me to—

THE CHAIR: Sure.

Dr Gibbons: I do not think we have enough evidence on our urban green space. We have some good information. People like Cris have developed great data on heat island effects, CO2 emissions and energy savings from green space. Anecdotally I think that a lot of our urban green space is not heavily utilised by the Canberra public, but I cannot back that up with evidence.

THE CHAIR: Yes. I can say that I have heard that anecdotally, too.

Dr Gibbons: Yes. So I think that is one issue, having solid evidence. Being able to go forward with solid evidence in an evidence-based way, I think, is good. One thing that I would like to see is a planning system for our neighbourhood parks in particular that does not discourage multiple uses. I get the sense that our planning system discourages multiple uses in our local neighbourhood parks.

THE CHAIR: When you say multiple uses, what are you referring to?

Dr Gibbons: Things like informal mountain bike trail adventure parks. I have looked at what is called the Gungahlin plan of management for urban open space. They do not encourage adventure play in neighbourhood parks. It is formally not allowed. They do not encourage social gatherings and there is no mention of mountain bike trails. But kids do this informally, anyway.

I notice that in the inner north of Canberra, all the adventure playgrounds tend to be in the schools. Everyone flocks to them and uses their bikes and things in them on the weekend. But they are not in the neighbourhood parks close to where people live. I think that is something that could change.

The World Health Organisation recommends that urban green spaces close to people support as many different uses as possible. I think we could have a planning system that recognises that a bit more. I think there is a lack of investment. We have heard that urban green space is important for health, climate and energy, and it increases your property values and biodiversity. Yet the funding does not come from those sources. Does the health budget include money for urban green space? I mean, it should.

Also, in respect of biodiversity offsets, I am not aware of any that have gone into urban open space. Residents adjacent to green space, if they are getting material benefit, should they actually pay a little bit for that? I certainly would. I know that that would not be the answer for everyone. Ginninderry will tell you that they are putting a levy on their residents for maintaining their—

THE CHAIR: If we have time, we might explore the levy issue with them next week. That is a good point.

MISS C BURCH: Still on urban green space, you mentioned a more European style for our urban green space. Did you also want to see more integration of native habitats into urban space in other ways or, again, is it about finding that balance?

Dr Gibbons: Yes, I think we should use more natives. But I am just recognising that there are some urban open or green spaces that have a different character or theme. I just recognise that. I am not advocating that you put natives everywhere. But I do think we need to use more natives generally to replace mown areas.

MISS C BURCH: There was a recommendation in your submission about introducing a pilot scheme for local communities to get involved in the design implementation of different alternatives for the urban space in their neighbourhoods. What thoughts do you have about how that would work?

Dr Gibbons: I should declare that, as of today, I have just got some funding out of EPSDD to do this type of thing. Ginninderry have also funded me, so we have started this process. That is a pilot, in the sense that we are trying a few different designs of urban green space where we are taking out large areas of grass and replacing them with natives and monitoring biodiversity outcomes, the costs relative to current management and maintenance costs, and the engagement by the community and whether that changes relative to—

THE CHAIR: What is the time scale for that?

Dr Gibbons: Five years. It has got to grow up and everything. But we will be doing it over five years. It does not look at different funding models and it does not engage local communities and the development of those spaces. So there are a few elements that still should be in a pilot program. That is the type of thing that I envisage should happen. That would be really useful and we would be happy to involve a number of different people. I think that pilot should also look at the process, the governance arrangements and how these things can be initiated by communities. I think it should be on a larger scale than what we are proposing.

Dr Brack: When we are talking about nature and greenery in the city, we have the streetscapes and then what used to be called the mown parks, and then there are the other reserves and things. So a lot of what Phil is talking about is the mown parks, and that is a very important thing. But the streetscapes themselves—just the street and then obviously where people park their cars on the street verges and what have you—are also something we can engage the residents in.

People often find that if you have the right trees and vegetation in the streetscape they start to use the streets actively—they walk, they cycle. A lot of people already have some sort of ownership of their verge—some of them will water the trees in droughts and what have you. So there is also the possibility of using that as a way in, to get people looking at the greenery. Streetscapes are becoming more important as we want people to do active transport. The streetscapes will pull them out of their house and hopefully into the green areas when the bike paths go through them as well.

MR MILLIGAN: In your submission you made it quite clear that you do not believe urban open space is properly managed and has the potential to spread African love grass and other species. Would you suggest we replace those areas with more native, natural species? Obviously there would be a cost involved in that. Would that require the scraping of the surface areas as well to remove any of the pest species and then replace them with more native species? How long would this take, and do you have particular areas of the ACT that you see as problematic?

THE CHAIR: Can I just clarify: was the mismanagement largely going to the mowing?

Dr Brack: They are harsh words. I would not say totally mismanaged—I would say the management could be improved. The improvement in management is about the total area of grass that we mow; I think that is too much. That, in turn, spreads African love grass in particular, which is a very nasty weed. It builds up numbers and gets into our nature reserves as well.

THE CHAIR: It just spreads.

Dr Gibbons: Yes, that is right. It is everywhere once you get your eye in. There are three options in terms of replacing grass: one of them is to just mulch and mass plant. So you use a knockdown herbicide then you mulch the site and then you plant natives. You can do that anywhere.

If you want to replace the original ecological community, you need to take out the nutrient-rich topsoil. This is a method developed by Greening Australia. You scrape that back and then you can seed with native Indigenous plants. For instance, if you want a biodiversity offset in an urban green space that would be a great treatment, and we are trialling both of those treatments in Ginninderry.

There is a third treatment: some of our urban green spaces already have native grasses that dominate the sites. It is just a matter of putting a boarder around them and then not mowing them. You could supplementary plant if you wanted to, but those sites will not build up huge biomass.

All of these treatments, if done properly, will not build up much biomass. If they are done around an existing big old tree, you do not have to maintain all the branches that fall off the tree. You are discouraging people from going under the tree because you have got shrubs—this is what they are doing at the ANU campus—so your risk from the tree is reduced and the costs of lopping branches or whatever are reduced. Also, these sites will self-regenerate and you will not be planting them.

MR MILLIGAN: So you are not necessarily talking about large parcels of land?

Dr Gibbons: No. You could do it on large parcels of land, but I am not saying that. You do this and all of a sudden you can potentially put in logs and things for nature play spaces. You can put little informal paths that kids can ride their bikes through. You can potentially develop the equivalent to a ParkCare movement in local parks where people can engage in citizen science. They could weed the site; you could have a weed bin that everyone walks past, pulls out a weed. That happens in ParkCare. There is lots of support for ParkCare, so why would that not happen in our reserves? Schools could adopt these sites.

MR MILLIGAN: Is there any risk that it could attract snakes and other things into those areas, and would you try to avoid doing that in densely populated areas?

Dr Gibbons: There is always that risk, but I have been in Canberra for 30 years, and I used to run in the Crace grasslands, and I have seen one snake. There is a chance of that, but there is much more risk in walking or driving to one of those sites. I think attracting snakes is a little unrealistic. It could happen, but if I saw a snake I would think, "Fantastic! We're bringing biodiversity into our suburbs." You would not do it close to the forested edge because most bushfire impacts happen within around 100 metres of the urban edge. So I would not be doing it there.

THE CHAIR: You put in your submission changing the mown areas and moving to more planted areas, and you encouraged a pilot scheme. Is there an area that you think would be a good trial site?

Dr Gibbons: I am working with EPSDD at the moment to identify some trial sites. But there are a lot of very big old eucalypts that are all pre-European. They would be the foci for most of the treatments. There are some areas where we have some good natives. A neighbourhood park in Ainslie, for instance, has the golden sun moth and that would be a good site to do it. The bigger opportunity is who is interested in having one near their site. There are so many opportunities. We have a lot of urban open space—4,000 hectares mown. There are a lot of places where you could do it.

THE CHAIR: We could stay here all day, but our time has concluded. Thank you for appearing today, on behalf of the Fenner School of Environment and Society. When available, a proof transcript will be forwarded to you to provide an opportunity to check the transcript and identify any errors. Once again, thank you for appearing.

NORMAN, PROFESSOR BARBARA, Chair, Urban and Regional Planning, and Director, Canberra Urban and Regional Futures, University of Canberra

THE CHAIR: We will now move to Professor Barbara Norman of Canberra Urban and Regional Futures. On behalf of the committee, thank you for appearing today and for your written submission to the inquiry. Can I remind you of the protections and obligations afforded by parliamentary privilege and draw your attention to the pink-coloured privilege statement before you on the table. When you have had a chance to have a look over the statement can you please confirm for the record that you understand the privilege implications of the statement?

Prof Norman: Yes, absolutely.

THE CHAIR: Can I also remind you that proceedings are being recorded by Hansard for transcription purposes and are being webstreamed and broadcast live. Do you have an opening statement that you would like to make?

Prof Norman: Very brief, if I do.

THE CHAIR: That is fine; please proceed.

Prof Norman: I am more interested in discussion. I probably should declare I also chair the ACT Climate Change Council but I am not here wearing that hat. But I am happy to talk about climate change and nature as well. Thank you for the opportunity and I am delighted that this inquiry is happening.

We often hear that Canberra is a city in a landscape but that does not mean that we should be complacent about that continuing in the future. With that comes a lot of responsibilities and obligations, I think. So I am really pleased to see it. I also think that we can continue to be an exemplar for other cities around the world. That is our broader obligation, I think: for others to share what we have done here.

In my submission I tabled a recent living infrastructure report that we did for the ACT government and some of the key findings there. I also tabled a very recent comment I had in *Nature* about future cities, and in *Nature Communications* which is a part of *Nature's* journals, and also some of the key messages in a recent book I had published last year, a global book called *Sustainable Pathways for Our Cities and Regions*. I have a copy here if you want to quickly have a speed read. But I think I provided a link there if the Assembly looks to acquire one themselves. *Sustainable Pathways for Our Cities and Regions*: *Planning within Planetary Boundaries* looks more globally at some of these issues. I thought those three things might give you some background for this committee. Since I did that I had an opinion piece in the *Canberra Times* about the importance of greening our cities in a hotter climate future. That might be relevant to the committee's considerations too. There is a mixture there.

In terms of key messages, there are, I think, responsibilities to continue the legacy of Canberra as a city in a landscape, both in our big urban renewal projects and in how we integrate nature into our new suburban development on the fringe so that all the new people to Canberra, or the next generation in Canberra, can share the same

benefits as we have all enjoyed living here during this period.

Implied in all of that are, I think, three things that I would like to discuss with you. One is the importance of connectivity between existing urban spaces. We have this legacy that we have inherited but I think we can do a lot more to strengthen the connections between existing urban open spaces, not just for people but for biodiversity as well, for example, from Mount Ainslie through to Black Mountain, corridors like that. I am sure that you have heard that sort of recommendation. I am just reinforcing that, if you like.

THE CHAIR: That is fine.

Prof Norman: But it brings connectivity, not just for birds and flora and fauna but also for people being encouraged to walk. I am hoping when you look at nature in the city you look at the broader benefits of active living and enjoying nature and some of the health benefits for our community as well, for young and old.

The second thing is to look at the actual buildings themselves. I think that we need to do a lot more in terms of monitoring and evaluating how we integrate landscape into our new building environments. There are a lot of promises that come with building approvals and planning approvals. When I have a look at what is happening and then look at other cities, I think that we could do a lot more here. And I would like to see, again, evidence-based research around that. I have talked about that for quite a while now. This is an opportunity to formally say that again. We need to have those systems in place so that when developers make a commitment to a landscape plan for a large development, for example, it actually happens in the first place.

I think we also need to be exploring more innovative ways to ensure that there is funding available to maintain that landscape. There is nothing worse than looking at a building which has been landscaped and a year or two later it looks like a dead landscape on a facade. And that looks pretty sad, doesn't it? Somebody needs to be doing that. I suspect that that is a partnership between the occupants of those buildings and the government.

I am a bit old fashioned in that I believe in regulation as well. I think you need a stick as well as a carrot. I think when significant developments, like along Northbourne Avenue, are occurring there is an absolute requirement to have a solid landscape plan for each of those developments that will last the distance of time so that we still have our beautiful entry into our city 10 years later.

The third thing I would like to talk about is how we then grow that. If we require buildings to be green buildings in a real sense, we must have good landscape plans for each of our precincts and within that we must have a landscape plan for the city. You can see that sort of nesting within each other. Whatever area that I work in, if we can have those elements that nest within each other and support each other, usually it is a much better outcome for all.

For integrated precincts, which the chair will have heard me talk about many times, there should be tougher requirements—and I know that there is a building inquiry going on as well—not just on the building material but on what happens around that

and integrating it all through. Cities like Singapore, for example, have increased their urban density by 40 per cent and their greenery by over 25 per cent at the same time. It is achievable.

THE CHAIR: That does lead to my first question, which is an essential question of this committee inquiry: as we urbanise, how can we keep nature in the city? You made the statement that we have always been a city in a landscape and you believe that it is possible for us to stay a city in a landscape. Can you expand on some of the ways you see us being able to achieve remaining a city in a landscape as we urbanise?

Prof Norman: Definitely. We need to start right at the beginning of any development process. We are not Singapore but we can learn from other cities. It would be arrogant for us not to think that. But we also need to adapt to our own culture. Of course in Singapore they had Lee Kuan Yew who said, "There will be no development unless the head of parks agrees to it." And he did that 30, 40 years ago. It was integrated.

But we have a different system here, a democratic system, which I absolutely support. We need to find our way through that and involve the community, involve schools, involve everybody in that process about becoming proud of their suburb and greening their suburb. There is a cultural thing there to start with. I actually think we have that in Canberra. I think it is not something that we have to convince the community about. But I think that right at the beginning of the process we need that conversation with developers particularly about how they are going to integrate landscape into their developments.

Often cost is raised and whether that would be passed on to the consumer. There are enough demonstration projects around now to show that if you do it well from the beginning that does not necessarily lead to cost and may well lead to much more value for your development in the longer term. But, as I said, we need to be having a maintenance plan with that strategy.

I do not think it is rocket science. I just think that we need to have that conversation right at the beginning. There need to be some very clear criteria that are probably driven by a good landscape plan for the city so that it is consistent. And then we need to have monitoring and evaluation practices to ensure that it happens. But I think we just need a lot more rigour in the process and a system applied across the city.

I also know that in Canberra some financial benefits are given to people who say that they will build five-star buildings for example. The question for me is: does anyone go back and check that that actually happens? And it is important that it does.

I think the other thing is to obviously involve the community in the process. I declare I live in Braddon. I see this happening all around me—Haigh Park, the whole conversation happening there. I think as more and more people live in inner urban developments, in a sense the open space becomes even more important.

The chair of landscape architecture at Harvard says, "Bigger cities, bigger parks." I think his key message there is: as we grow our city it is even more important to be investing in urban space, because in a sense we have outsourced our open space. We have increased the density of buildings. That is where the kids will play. They need

space. It is my way of saying I think the community is going to demand it anyway. And that is when people like you become very interested.

I think it is about systemising it, conversation with the community and having those nested strategies, as I said, in place. But we do need regulation with it.

MISS C BURCH: On that idea of engaging the community in these processes, what kinds of initiatives would you like to see to actually achieve that?

Prof Norman: Certainly the city of Melbourne I look at as a model. They have all sorts of strategies including emailing a tree, your favourite tree.

THE CHAIR: We talked about that.

Prof Norman: We can laugh but it actually has been shown to have mental health benefits as well as environmental benefits for people who are lonely and looking after their tree and that relationship. And that is a good thing.

I can see already in Braddon interest in Haigh Park that was a neglected space for a long time and now people actually have their apartments looking over it and go, "What's happening there?" They are beginning to demand action. It is inevitable that that will happen.

I think we can learn from places like the city of Melbourne how to have something a bit like Landcare but be much more active—adopt a park, your local park—and I think you could take advantage of a very interested, educated community who would jump at that opportunity to do that.

I have lived in Canberra for quite a long time and there is a great willingness to volunteer time here as well, if it is for a good cause. And if it is for your local park for your children, you will definitely be there. That is how I think that can happen. And I think it is worth the ACT government investing in those groups to enable them to be able to do things.

A lot of my expertise is in actual coastal planning, which is completely different, I know, but there are thousands of volunteers in Coastcare around Australia who really take care of those dunes. It is a similar kind of concept that we could have much more of here.

MR MILLIGAN: In our cities it seems it is becoming more difficult to try to maintain urban open space. How do you keep that urban open green space in our cities when there is so much demand for more development and buildings? Is the community expecting to see these urban open green spaces on the outer edges of the city? How do you try to achieve this balance? What restrictions do you need? How do you achieve urban open greens paces in our city that is developing so quickly?

Prof Norman: That is why I often say how do we grow and be green at the same time? I come from Melbourne originally so I know it well as well as here; I have spent about the same time in both places. If you touch the urban open space in Melbourne that is politically extremely courageous, as one would say in *Yes, Minister*. The

community defend it until the nth degree, and that is what I think will happen here in the inner urban areas. I think the community will take care of that themselves and have a very strong message to elected leaders that, "That is our space and do not touch it."

There is a conversation the government can have with those communities about a shared contribution to maintaining those spaces: "If that is so important then perhaps you would like to make a contribution to that." I heard that in the previous discussion you just had.

I am concerned about the open space in the outer areas. At some point we will come to redeveloping the middle suburbs in this city as well. Watch this space. If you think there has been controversy to date, you will get some there. We need clearer guidelines about how we plan for and provide urban open space in new development areas and when we come to redevelop our middle suburbs as well. This comes back to the basic thing of having a landscape plan for the city. As I understand it, there is not one.

THE CHAIR: Not a comprehensive one.

Prof Norman: That seems to me a pretty basic thing to be doing. There are a lot of reasons why there is a lack of landscape in our newer areas, and it is not just because they are new. It is easy to drive through these places and go, "What are all these McMansions doing here when there is no landscape?" Well, there are a lot of pressures that lead to this, and even the banks are involved in this. If you are a first home owner they want to minimise the risk on their loans. You might think that this is a long bow, but it is not actually.

The bank says, "We'll give you a loan, but we want you to maximise the development on that block." So the block is concrete from one side to the other, filled up with developments, so if there is a default on the loan the bank can flog it off. That is where they are coming from. Anything that is set aside for landscape or a back garden is seen as a luxury. We need to move beyond that.

To move beyond that the government needs to be very clear about its intentions about integrating landscape into those blocks so it is not a discretionary aspect and so the banks understand that these are the rules and regulations in the ACT. If we want to maintain open space in those backyards, if we want to provide buffers so you can grow trees or gardens or fruit gardens or vegetables in your place, we need to have in place planning regulations that say that this is not discretionary and it is something that we actually require.

THE CHAIR: Should it just be the backyards or should there equally be as big a focus on streetscapes?

Prof Norman: I think streetscapes are absolutely important. I think all the space we look at is important. Whether it is the United Nations at a global level or here locally, there are some standards around the world that are accepted in terms of the amount of open space in a suburb, and we should be looking at leading practice in that.

As to nature strips and things, there are many innovative things we can do there. I am sure you will have heard from the ecologists around that, but I think we should be very flexible. We spend a lot of money on grass cutting in this jurisdiction. I am sure that we could do something more innovative there and we should allow that to happen. Again, community groups participating could do that well.

THE CHAIR: In your opening remarks you said connectivity is one of the things we can do better. Can you elaborate on what you mean by that and what you see as being the areas where we could improve and the measures we could take?

Prof Norman: The chair has been through this with me, but one of the things I do with my planning students is make them walk: go out and walk the talk, whether that is around Belconnen or Civic, and actually explore. The one thing we find is that the footpaths do not actually connect let alone the landscape. I think connectivity is something where we could get significant gains with probably not a lot of cost.

That is about mapping all that properly and getting advice from ecologists in terms of the landscape itself, but also ensuring that if I want to go for a jog or a walk through the inner suburbs, I can do that and enjoy the landscape too without walking along a footpath, then a road, then something else so you could see a more integrated approach. I think the connectivity is not just about trees and biodiversity; it is also about the pathways below so we residents can reap the benefits of that.

THE CHAIR: In your opening remarks you also mentioned buildings and what we can do with those. Can you elaborate a little more?

Prof Norman: I can talk about my climate change as well; well, not formally, but I can talk about climate change. I would like to see some demonstration projects in this city. They are really worth investing in. I do not mean avant-garde statements of architecture; I mean the boring suburban house. Just sit where most people live examples that people can go to to see exactly what you can do with your house in terms of a greener house.

I think we should do the same with the apartment blocks as well. I do not see many solar panels on apartment blocks in this city, for example. I do not see many gardens. In fact, I do not see any gardens on our rooftops in this city. Think about where you travel yourselves—you will see them all through the city. They are all through the cities of Melbourne and Sydney, it is happening now. What is happening in Canberra?

MR MILLIGAN: Why do you think it is not occurring here?

Prof Norman: I do not think it is required. I do not think it is made easy, and you have to make things easy for people to do it.

MR MILLIGAN: Do you think it would be too much regulation.

Prof Norman: Both. Say I live in an apartment block and I am on the body corporate. If there were a couple of examples we could have a look at and see how it was done and what pathway they took and was it expensive, was it not expensive, what is an affordable way of doing it and how can it be maintained, that would be fantastic. I

think a lot of people in the new apartment blocks would find that really interesting. That is just one kind of example. If there were a partnership between the government and a developer to show how it can be done I think everyone would be a winner.

MR MILLIGAN: In your submission you talk about water sensitive urban design strategies. How exactly is this achieved? Is it expensive to retrofit older suburbs compared to newer suburbs?

Prof Norman: It is interesting; Australian engineers and architects are engaged internationally, including by Singapore, to give advice on water sensitive urban design. It is something we do really well in this country, but not universally. We have that expertise here. In terms of public open space, it is bringing inner creeks and wetlands back to life. We have been doing some terrific work here in the ACT. I do not think that is a negative here; we are doing really good work. In a sense, we just have to keep going. We have a lot of incentives to do that in terms of the water quality of the lakes, so that is a good thing.

I walked down Lonsdale Street in January. It was pretty hot and the landscape was suffering. If you have good water sensitive urban design—quite a lot of cities do this—you then start to integrate things like pocket parks and you recycle water systems through those. You start to green that space through recycled water systems, and that is a very positive thing to be doing.

MR MILLIGAN: So lift up the concrete and put in—

Prof Norman: That is right, yes. Capturing the water better and having more permeable surfaces to capture that water so when we get the sudden downpours it does not just end up in the lake causing problems. We could retain that water in that area through a series of pocket parks coming down Lonsdale Street. Less concrete, more open space, more green, more puncturing of holes along that landscape. Again, there are benefits everywhere there: you retain the water, you use the water better, you get a greener environment, and people appreciate that.

THE CHAIR: As a research institution generating a level of knowledge—you have attached all the reports and shown the books you have there—how can we better share the knowledge coming out of the research institutes with the practice we put into the city?

Prof Norman: That is what CURF is about really; it is about an innovative platform to better share knowledge of university research that is often locked away and put on the shelf or published in some obscure journal. It is to break that mould and to get that research out to share with you and then with the community as well. We run a series of seminars, which are well attended, to do that. We publish these reports. Everything we do is on the web and open.

Investing more in those innovative platforms that provide a bridge between that research and public policy is quite cutting edge to do that globally now, and they are doing it in the cities. The City of Melbourne has a really good partnership with RMIT and with Melbourne university on this sort of thing. You will find the same in Sydney. We would like to see more of that here in Canberra.

We have this fantastic opportunity in Canberra with local universities, and we need to make that bridge stronger and invest in those platforms. That is a very self-serving comment, but that would be good to see with a lot of benefits to be gained.

THE CHAIR: Our time is almost concluded, unless there is anything you would like to add in the minute that is left?

Prof Norman: Just the point I made before: think about it as more than just nature in the city. I always say a healthy environment leads to a healthy community which leads to a healthy economy. I think I would like to finish with that.

THE CHAIR: That is a good concluding remark. Thank you for appearing today on behalf of Canberra Urban and Regional Futures. When available a proof transcript will be forwarded to you to provide an opportunity to check the transcript and identify any errors. Once again, thank you very much.

RUSSELL-FRENCH, MS ALISON, President and Chair, Woodlands and Wetlands Trust
CUMMINGS, DR JASON, Chief Executive Officer, Woodlands and Wetlands Trust

THE CHAIR: We will now move to the third organisation appearing today. I welcome Alison Russell-French and Jason Cummings from the Woodlands and Wetlands Trust. On behalf of the committee, thank you for appearing today and thank you for your written submission to the inquiry.

I remind you of the protections and obligations afforded by parliamentary privilege and draw your attention to the pink-coloured privilege statement before you on the table. Once you have had a chance to read over that, can you confirm for the record that you understand the privilege implications of the statement?

Ms Russell-French: Yes, I have done this at the commonwealth level. That is fine.

Dr Cummings: Yes, thanks.

THE CHAIR: I also remind you that proceedings are being recorded by Hansard for transcription purposes. Proceedings are also being webstreamed and broadcast live. Are there any opening remarks that you would like to make?

Ms Russell-French: Yes, I have some that I will make. We thank you for the opportunity to come and speak to you today. We had a fairly good joint effort in putting our submission together, from a number of our board and other members, so it reflects the views of our trust quite effectively.

By way of background, we were set up by the ACT government nearly 10 years ago, which seems a long time back. It was an idea to bring greater community support for and engagement in the natural environment, to bring new ideas to policymakers about innovative ways of looking at how to protect conservation areas and natural areas, and also to support fundraising initiatives, because as a not-for-profit we have much greater flexibility to raise funds, whereas governments are a bit more constrained. So that is one of our important elements.

Although our initial remit was to focus on two places we love—namely, Jerrabomberra wetlands and Mulligans Flat—we are not limited to these places only. In the last four to five years we have been very successful in attracting significant support to both places. We have raised millions of dollars from the commonwealth and the ACT, and through the private sector partnerships we have. So there is, we can say, broadly recognised value in the partnership model, which is one of our key objectives.

I digress to provide a small anecdote. When we had one of our bettongs released at Mulligans Flat, we had Greg Hunt, the commonwealth minister, come out. At this stage we were looking to get some significant support for the sanctuary fence extension. So we asked him to come out and release one of the hand-reared bettongs. I was thinking to myself that it would be interesting: "We will see two seconds of tail before it disappears into a bush."

However, someone had trained Bella the bettong extremely well; so she sort of hung around his feet, put her paws on his leg, looked up at him, and he was busy snapping photographs. I thought, "I can see money coming." And, sure enough, we were very successful with that. Never underestimate the cuteness of an animal.

We share the aspiration for to Canberra be the best bush capital for the world, the best for the bush and the best for its people. We will probably come back to that bush capital theme quite a lot, because it is one of the things we feel is really important. As we indicated in our submission, we strongly support the blending of the natural and urban interface in view of the multiple benefits this provides both to community and to the natural environment.

We note that Canberra prides itself on being the bush capital, but I think we actually need to actively encourage engagement with and an appreciation of the natural assets that we are very fortunate to have here. Anyone from Sydney or other big cities would really benefit from seeing how lucky we are to have two huge nature reserves within our urban context and the important role they do play and can play into the future. They are assets I think we probably do not appreciate to the level that we should.

We have a whole range of natural assets and areas in our urban precincts. We have nature reserves, city parks, city wetlands and the two reserves, Mulligans Flat and Jerrabomberra wetlands. They are all highly valuable and provide multiple services to Canberra. As we stated in our submission, close proximity to the natural environment provides opportunities for water protection and stormwater run-off control through urban wetlands. It is very pleasing to see the number of urban wetlands that are being built under the Murray-Darling Basin program funding.

They also provide biodiversity protection and enhancement. We hear constantly depressing stories about the loss of biodiversity and the difficulties our species are facing. They provide climate change mitigation. I am sure you have already heard a lot about that. They provide recreation and tourism for the community and others, give us the opportunity for healthy lifestyles, and provide education and learning about the values that natural places can play in the urban context.

Have any of you been on our twilight tours? I strongly encourage you, if you have not. If you want to see a really nice little animal that has not been here for over a hundred years, it is a good way to do it. The visitors learn about the history and the values of Canberra's natural places—that also includes the Indigenous history—and the richness of the ecosystems such as the yellow box and red gum grassy woodlands and the role they actually play. As we probably all know, 90 per cent of those have now been lost on mainland Australia, which is a very sad state of affairs, given their rich biodiversity.

Our visitors also learn about the reintroduction of locally extinct native animals such as the bettong and the quoll, and the valuable ecosystem services that they provide, because bettongs are known as ecological engineers, with their capacity to dig, and dig very effectively. We have some work being done to test what the soil productivity from those digging events will show, which has wider implications, of course.

Our program is developing into a significant ecotourism opportunity in Canberra, which will provide economic opportunities that match both the ecological values and social values as well. Our natural places are what make us an attractive place to live and to visit. They contribute substantially to the triple bottom line of achieving economic, environmental and social outcomes. Our philosophy of connecting community to nature through our own natural assets is really important in helping people to appreciate and to value these assets, and we also want to protect them.

We made a number of recommendations and I will quickly run through those for your benefit, to refresh you.

THE CHAIR: Sure.

Ms Russell-French: We believe that connecting people and nature and quality spaces should be a policy priority as it provides wellbeing benefits plus a host of other benefits. Ecological restoration should continue to be a policy priority. Many of our reserves are in a degraded ecological state. They need investment to improve, maintain and reach their potential. We see ourselves providing a model where this could bring in a broader base of support, not just through government support but through corporate support and other areas of support.

We also have an opportunity to show national leadership on the European red fox issue. It is a well-known voracious predator which wreaks havoc on our native fauna every day and every night. We would really urge that a much greater thought process go into looking at landscape planning. I think we see far too much fragmented planning that does not take into account the holistic approach to the landscape.

I know that the commonwealth is now looking at integrated assessments of ecological values, rather than doing piece-by-piece fits. I think that a much stronger focus on that landscape planning, to pick up all the benefits and values that exist, would be of really significant value and a plus for us. We often see the fragmented approach leading to the detriment of the natural environment and the values that it can offer in the urban context.

We have noted the concerns that have been expressed in other fora about the loss of trees in and around the urban areas and believe that is an important area that needs to be focused on as well, because trees provide enormously important continuity and corridors for birds and other species. Again, coming back to the landscape context, if you do not have a holistic approach to what is in the environment—urban and natural—then you are creating greater risk through fragmentation and loss of things.

We have recommended in our submission that the advice for your reserve concept could be given greater focus and thought because it does integrate ecological, economic, social and cultural elements in taking account of all the needs for future generations.

We suggest that this one might probably raise a few hackles: an environmental levy could be considered to meet the challenges currently confronting natural areas and green space management. This would give us greater protection and resilience to restore areas in poor condition. Levies tend to get a very negative approach first off,

but they are actually very beneficial in the sense of looking at a long-term investment. So we urge that that be given some thought.

Over the next 18 months we are going to be delivering a new concept for conservation with the sanctuary gateway at Mulligans Flat, in our Throsby suburb, and for the visitor centre. We are looking at a similar plan at Jerrabomberra wetlands, in discussions with the Eastlake development. So we are looking to have two visitor centres in Canberra that will connect the community back to the natural environment very effectively.

We see a future where Canberra could be widely recognised as a premium tourism and conservation destination that has unique high-quality nature engagement experiences for people in the community generally. That is a resume of our submission. Jason, are there any additional comments you would like to make?

THE CHAIR: Jason, is there anything you would like to add?

Dr Cummings: No.

THE CHAIR: You did not see it, but he was nodding quite a few times.

Ms Russell-French: As long as you were nodding and not shaking your head.

THE CHAIR: In your written submission and in your comments you mentioned that it is a shifting interpretation of sustainability but also shifting from a non-pristine based dismissal of natural values to looking at how places can be rejuvenated. I want to get a better idea of where you see the opportunities in Canberra, how that might affect how we have previously managed some places and what we could move to.

Ms Russell-French: Since I have talked a lot, you may speak.

Dr Cummings: Canberra's urban reserves and nature parks are a great platform for us to do that. On the doorstep of the community we can, with resources, regenerate a lot of those places. You could foresee a future where we take the learnings from Mulligans Flat and apply them at Mount Majura, for example. With a community-led fox control initiative you could quite quickly have eastern quolls, bettongs and curlews on Mount Majura again.

THE CHAIR: But the sorts of things we are talking about with rejuvenation are bringing back the landscape to more what it would have been before human—

Dr Cummings: Absolutely.

Ms Russell-French: As much as you can. One always has to recognise that you can never fully rejuvenate it to the pristine state it was in, not necessarily that it was pristine but where it was before settlement.

THE CHAIR: Outside the nature parks, do you see opportunities for the wider landscape within Canberra, the more urban landscape, looking at how that could be essentially rewilded, for lack of a better word?

Dr Cummings: Yes, absolutely. Superb parrots come to mind, for example. They do not limit their distribution to the nature reserves. I see them in the laneway behind my house in Cook all the time. They eat on the Chinese elm in my backyard. It is probably a species-by-species thing, where the green fabric of the landscape, in whatever tenure, can be resourced for biodiversity conservation if we manage it appropriately. I know that Phil Gibbons, who you have probably spoken to already, is doing work on how we can turn normal urban parks into more biodiverse places. I think there is a wealth of opportunity there.

Ms Russell-French: One of the interesting findings in the work that has been done on little eagle movements—and you have possibly seen this—is that these birds that were not very well known do enormous migrations. In fact, we have had a couple from Canberra that have gone up to northern Queensland, across to the Northern Territory and back down to Victoria. Two of them have actually been found in industrial areas. It was always thought that they would never go near urban areas. The more we learn about species, their movements and how they can adapt to urban environments, the more we can then understand what we have got to protect and how we might enhance those areas that species will use.

MISS C BURCH: In one of our previous hearings we heard the suggestion that we need to be doing more to promote woodlands and wetlands in tourism platforms. Would you support that recommendation? If so, how do you think that we could do that?

Dr Cummings: I spend about 24 hours a day trying to do that.

Ms Russell-French: That is one of my interests too.

Dr Cummings: We obviously think there is an ecotourism platform around the sanctuary particularly and the Jerrabomberra wetlands. I have recently participated in the visit Canberra accelerator program, which links us with inbound tour operators. There is good appetite in those inbound tour operators for the experiences that we have in Canberra. Once we get this building in place we will have a new platform for new products to engage people in nature. Then, from a tourism perspective, it is not just international tourists; obviously it is visiting friends and relatives and the education sector as well.

Let me step back. There is a nature ecotourism strategy being developed at the moment by government. We certainly think that is a step in the right direction and should be the blueprint for how we do what you are suggesting.

Ms Russell-French: You are probably aware, through our submission, that we have an MOU with the Zealandia eco-sanctuary in Wellington. That has proved to be a very successful arrangement on both sides. When we have brought Zealandia board members over here, and other members, they have been very enthusiastic about our areas of natural bush and areas where we are looking to promote ecotourism. Likewise, they are doing the same with Zealandia, which is a smaller area than ours but quite a substantial one that is going through a 500-year vision of restoration. It is very impressive all up.

Those sorts of arrangements are really important because we both learn, each way, of the things we can do to improve the natural world coming to the urban world. They have now got native birds around Wellington that have not been heard there for many, many decades. We were talking to Dame Annette King the other day and she said, "It's lovely to hear a tui in the morning in the tree. I have never heard it before this." Birds have spread out from Zealandia because of community engagement in feral pest control. They have possibly easier pest control, apart from possum, than we do, and they can engage the community in catching the ocelots, weasels, stoats, mice, rats and other smaller rodents that they can get rid of. We would like to try to engage community in some feral pest control as well, once we have worked out effective ways of doing that.

THE CHAIR: I am not sure how I feel about catching rodents, but I wish you well.

Ms Russell-French: People get very enthused over there, evidently.

THE CHAIR: I am happy to participate in other activities.

Ms Russell-French: They do humane catching, we are assured.

MR MILLIGAN: In your submission you mention that it is important that government, the corporate sector and also the community all play an important role in conserving and protecting the natural assets here in the ACT. My question is: to what extent is that being done now and what needs to be improved?

Ms Russell-French: I will do Jerra and you can do Mulligans.

Dr Cummings: Okay.

Ms Russell-French: We have started open days at Jerrabomberra wetlands, generally on World Wetlands Day, which is in February. It is probably the worst time of the year to hold an open day and to get community there. But that has been increasingly popular with community because they come along, they see the wetlands, they can go on guided tours around the wetlands and hear what are the important things there. There are groups that do Waterwatch-type activities, birdwatching. We have people who come along to teach people how to do basic birdwatching 101. That has been a really important element in raising awareness about an asset that many community people have not got a clue is actually there. It is a really good way of showing how that interface of natural and human direction can work very effectively.

We have also got quite a range of historic and heritage values at Jerra. We have just finished, through two very fortuitous grants from the ACT government on heritage, reconstructing the World War I training trenches, which are now going to be part of the tour operations there. People can see what was there, even some signage about the trenches that were there in World War I. It was a very significant training area and probably the most important in Australia. That is an important area.

We also have quite a lot of Indigenous activity at Jerrabomberra wetlands. There are Indigenous groups that do tours there and talk about the cultural values of those

wetlands.

It is a learning and starting story, but it is gaining a lot of momentum, which is really pleasing to see. I think the critical thing for us will be visitor centres. Once they are there you can have a central location for people to come and learn about the values, learn about the wetlands in this case and get a much better understanding of how the interface of natural and urban world can work and work effectively.

Dr Cummings: I guess there are two parts of the answer to your question. One is that you have got regulatory instruments to force business to contribute and to behave properly. Then we have got voluntary instruments, corporate partnerships that we enter into, social enterprise et cetera. In our experience, both are really important. There are always the corporate leaders who will come to the party and form partnerships with us. But then there is a whole section of the economy who could do more if they were required to through training processes, for example. Every time you get a DA in, there is no reason that ACTPLA could not be saying to them, "Are you making a contribution to the woodlands and wetlands, for example? Why aren't you?"

What we have tried to engender is mostly the philanthropic partnership side of things. I think there could be, with minor policy adjustments, a lot more support coming from the business community but not necessarily having an impact on those businesses because it is only a small amount over a large number of enterprises.

Ms Russell-French: We recently did a field trip out to Ginninderry, at David Maxwell's invitation. He has been looking at how we might collaborate between their trust, to be established, and ours. I think we were all really impressed with the way they have approached looking at developing an area where the first focus was on the ecological and conservation survey. Once you have identified your values then you have a better picture of what you can do by developing areas that do not have those high values and you are not into this war over how much you are going to increase or decrease for conservation.

I think that overall approach is one that could be really sold more actively to developers generally. If you are going to develop areas and you do have natural assets on those pieces of land you are developing, let us look at doing it in a different way so that you end up with a really good win-win—not a protracted negotiation, least best outcome situation but some sort of resolution approach. I think Ginninderry is providing a really useful example for developers to think about.

THE CHAIR: We do have Ginninderry appearing next week. I think, based on today, we will have a lot of questions for them.

Ms Russell-French: Yes.

THE CHAIR: Are there any examples of where you have identified potential opportunities that would warrant a contribution to a natural ecological place or a conservation program?

Ms Russell-French: I assume you have talked to the Conservation Council?

THE CHAIR: No, we have not had them in yet.

Ms Russell-French: They have done a lot of work in some of the natural areas, particularly in the Molonglo area, which would be very much part of this process. We have not got into that field so much, apart from Ginninderry, because our focus has been very much on the two reserves. But it is an area where we could potentially play a bigger role down the track.

I think there is too much of a strong focus on intense development at the moment, with the sacrifice of green spaces. You have probably heard this from others who mentioned the climate change impacts of over-densification and lack of green spaces or lack of green capacity. It is how you marry these things so that you can maximise everybody's objectives effectively but not necessarily sacrifice one or other of the interests.

Dr Cummings: Under the offsets policy framework at the moment, with the commonwealth's involvement, developers in the ACT are often required to contribute money or land to offset their development. In the ACT we are a bit different, of course, with the Suburban Land Agency being the main agency. The Gungahlin strategic assessment had a requirement to spend a certain amount of money to enable the development of Throsby, for example, and all the other suburbs. That is an example you can draw on. Icon Water and others, whenever they do a development, if they are clearing box gum woodland, for example, will need to fund the restoration of that somewhere else. It is block for block.

THE CHAIR: Most of the examples are through offset programs?

Dr Cummings: Yes, that is the most tangible one you can grab onto. But that is not going to solve where we started the conversation about how we get Mount Majura up to standard. That is a big public policy issue. The community needs to decide that we want bettongs on Mount Majura. It is going to cost X dollars and we need to find the money from somewhere.

Ms Russell-French: It is going take an ongoing engagement of effort to maintain that.

Dr Cummings: Correct, yes.

THE CHAIR: You mentioned a landscape plan in your statements today. That has been a proposition put forward by other submitters. What benefit do you see from a landscape plan? What do you see that including?

Ms Russell-French: I think we were talking about landscape planning. It is about looking at the overall landscape here and doing an assessment of all of the values. If you had, for example, the yellow box and red gum woodland remnants, you would be looking to make an effort to conserve those because they are in such small areas now. You would really want to try to exclude them from any sort of development. But then you need to look at that work in a context of: if you take them out, what is going to be the sacrifice elsewhere?

So it is not just about making a decision on a particular area for development; it is

about saying, "Well, if we develop here, what's that going to mean over here?" Are there opportunities to expand the ecological values that you might have across that area and are there opportunities to have urban development happen in a way that is sympathetic to the natural environment as well?

From my perspective, it is really about looking at the holistic approach to how you develop. We would be in a sense retrofitting some of it now because we have gone on a different basis up to this point. So it is really about looking at what is left and how best to maximise the values you want to see left from an ecological perspective, plus the values of social and economic advancement.

THE CHAIR: Just for clarity, I did say "landscape plan" and you said "landscape planning". There is quite a big difference as a result of those three letters at the end of a word. Do you have a view on whether a landscape plan could help with the landscape planning that you are trying to get to?

Ms Russell-French: It could; it would depend on the basis of what you are going to develop your landscape plan around. If you are looking at an equal assessment of values then potentially yes, but if it is to minimise certain elements then that is not going to be very effective.

Dr Cummings: The other element to it is that we garner new knowledge all the time. When the last landscape plan was done in Canberra it identified areas to develop and areas for the nature and conservation state, and there were no bettongs in Canberra at that time. There were no eastern quolls; there were no bush stone-curlews. We know more now about superb parrots and the habitat they need. Really it is about engendering a commitment to that process, to keep refreshing our landscape planning so that we keep identifying what nature needs to thrive and accommodating that and working with it.

Ms Russell-French: And perhaps using a precautionary approach to how you develop as well, given that, as Jason said, knowledge comes in different ways. A lot of the satellite tracking of some of our birds is showing up things we would not have thought about 10 years ago. You cannot plan for that 10 years earlier, whereas if you leave some degree of flexibility you might be able to accomplish the values you now want to try and protect.

THE CHAIR: Those comments certainly reinforce what the Fenner school said earlier: that nature is dynamic. We are hearing it from more than one group; that is always beneficial.

MR MILLIGAN: What would the environmental levy look like? Where could that possibly be collected? Is there a suggestion that there is not enough already being made available to preserve our green areas, to further protect areas and also, as you mentioned earlier, to bring areas back to their former glory?

Dr Cummings: To answer the second part of that question first, from my perspective there is never enough money for conservation. We can always do more, and we can always bring more back. The levy is not a new idea. Jurisdictions around Australia use environmental or NRM levies and they go on your rates. One hundred bucks per

annum and it is never complained about by residents, by and large, from the research I have done. It is not a contentious mechanism elsewhere in Australia. It is used in most jurisdictions but not the ACT. For us it seems like an obvious opportunity for policy change to generate more revenue for conservation so that we can restore more places. That is what it is about.

Ms Russell-French: I think more focus could be placed on developers, in the sense of a levy that would balance what could be lost through development and put into management of areas of significance. One of the things about Ginninderry that is so attractive is that each block will have a one per cent levy on it that will go into the trust they are going to put up to manage the river corridor and the conservation areas. It is a bit like a quid pro quo—if you are going to develop somewhere, you pay a certain amount of social benefit back to the community to manage the areas that are important.

The levy would not necessarily go into just the area being developed but be used more broadly. Having being a former environment department and commonwealth employee, I know how hard it is to get money for the environment. It is generally the first one to be cut when things have to be cut. It is always going to be an area where you need money. From my perspective, a social due on the community as a whole, which includes developers and others, is not a bad idea to preserve what is going to be of value down the track. It is like an investment. Rather than just looking at it as a short-term imposition of a levy, it is actually something you are building into the future of the place. If you sell it that way it is a lot more positive, in my view.

MR MILLIGAN: So could that levy depend on that sort of development and what impact that has on that local area to sort of make it fair for any future development?

Ms Russell-French: It could, yes.

MR MILLIGAN: If a redevelopment is being done in an area that is already developed, what sort of a levy would that incur compared to a development being done, let's say, at Glebe Park, where there is no development? That levy might be much higher so will have a bigger impact.

Ms Russell-French: There will be areas within areas that are already urbanised and developed that would benefit from a greater injection of funds to maintain the green spaces. These would not just be native areas of bushland but areas that are green space and of community value—picking up what the Fenner school were saying to you about those areas requiring an investment of funds for maintenance and for use. To me, it seems to be like dues the community pays as a whole to maintain what is considered to be valuable and worth maintaining in our society if we believe in this nature in the city or urban context philosophy.

Dr Cummings: I think it might be too complicated. Good policy is simple policy. With the urban example you used, the people living in and around Haig Park are using the natural landscape. They value it. They will be the ones ringing up Chief Minister's talkback complaining about the trails not being looked after and weeds in the landscape. I do not necessarily think it needs to be tailored to where you live. I think we all recognise that we live in the bush capital. It has these values that we cherish

and we would all be willing to pay a hundred bucks a year, if it is income tested so that there are fewer socio-economic issues.

Ms Russell-French: In that context, you are right; an overall levy would be for all-purpose use, not just specific.

Dr Cummings: I should say that I think there is good funding for the environment in the ACT. I would not want to be seen to be critical about colleagues in parks and cons. They have a large estate to manage and, compared to what we see in other jurisdictions, they have some resources to get stuff done on the ground. That is not always the case around the nation.

Ms Russell-French: I would back that up from my previous experience elsewhere—the ACT is very much more focused on investing in this area, which is really exemplary. I know that, certainly in other parts of Australia, it has always been the area that gets the whack first, which is pretty frustrating when you have good things happening.

THE CHAIR: Thank you for appearing today and for the submission you provided to the inquiry. When available, a proof transcript will be forwarded to you to provide an opportunity to check the transcript and identify any errors. Thank you once again for appearing.

CORAM, MS JANE, Director, Land and Water, Commonwealth Scientific and Industrial Research Organisation
BARNETT, MR GUY, Principal Research Consultant, Land and Water, Commonwealth Scientific and Industrial Research Organisation
TAPSUWAN, DR SORADA, Senior Research Scientist, Land and Water, Commonwealth Scientific and Industrial Research Organisation

THE CHAIR: We will now move to the fourth organisation appearing today. We have Guy Barnett, Jane Coram and Dr Sorada Tapsuwan from the CSIRO. On behalf of the committee, thank you for appearing today and for your written submission to the inquiry. I remind you of the protections and obligations afforded by parliamentary privilege and draw your attention to the pink-coloured privilege statement before you on the table. Can you confirm for the record that you understand the privilege implications of the statement? If you need to take a moment to read it, please do so.

Mr Barnett: Yes, I do.

Dr Tapsuwan: Yes, I have read it.

Ms Coram: Yes.

THE CHAIR: Thank you. I also remind you that proceedings are being recorded by Hansard for transcription purposes and are being webstreamed and broadcast live. Ms Coram, would you like to make an opening statement?

Ms Coram: Thank you for the invitation to appear before this inquiry. Our written submission aims to provide the committee with a snapshot of the latest findings and body of evidence from relevant scientific research that has been undertaken by CSIRO scientists. We have not addressed all of the inquiry's terms of reference since as government scientists it is inappropriate for us to comment on policy. Nevertheless, we hope that the committee has found our scientific contributions to be useful. I will now hand over to Guy Barnett, who is the lead author of our submission, to outline our key messages.

Mr Barnett: There are five key messages from our science that I would like to highlight. The first of those is that nature is not just a "nice to have" in our city but provides critical infrastructure. There is considerable scientific evidence from around the world supporting the role of nature in cleaning our air and water, providing shade and shelter benefits, conferring health and wellbeing benefits and so on.

The second point is that people are diverse in the way they appreciate and value nature. Internationally, the perceived benefits generally seem to outweigh the negatives. But this varies according to local context and also the characteristics of the population, such as demographics, cultural background and so on.

The third point is that nature has an important role to play in building Canberra's resilience to the impacts of climate change, particularly extreme heat events. CSIRO has mapped land surface temperatures across Canberra with cooler areas characterised by green vegetation and proximity to water.

The fourth point is that it is important to manage the interface between natural areas and urban areas. This includes consideration of the location and intensity of surrounding land uses and maintaining a 30 per cent landscape representation of natural areas to support healthy populations of mobile fauna.

Finally, the last point is that the use of natural systems, such as water sensitive urban design, to provide services in urban areas remains relatively novel compared to conventional approaches. This is in part due to the lack of monitoring and the limited understanding of maintenance requirements and long-term costs of using natural processes.

What I have just outlined are some key points from our submission. As I am sure you all appreciate, nature in cities is a big topic. Jane, Sorada and I can speak to the high-level detail in our submission, but we are not across the finer details of every study CSIRO has undertaken. We are happy to take questions but there are limits to our knowledge and areas of expertise, so there are some questions that we may need to take on notice.

THE CHAIR: In the introduction to your submission, you say that as Canberra continues to develop there is a need to ensure that natural value is protected. What measures do you see need to be taken in order to do that?

Mr Barnett: I think the first thing is actually understanding our natural values, having a deep understanding of what natural values are there. Then there is the type of work that Sorada undertakes, which is particularly around valuation and the processes there. I will hand over to Sorada to take that one.

Dr Tapsuwan: My specialisation is in environmental economics, particularly around the value of natural assets. I think Guy is right. We believe that there are a lot of values to natural assets. But when it comes to decision-making, we kind of need to know what the values are in dollar terms at least. I think that is the difficult part. There is a lot of scientific knowledge that has been developed since the 1970s to come up with robust methods to value natural assets. But it is an expensive process and it is not implemented everywhere yet. We do know there is value; we just do not know how much.

THE CHAIR: Do you find that it is an obstacle not being able to apply a price to that value? Without wishing to pick on treasury officials, when you are looking at people who are doing the books, who are doing the accounts and those sorts things, if they cannot ascribe a value it is very difficult to make a case. Is that something you have found in the research that you have done?

Dr Tapsuwan: Yes, particularly if you have to provide results in the form of a cost-benefit analysis. So the costs are very clear but the benefits are unclear.

THE CHAIR: Is that perhaps something that is holding us back from keeping more nature in our city, from preserving more, from achieving more, from increasing the number that we have, in your opinion?

Mr Barnett: It is an area that CSIRO is undertaking active research on. There are some values that are relatively easy to ascribe. That might be looking at street trees and premiums on property prices. But when you then look at the role of trees and mitigating urban heat island effects, the contribution they make to improving mental health benefits and those sorts of things, it is very difficult to ascribe value there.

How you actually weigh up the different values from the different types of benefits is quite difficult. That is an area that we are working on and undertaking research on. That is on the basis of requests we have from various governments but also developers in just trying to understand and have a systematic way of understanding what the costs and benefits are of different types of nature in cities.

THE CHAIR: Do you think we ever unintentionally undervalue nature because we cannot ascribe a cost to it?

Ms Coram: I am not an environmental economist. I am nodding my head furiously. But I have worked in environmental science for many years and grappled with how do we actually get valuation for things that are non-economic. It is one of the problems in terms of justifying government's continuing investment in environmental things, in biodiversity conservation, for example. Unless we have some quantitative way of demonstrating the return on investment, it is very easy for the motivation to drop out of programs.

As well as economic measures of achievement, I think there is long-term monitoring of environmental benefits that can come into play too. It is not just the dollar value but simple things like how many trees have been planted? How many have survived? There are really simple measures where there can be demonstrated return on investment that kind of keeps the financial or the more economically-minded people—the funding agencies—more interested.

MISS C BURCH: You spoke in your opening statement about using natural systems more in urban design. Do you have some examples on how Canberra could be doing that better?

Mr Barnett: That reference was specifically to water sensitive urban design. But we also do work looking at how you use trees to mitigate urban heat island effect as well. In the context of water sensitive urban design there is work that we have done around Australia, working with developers and governments, to really understand, I guess, the successes and failures of different water sensitive urban design. It is relatively novel.

There has been a lack of long-term monitoring to see how these sorts of things work, what the maintenance costs might be longer term, and I think that that uncertainty has actually been a barrier to or a disincentive for greater uptake of those sorts of technologies. I think that that sort of information is needed to have more acceptance of these types of novel approaches.

MISS C BURCH: And why do you think there has been a lack of long-term monitoring? Has it been lack of resources or time?

Mr Barnett: I think it is just a lack of concerted research effort to look at these things. Part of it probably comes down to funding. But there has not been a systematic review of how these things work in the long term.

THE CHAIR: When you say "water sensitive urban design", what is it that you are actually referring to, so that we are have the same understanding?

Mr Barnett: Talking about constructive wetlands, talking about, instead of using concrete kerb and gutters, bio-swales to capture and retain water where it falls. There are a range of features like that that fall into a class called water sensitive urban design that is using more natural processes to capture water and to clean water.

THE CHAIR: But is there a bit more evidence behind some of those mechanisms than others? I think you might say we are starting to see quite a few more of those reclaimed wetlands and a bit of evidence coming out about how they have formed over time. But the swales perhaps not so much. Are we seeing that within some areas of water sensitive urban design there is more guidance?

Mr Barnett: That is correct. We have had a CRC for water sensitive cities too that is building a knowledge base in that area. But you are right. I think the understanding varies across different types of water sensitive urban design features.

THE CHAIR: And how important is it to continue to invest in trialling these things and gaining information on them and reapplying it and then developing these techniques?

Mr Barnett: I think it is critical. There is clearly a role for research and science here to try to de-risk these innovations for governments and for industry.

THE CHAIR: You have spoken a little about water sensitive urban design and also about climate change. What is the biggest risk in Canberra to our natural environment? Is it urban heat islands and hotter temperatures or are there other things that we should be looking at within climate change that pose a big threat?

Mr Barnett: I think that some of the main implications of climate change in Canberra are increasing temperatures and more frequent, severe and longer lasting heat wave events. And I think that the bushfire weather is likely to change as well.

A lot of our work, I guess, has focused particularly on the impacts of climate change on people. That is where we have placed emphasis on looking at heat wave events and the role of natural systems like tree cover, irrigated grass, and use of water in the landscape to try to mitigate those impacts and improve the livability of the urban environment for people. But we also have parts of our organisation too that have looked at the potential implications of climate change on biodiversity, species and ecosystems and using various modelling approaches to explore that. I think the implications there are that by the period 2050 there could be some substantial shifts in the species composition within many of our iconic ecosystems.

MR MILLIGAN: In Gungahlin there are quite a few areas where water retention for stormwater and so forth has been built, small dams and so forth. That is all great. But

the issue is the water quality there. What we are seeing is a lot of blue-green algae and other things starting to bloom in these areas that have been purposely built for that particular reason. What can we do to ensure that the water quality still remains good and we do not get blooms of algae and other things? How do you address that issue?

Mr Barnett: That is an area that is outside my expertise. I am not sure whether Jane or Sorada could answer.

Dr Tapsuwan: Yes, it is the same. I am trying to think of previous studies but I cannot really think of anything right now.

Ms Coram: There are certainly techniques for spot controlling blue-green algae which, in increasing heat and decreasing flows, may well be a reality in the wetlands. Again, we can take that on notice but certainly designing wetlands so that they can engage with really low flows and heat events is probably a really important consideration.

MR MILLIGAN: But would it potentially be suggesting that to put in wetlands or something like this in an area where it is not normally seen will be problematic and that if you are looking at introducing wetlands or green areas or more water flow you should be looking at areas where it should naturally occur and might be more successful, I guess?

Mr Barnett: I think naturally in parts of Canberra there have historically been chains of ponds and wetlands. I think there is a role for looking back at how those sorts of systems worked and particularly, I think, having good riparian buffers to our wetlands. You are trying to reduce, I guess, the flow of nutrients into those waterways which often drive a lot of the blue-green algae issues.

THE CHAIR: Am I right in saying that it is more about making sure that what we are putting down our drains is actually not ending up in the water system, that we are being sensible about what we are putting down our drains?

Ms Coram, if I picked up on something you said, potentially every algae there is from climate change that has already happened and, with the warming temperature, we are going to see more impacts such as blue-green algae in places we have not previously seen it.

Ms Coram: I think that is possible but I think, as Guy says, thinking about how to design the wetlands and the riparian vegetation is a really important part of it. The blue-green algal blooms are driven by heat and flow. If you have got overhanging vegetation then it keeps it cooler. If you have got an extensive riparian zone next to the actual standing water area, that actually can help to mitigate a lot of the nutrients. In fact, wetlands can be a really effective way of cleaning up water.

THE CHAIR: But it is just that method of trial and error until it gets right?

You made a comment, Mr Barnett—apologies if it was not you—about the 30 per cent natural fauna within an urban environment here. Can you expand on what you mean by that and what you see the benefits as being?

Mr Barnett: That is work that has been undertaken by some of our conservation scientists within CSIRO, particularly people like Suzanne Prober and Jacqui Stol. It is work in grassy box gum woodland communities but in rural parts of the region and quite detailed work over decades. They have found that to maintain viable populations of mobile fauna in a fragmented landscape there is a minimum threshold of 30 per cent of that landscape remaining intact in natural systems. And there is a view that that could equally apply to urban areas in that maintaining around 30 per cent of an urban area in terms of natural areas is important for those flows of mobile species through the landscape.

THE CHAIR: Essentially they are corridors for species to travel through?

Mr Barnett: That is right. It is having sufficient patches of habitat that are of sufficient size to mitigate edge effects and impacts of predators and those sorts of things but also having those connections through the landscape that allow a species to move through an urban landscape as well.

THE CHAIR: We have a lot of nature parks surrounding Canberra and coming into Canberra and we have the urban areas as well. What, if any, opportunities do you see to connect the two so we can have this travelling through areas?

Mr Barnett: There are lots of opportunities. We take a very broad definition of nature and include exotic species. All living things and the processes that support those is the way we define nature. There are clearly roles for vegetation in people's backyards and all the canopy cover in the residential parts of the city as well as parks that might be more focused on recreation activities through to the nature conservation aspect. Looking at that all together and how that forms a network that can facilitate movement of species through the landscape is really important.

THE CHAIR: You make a comment that I have not seen in a lot of other submissions so I want to just have a discussion on it. The comment is that disadvantaged communities may have a greater reliance on public green infrastructure in the form of parkland due to a lack of private residential tree cover. On the issue of equity, is there anything further you would like to add on the importance from a public provision perspective of nature within the city?

Mr Barnett: That comment is based on work we have undertaken in Sydney where we have mapped tree cover across all of Sydney and looked at how the distribution of that tree cover falls out according to different socio-economic characteristics. You tend to find—and this is not just in Sydney but in Brisbane and other places overseas—there is generally more tree cover in areas with higher socio-economic status. There is an issue there thinking about equity.

In Sydney as you move down the socio-economic gradient there is less tree cover in those parts of the city and those people were then more reliant on the nature that was in the public realm in that part of the city because they had less in their private realm.

THE CHAIR: Did anything in the study indicate why the lower socio-economic areas did not have the same level of tree coverage as affluent areas?

Mr Barnett: There is speculation around the role of affluence in terms of being able to afford to garden and to buy plants and to maintain gardens in terms of fertilisers, irrigation and those sorts of things. But part of it comes down to the natural geography and landscape of particular cities. Western Sydney is quite different to parts of eastern Sydney or northern Sydney with higher canopy cover. The same could be said for Melbourne and Brisbane and other places as well.

Dr Tapsuwan: For Brenda's Brisbane study she found two main factors: one is higher socio-economic suburbs have the ability to maintain private greens pace. But also the higher socio-economic areas correlated to the older suburbs, which means that the trees are usually older and bigger.

THE CHAIR: Going back to water sensitive design, what do we do well in the ACT and what can we improve?

Mr Barnett: Canberra has been quite innovative in trying lots of different things. There certainly are some really good examples of water sensitive urban design in Canberra. In fact, Canberra has probably been one of the leaders in trialling different water sensitive urban design approaches, certainly with the urban heat mapping work that the CSIRO has done, which is starting to identify hot spots in Canberra where more tree canopy cover and greater use of water and irrigation provide cooling benefits for the population. More work can probably be done in trialling different methods for how we cool our cities using natural processes. But, all in all, with the approach that the ACT government has taken around climate change targets and so forth, it is quite an innovative jurisdiction.

THE CHAIR: Thank you for appearing today. When available a proof transcript will be forward to you to provide an opportunity to check the transcript and identify any errors. One question was taken on notice so can I get you to confirm with the secretary afterwards that we have a correct understanding of that question and she can run through the processes of what we do to get the information back to us.

The hearing is now adjourned. On behalf of the committee I thank all the witnesses who have appeared today. The next hearing will take place on 8 May.

The committee adjourned at 4.58 pm.