

# TRANSCRIPT

## LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

### **Inquiry into Ecosystem Decline in Victoria**

Melbourne—Wednesday, 21 April 2021

#### **MEMBERS**

Ms Sonja Terpstra—Chair

Mr Clifford Hayes—Deputy Chair

Dr Matthew Bach

Ms Melina Bath

Dr Catherine Cumming

Mr Stuart Grimley

Mr Andy Meddick

Mr Cesar Melhem

Dr Samantha Ratnam

Ms Nina Taylor

#### **PARTICIPATING MEMBERS**

Ms Georgie Crozier

Mr David Davis

Dr Tien Kieu

Mrs Beverley McArthur

Mr Tim Quilty

**WITNESS**

Dr Nadine Richings, EnRICHeD Pursuits.

**The CHAIR:** I declare open the Legislative Council Environment and Planning Committee public hearing for the Inquiry into Ecosystem Decline in Victoria. Please ensure that mobile phones have been switched to silent and that background noise is minimised.

I would like to begin this hearing by respectfully acknowledging the traditional custodians of the various lands which each of us are gathered on today and paying my respects to their ancestors, elders and families. I particularly welcome any elders or community members who are here today to impart their knowledge of this issue to the committee or who are watching the broadcast of these proceedings.

I would like to welcome any members of the public who may be watching these proceedings via the live broadcast as well.

So at this point I will take the opportunity to introduce the committee members to you. I am Sonja Terpstra. I am the Chair of the Environment and Planning Committee. Mr Clifford Hayes is the Deputy Chair. This is Dr Samantha Ratnam. Then joining us via Zoom are Mr Stuart Grimley and Dr Matthew Bach, and we may or may not have Ms Nina Taylor—she may be in and out. And then back in the room of course you know Mr Andy Meddick and Mrs Bev McArthur.

All evidence that is taken today is protected by parliamentary privilege as provided by the *Constitution Act 1975* and further subject to the provisions of the Legislative Council standing orders. Therefore the information you provide during the hearing is protected by law. You are protected against any action for what you say during this hearing, but if you go elsewhere and repeat the same things, those comments may not be protected by this privilege. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament.

All evidence is being recorded, and you will be provided with a proof version of the transcript following the hearing. Transcripts will ultimately be made public and posted on the committee's website.

So if I could just get you at this juncture to state your name and the organisation you are representing.

**Dr RICHINGS:** Dr Nadine Richings from EnRICHeD Pursuits.

**The CHAIR:** Great. Thank you very much, and with that we will get you to make your opening statement. Please restrict it to 5 minutes. I know that is a really tough ask.

**Visual presentation.**

**Dr RICHINGS:** I am going to charge through to this point. Thank you very much for allowing me to present today. One of the critical points that I have not heard anyone mention very much at all in this: as a reproductive biologist I must mention breeding and reproduction. One of the critical differences between species and individuals is that in order to survive a species needs to breed. An individual does not. Now, breeding requires a lot of energy and a lot of commitment. Therefore when you put an individual under enough pressure, the first system to shut down is the reproductive system. This is a critical point because it contributes to the loss of species. Breeding is an indicator of a healthy habitat, and there are conservation solutions in reproductive biology. I have worked for 30 years in reproduction and assisted reproductive technology. Please ask me questions about this.

I would like to now go over three key issues, but firstly I would like to talk about the biodiversity emergency. We know that there are five key drivers. I have been listening to some of the presentations, and I just want to remind everybody that these five drivers work together. We therefore need integrated solutions to tackle the biodiversity emergency. Trying to tackle them separately will not work. Have a look at that diagram there, showing you the impact of all of those drivers. In my presentation in my submission I have created this matrix where I put human activities up against the drivers. To sort of detail that out, there is an example with respect to climate change.

I would now like to talk about three key issues. One is a threatened ecosystem. These are all examples where government decision-making is impacting biodiversity. We know of the critically endangered Victorian volcanic plains grassland. Every last patch is significant and important. We must save them.

I am going to speak very particularly about Dumbarton Street grassland, a piece of grassland that is very important to me. I grew up here. I played here as a child. It is 80 metres from my front door. It is in the City of Darebin. The government plans to put housing on it and destroy the entire grassland. I have been advocating through the City of Darebin as a member of the Darebin Nature Trust. Darebin have offered to manage this grassland and find land elsewhere in Darebin for housing. The Victorian government said no. Please explain this to me. It seems like an example of where biodiversity loses yet again, and development and planning wins. What are the reasons why the Victorian government would not take this offer?

Second example: this little guy is a blue-billed duck duckling, a threatened species. Here is the duckling with its mother. Again, it is threatened because of loss of habitat. There are only 17 sites where it has been recorded to have bred across Victoria. Earlier this year we had an 18th. This should be great cause for celebration. It is at Lake Knox in the eastern suburbs of Melbourne. Why is this a problem? The Victorian government plan to drain the lake, in-fill it and build housing. Three government bodies are associated with this decision. Again, biodiversity loses, development and planning win. A wetland ecologist created an independent report; science favours retaining and enhancing the lake. The community advocates for Lake Knox have been extraordinary—I have to give a shout-out to them.

My third issue that I would like to bring up is that native animals are not valued. The kangaroo—it has been here for 3 million years. Government has made decisions to continue to have a commercial industry even though a report from the government says it is not sustainable. They have now further opened it to human consumption even though there is a link from trade and consumption of wildlife to pandemics. Peter Hylands talked about the numbers earlier in this inquiry. I would just like to remind everybody that the young are not included in the numbers, so the loss of numbers is much greater than we appreciate. A shout-out again for reproductive biology. On the claims around breeding, the biology just does not support the claims. They do not breed like rabbits. At best you would get one per 12 to 18 months. This issue is so great in New South Wales there is now a parliamentary inquiry looking into it. Victoria has got to stop this happening in Victoria, please. Kangaroos are only found in Australia. If we do not change the way we treat them, they will not be found anywhere. I am happy to go back, Sam, if you want to take a photo. I am happy to share these slides.

So I would just like to finish and summarise. Sorry, I am charging through. As I spoke about, the solutions need to be all of government. There are strategic options that are available. Globally there are solutions that are available, and we need to make sure that our options are all of government. I actually work with the City of Darebin, helping them with their council plan, and we are talking about all-of-government options now. I am almost back to where that was. There are some great solutions that I am at here now—the eight-transition pathway offered by the *Global Biodiversity Outlook* and the transformative change offered by IPBES. The scientists alliance has all-of-government or overall strategic options. Australia's scientists have these options. They have this three-A pathway that they have come up with recently. I would like to add a fourth A in there: accountability. We need to be accountable across all of these areas as well as, as I said, needing to embed biodiversity across all of government. I am happy to talk about these sorts of plans that I have been working with Darebin council on. I am going to end with reproductive biology. Again, I am happy to talk about any of those sorts of solutions. Thank you so much for the time.

**The CHAIR:** Great, thank you. Mr Hayes.

**Mr HAYES:** Thank you very much, Dr Richings. You were music to my ears. I am so glad—

**Dr RICHINGS:** I have listened to your questions, and I thought that you would—

**The CHAIR:** Do not waste your time now. You have got the floor, Cliff—come on!

**Mr HAYES:** I never do. Dr Richings, I think it is fantastic that you are actually helping a council with their development plans. We need more advisers like you on councils. But I am very interested in what you say here about one of the scientists' critical recommendations to stabilise the population and gradually reduce population because of the impact that it is having on the environment. It is something we are very concerned about, and you are one of the few ecologists that have come and pointed that out. Most are very reluctant to talk about population growth or say we can manage it. What do you think, then, of both the Victorian government and the

Australian government planning to double our population over the next 25 years? Is this a realistic plan when we are faced with the species extinction and habitat loss that we are facing now, when we are talking about it going down like a sinking ship while the population is rising exponentially? The two things seem to me to be connected, and I would like you to make some comments on that if you could.

**Dr RICHINGS:** Yes. So firstly I would just like to say I am a biologist, I am a reproductive biologist, I am not an ecologist, but—

**Mr HAYES:** All right. Sorry. I did not mean to smear you.

**Dr RICHINGS:** No, no, no. It is not so much smearing as to make sure that people understand—

**Mr HAYES:** No, I know. You are just making that distinction.

**Dr RICHINGS:** what my specialties are and are not.

**Mr HAYES:** Yes, of course.

**Dr RICHINGS:** But certainly general biology and biodiversity and reproductive biology. So you would be aware of this idea of holding or carrying capacity, which is the number of any population that can exist in an area with a particular quality of life. So that quality of life is something that you can, I guess, tinker with. Scientists have variously talked about the carrying capacity for humans for the entire planet, and those numbers—it has been a while since I looked at the numbers, but they vary anywhere from about 4 to 16 billion. That is a very broad range. So generally they average that and say 10 billion is often a number that is spoken about as being the carrying capacity of the planet for humans.

Obviously you can up that number if you decide to bring down your quality of life, and this obviously varies right across the planet with respect to quality of life. So your question would certainly speak to: what quality of life do you want in Australia? If people decide that a higher population is required, then you will lower the quality of life. You are correct about the impact of our species and our numbers on biodiversity everywhere and certainly in Australia. Human life is very dependent on biodiversity. We often talk about engaging with nature or reconnecting with nature. We are part of nature and we need to get this idea in our head: we are part of nature. We are nothing without nature; we cannot lose biodiversity. We cannot. This is such a critical issue.

So we need to tackle these issues and—I do not know what we need, whether they are round tables, whether they are large workshops—seriously get people in a room, whether it is at Victorian government level, council level, federal level, and seriously talk about what population of humans can this country hold for us to have a reasonable quality of life, and our quality of life includes the quality and health and wellbeing of the entire environment. It is such a critical question.

I do not have the answer to what that number is, but there is so much that we need to tease out in there. And of course Australia is a country that, as we know, has got this massive desert in the middle, which is getting bigger seemingly, thanks to climate change. So we need to consider where these people are going to live. Are we going to do something to allow people to live in other parts of Australia, such as the desert areas, or are we going to maintain this edge living, around the edges of Australia, down in Tasmania? But if we continue to develop this land the way we have, we will just lose more habitat.

So I do not know the answer to the number, but there are so many critical things that we must think about before we go just increasing Australia's population. Can we double in the times that are mentioned? Not with our current strategies around various other things.

**Mr HAYES:** So you would say we need to develop a population policy rather than just a more-and-more policy?

**Dr RICHINGS:** Well, see, again I am going to come back to this: yes, we need a population policy, but the population policy has got to include indicators for biodiversity in the environment—everything we do. Our health and wellbeing policy should be a far more holistic approach. Have you heard of approaches such as One Health? One Health, Planetary Health, EcoHealth are three examples of holistic health and wellbeing policies that connect humanity back to the rest of the planet and appreciate that we cannot have a healthy, well and safe life without a healthy, safe and well environment. So our health and wellbeing policy should be connected back

to all of biodiversity, and one of the elements that has to be considered in that, in our health and wellbeing, is: what is an appropriate population number for Australia, what is an appropriate population density?

**The CHAIR:** We will have to move along. If you have other questions on this, you can certainly put them on notice. I might ask a question, if I can, on your area of expertise, which is about breeding and reproductive technologies. One of the ways that many governments manage pest species, if we talk about deer for example, has been through culling through shooting. This has come up not only in regard to deer but also horses like brumbies and that sort of thing. I know there has been some work done in trying to manage other species through reproductive technologies—I think pest rabbits. Can you talk about that, around what technologies are available for keeping reproduction down? Because we have heard some evidence throughout the inquiry that shooting does not always keep population numbers down, particularly with the pest species, and it has got to do with breeding rates.

When we talk about ecosystems it is clear that some of the pest species are really proliferating, whether that is through adaption in their environment or whether the current environment that they are living in is supporting them. I do not know the answer to that, but when you look at the numbers of some of those pest species living in native areas—hills, forests, whatever—there is quite a lot of them and some of them, like deer for example, are now coming into urban areas. So can you talk about what technologies are out there and are there any new and emerging technologies? And if so or if not, is there an opportunity to explore how some of those larger pest species could be controlled through reproductive technology?

**Dr RICHINGS:** Okay, so firstly, as I mentioned in my very first point, if you put an individual under enough pressure, the first system that closes down is the reproductive system. The converse to that is if an individual breeds, the environment is healthy enough for them as an individual to allow them to breed. Different species of course breed at different rates. So you have got, like, horses: usually one individual over, I cannot remember what the gestation period for a horse is, but you are looking at one to two years while it is raising that individual. Compare that to rabbits. When people talk about ‘breeding like rabbits’, they have a phenomenal breeding pattern. They really do. Firstly, they have litters, so you are looking on average at about four, and as soon as they have had that litter of bunnies they are ready to breed again. They really are phenomenal—mice similarly. So we are talking about very different species and capacities.

The second point I would say is that we could control the breeding of any species, all right? If we understand enough about that species, enough about their reproductive biology, and we put enough funding towards it, we can effectively control the breeding of any species without doubt. Secondly, we need to talk more about fertility control. There is not a single answer. The species all vary a little bit. We are also talking about anything that we would have to do to control the breeding of an introduced species. We would have to look at a delivery mechanism, which is beyond reproductive biology, but the delivery mechanisms are critical. You could have something that in terms of reproductive biology will work, but you have got to make sure that you deliver it.

**The CHAIR:** And also how that runs off into the landscape then, if there are other—

**Dr RICHINGS:** Well, see, I notice that Ms Taylor is present. I am very happy to see her there. I listened to you yesterday ask a very important point about pollution of the environment. You are one of the few people I have heard ask about that. Thank you for bringing that up. I think we need to be very careful about anything that we use to deal with any of the biodiversity problem. We have to look at how it is impacting the rest of the environment. We need to make sure also that any fertility control is acting on the target. We want it to act on the species that we are targeting, and we do not want it to be able to transform in some way and impact other species.

Obviously you can sterilise an animal—as in, you can block or take out parts of the reproductive system. That is one way. Another way is called chemical or hormonal control, where you are blocking the parts of the overriding hormones that control reproduction. There are various barrier methods, which would not work for these species, and then we are currently hearing things like immunocontraception. Immunocontraception is a method that involves the immune system. It acts like a vaccine in that it elicits an immune response. Now, I am not an immunology specialist, but as soon as you are starting to bring in another system like that I would really want to be certain that you are not going to have other impacts on those species or have a method or molecules, chemicals that could potentially transfer to another species. I really think we need to apply the precautionary principle here: be very careful about—

**The CHAIR:** And just finally: do we have knowledge gaps in the things that you are talking—

**Dr RICHINGS:** Absolutely.

**The CHAIR:** Yes. Are you able to give us a ballpark definition of where the knowledge gaps are and what we need to do? Is there a lack of data—we are hearing that as a common theme—or is there just no data?

**Dr RICHINGS:** Yes and yes. For some of the questions there is no data. For some of it, we are just drastically lacking. Does anyone know how many, say, so-called ‘feral cats’ there are in Australia? Does anyone know the number?

**The CHAIR:** Are you talking feral as in the bush or semidomesticated?

**Dr RICHINGS:** Yes, any of those. The answer is no-one knows. If you look at the numbers, some people will tell you that maybe it is about 7 million, but they are estimates. We do not know. How many foxes? People will say a similar number—7 million. The answer is: we do not know how many. So that is one of our knowledge gaps. Do we really need to know in order to make some of these methods work? Probably not. Some of our knowledge gaps are: we do not know how big the problem is; we do not know how many of these species are out there; we do not know the actual impact on the environment—and we will not know because the impacts are all interlinked. So you cannot just tease out, or it is very difficult to honestly tease out, the impact of introduced species only, because there are other factors. We have great knowledge gaps in the efficiency and effectiveness of delivery systems—really ensuring that the appropriate method that we have chosen to use makes it to enough of those individuals to truly impact their ability to breed, and then coming up with appropriate methods to actually employ—knowledge gaps right across.

**The CHAIR:** Great. Thank you.

**Dr RICHINGS:** Sorry, and also then to individual species—some methods will be more effective on some species. As I have said, there is not a one-size-fits-all answer unfortunately.

**The CHAIR:** Yes, great. Thank you.

**Ms TAYLOR:** Thank you. Extremely interesting, and your passion is actually very inspiring, so thank you for your care of the environment. Now, into the question. There are so many questions. I was just wondering: with regard to kangaroos, forgive me if I am going over old ground, but do we know yet—what is your estimated impact of the bushfires on their breeding, considering you were talking about how traumatic experiences can inhibit animal breeding patterns?

**Dr RICHINGS:** The fires that happened at the start of—my timing is out. It was the start of last year, wasn’t it? At the start of last year—2019–20—what happened in eastern Victoria was unprecedented. We heard a fantastic presentation from Dr Holly Sitters about the impact of fire. That fire was just unprecedented, so rather than having patches where the animals could move between, we lost all of it. Normally an animal like the kangaroo would survive and persist in some of those unburnt areas or the partially burnt areas, so therefore when those areas come back—are regenerated—the kangaroo would be able to repopulate. When I say ‘repopulate’, it would be able to move into those areas. Then when it felt safe enough, it would then be able to start breeding. So it has to feel safe enough before it will breed—remember that. At the start of last year, instead of those patchy areas where the kangaroos persisted and survived and then were able to start moving back out into the area, that whole area was burnt. We lost everything. There were no kangaroos throughout that and no other species. It was just heartbreaking and mind blowing what that did.

So the kangaroos, any kangaroos that survived, had to get out of that entire area. So they got out into the area, and then another mind-blowing government decision was they ended up starting shooting again of kangaroos, not in the burnt area—well, you would not have been able to shoot them there. They were not there. They had moved out of that area. They had moved out of that area and managed to survive. I do not know how quickly they would have bred again. It would depend partly on their breeding season, partly on whether or not they found somewhere where they felt safe and secure enough to start breeding. But then what happened? They were potentially shot, because that was where the Victorian government chose to start shooting in those areas. It is just mind-blowing.

That day, when I read about that decision—I know Holly—I had a phone call to Holly very quickly, because my understanding of fire is not what hers is, so I had a phone call to Holly and asked her about that and she told me. All that information I just shared about the fire I got from Holly, and it really was as bad as I thought. It really was just that bad—incredible impact. So I am just incredibly concerned. The Victorian government has

now chosen to—well, there are no kangaroos in the burnt area, you cannot shoot them there—start shooting them here, and now all of the permits and the commercial shooters are now going to the rest of Victoria. We are getting very close to the point of needing to call for a parliamentary inquiry into kangaroos, just like New South Wales have done. It is just mind-blowing what is happening to kangaroos. Thank you for that question and allowing me to release that frustration and irritation and passion.

**The CHAIR:** All right.

**Dr RICHINGS:** Can I just make one more point about kangaroos? Please remember that even if you have the absolute best environmental conditions, female kangaroos can at best produce one young to independence across a 12- to 18-month period, and that is if it is not predated by foxes. Just one!

**The CHAIR:** Thanks. Dr Ratnam.

**Dr RATNAM:** Thank you so much, Dr Richings, for your presentation today and once again bringing the passion to this inquiry. It is so important for the work that we have before us. I was going to ask a question in reference to your submission, so thank you for your very detailed submission as well. You referred to environmental laws and their inadequacy to halt biodiversity loss. I was wondering if you could expand a little bit more about in what areas you think our laws need to be strengthened and what kind of impact that would have.

**Dr RICHINGS:** Yes. There were two great presentations here from lawyers: Dr Bruce Lindsay, and yesterday there was a wonderful presentation from Professor Lee Godden. One of the things that just again is mind-blowing to me is that if we can appreciate how important the environment is and we can write environmental laws that truly protect our environment, then they should be sacrosanct. At the moment what we find is it is almost like they are a tick-box exercise, and if something else more important comes up, like planning or like development, it is like the environmental laws are just torn up and cast aside. How can you destroy a critically endangered grassland just to put housing on it—again, my Dumbarton Street grassland example?

We also heard somebody yesterday—I am trying to remember the person's name; I cannot remember, but one of the people who presented yesterday—speak about the name of our primary environmental law in Victoria: the *Flora and Fauna Guarantee Act*. The entire name is a sham. Firstly it is far more than flora and fauna. There are fungi, there are microorganisms and there are the ecosystems more broadly, so there is that part of it. And then there is a guarantee? What a joke. You could not give it a worse name; it is anything but a guarantee. So we need solid environmental laws that are real and have real protections in them. There cannot be exemptions. They cannot be torn up and cast aside for any reason. They have to sit at the absolute very top. If we are not going to make these decisions, we may as well end this inquiry right now and just walk out and accept that our end is coming, because all you are otherwise going to do is just slow down the end.

**Dr RATNAM:** One quick follow-up question. Thank you so much for that response, and there is lots to get through there as well so we appreciate your submission with more evidence behind it and with more detail behind it as well. With the Dumbarton grassland example, which is a really good case in point of what is happening at the moment—if you do not have this information now, that is absolutely fine; on notice is fine—I was wondering if you have the details of the species that are threatened should we lose that.

**Dr RICHINGS:** I think it is in the back of my submission.

**Dr RATNAM:** Fabulous. All right.

**Dr RICHINGS:** I have actually had a number of people do surveys on that land. The biodiversity officer in Darebin who only joined about a year ago has now done a couple of surveys on it and she has gone through it with me and said, 'Wow, this is actually high quality'. I know! It has got a beautiful river red gum in the middle of it. It has got *Dianella amoena*, which is also a critically endangered species, present on the site; I have found it. There are a couple of different clusters of it. So yes, it is significant. But it is not only the species that we will lose. We will lose that ecosystem and the genetics in that bit of land. We have got to remember that that is real. It has been there forever. To the best of my knowledge there have never been any buildings on it. It had only ever been used for grazing before the whole area was subdivided, including the house that I grew up on, which used to be part of that broader area. The genetic variability on that land is so critical. It is very close to Bundoora Park and Ngarrri-djarrang grassland, which is further across. The genetic variability is critical, and that is part of why we cannot lose it. It is also highly likely that there would be the critically endangered golden

sun moth present, because why wouldn't they be there? Other than mowing a couple of times a year, nothing has otherwise disturbed them.

**The CHAIR:** Mr Grimley.

**Mr GRIMLEY:** Thanks, Chair. Thanks, Dr Richings, for your submission and presentation. I was listening in with interest when you spoke about living in the desert. Having spent 2½ years living in remote Aboriginal communities in the central desert of Western Australia I can definitely attest to the fact that it is certainly not Brighton or Torquay. They would need some pretty impressive infrastructure to encourage more people to move out that way, but nevertheless it is a beautiful part of Australia. In your submission you recommend that we should look at declaring a biodiversity emergency. If I could just ask a question around that: in your words can you elaborate to the committee how declaring a biodiversity emergency supports the effort to address the ecosystem decline?

**Dr RICHINGS:** We have got to acknowledge the problem; that is what we need to do. We have heard so much evidence here about how significant the problem is. We actually have three global existential crises at the moment, and they are all linked. There is the biodiversity emergency, the climate emergency and the emergence of new diseases, and they are all linked to the way that we exploit the environment and its species. So the first thing we need to do is acknowledge the problem, hence declaring a biodiversity emergency. If I got to write that recommendation again, I would actually write it with more clarity and detail, and I would say we need to declare a climate emergency and act on it. We need to have an all-of-government response, a strategic plan that looks at all of the drivers and tackles all of the drivers in a cohesive and coordinated manner. As I said before, if we are not going to do this, walk out now. Either tackle all of the drivers cohesively, deal with all of them, or walk out now and accept the end. It is that serious.

**Mr GRIMLEY:** Thanks, Doctor. One more question if I can, Chair. You assert in your submission that some industries enjoy a political protection because they donate to political parties, and I am quite interested in hearing more about that. Are you able to elaborate on that at all—provide examples, for instance? And also, how would you address this issue?

**Dr RICHINGS:** I think in my submission I referred to the Grattan Institute, who have done some great work around that. They are far more expert in that than I am. But we also heard, I think it was at the end of last year, about the issue in the City of Casey with a developer who pays substantial amounts of money to two of the major parties in order to seemingly secure better deals around development. So we are selling out our environment to some of these donations to political parties.

**The CHAIR:** Are you aware there are political donation reform laws that are in place now?

**Dr RICHINGS:** Yes, yes, I am.

**The CHAIR:** So you are talking about past.

**Dr RICHINGS:** Yes. In the Grattan report they actually talk about some of the things that should be required. So I would say that we go to independent experts and we look at reports such as the Grattan report. If we need to secure another report, we should do so. But then we should have, again, a solid strategic plan as to how we address this issue and try and prevent undue influence. I found it interesting in that Grattan report—I mean, I had thought about the political donations, but there was a form of influence that I had not thought about before, and that is that people who offer significant money to political parties tend to also have access to meet with MPs and ministers.

**Mr HAYES:** Absolutely.

**Dr RICHINGS:** You know, I felt very naive when I read that for the first time, because I certainly had not thought about it. That is an incredible opportunity to change. No wonder we see examples like Dumbarton Street grassland. No wonder we see examples like Lake—

**The CHAIR:** At a council level.

**Dr RICHINGS:** Yes, well, but it is not only—

**The CHAIR:** Councils are the planning authorities.

**Mr HAYES:** It is all levels of government.

**Dr RICHINGS:** Darebin council want to save Dumbarton Street grassland. They have offered every opportunity to the government.

**The CHAIR:** They ultimately approve the—

**Mr HAYES:** It is the minister's decision.

**Dr RICHINGS:** They have offered to financially and operationally manage it as a grassland. They have offered to find land elsewhere in Darebin for housing. That is a win-win situation, and the government said no.

**The CHAIR:** Because we need affordable housing, so—

**Dr RICHINGS:** I absolutely agree with affordable housing, but this site is a long way from transport, a long way from any amenities. There are excellent sites elsewhere in Darebin that would be close to amenities, close to transport. It is so illogical, I just do not understand it. I mean, Lake Knox similarly—

**The CHAIR:** Okay. Mr Grimley, do you have any other questions that you would like to ask there?

**Mr GRIMLEY:** No, thank you, Chair. Thank you, Doctor.

**The CHAIR:** Thank you. Dr Bach, over to you. There are quite a few people that have still got questions.

**Dr BACH:** Thanks very much, Chair, and thank you, Dr Richings. Dr Richings, I am a metropolitan member, and I share your deep concern for ecosystem decline in suburban areas. I have been fascinated to learn more about the particular example that you have talked to us about today, but there are other threats. I have asked questions of other witnesses before us today, for example about plans to use a portion of our green spaces in the City of Kingston as a stabling yard for the Suburban Rail Loop. I wonder, taking what you say about the grave threat to the grassland that you have been talking about, if you could talk to us about any other threats to important ecosystems in metropolitan areas?

**Dr RICHINGS:** The railway network is an incredible opportunity actually, because there is obviously land that persists along the railway lines that has not had very much change. You know, there is that barrier along the railway lines, and Metro Trains actually have a biodiversity manager. He happens to also be a member of the Darebin Nature Trust. So they have actually put in the effort to manage the land around the train lines through Neal Masters, who is the biodiversity manager. He lobbied Metro Trains and said, 'We are responsible and accountable for this land. We can protect these critical ecosystems'. So he would be the sort of person who could give you a better response to that, but that is just one example.

We also have to look at things like nature strips. You know, there are incredible opportunities in nature strips. We tend to fill them with introduced grasses. We have the opportunity to change our streetscapes and fill them with indigenous plants and offer these incredible connections for wildlife—an incredible way to increase the green space and start to combat the climate emergency. So there are incredible opportunities in urban planning. Biodiversity-sensitive urban planning and water-sensitive urban design should be the way that we go about our urban environments. Innovative solutions like looking at—there are so many flat roof tops, even on things like bus stops. We should be putting gardens on the tops of bus stops or any flat surface we can find. We should be looking at vertical surfaces, looking at ways to increase green space by looking at vertical surfaces. There are so many innovative ways that we can tackle urban design and support biodiversity—great for our health and wellbeing, great for the environment.

**Dr BACH:** Thank you very much. That is all from me, Chair.

**The CHAIR:** Thank you. Mrs McArthur.

**Mrs McARTHUR:** Thank you, Chair, and thank you, Dr Richings. Just in the pursuit of transparency here, since you have mentioned funding of the two major parties, perhaps you will take on notice how EnRICHed Pursuits is funded.

**Dr RICHINGS:** Not at all.

**Mrs McARTHUR:** Not at all. You are short of money.

**Dr RICHINGS:** EnRICHed Pursuits is basically my business. I do most of my work pro bono or volunteer. I cannot help myself. If there is an opportunity to volunteer, my hand is in the air.

**Mrs McARTHUR:** Good. And you are a member of the Animal Justice Party, so perhaps you can provide the transparency in relation to that funding.

**Dr RICHINGS:** Yes, I declared that in my submission. I am a member.

**Mrs McARTHUR:** Yes, exactly.

**Dr RICHINGS:** So I am not sure what else you want me to declare.

**Mrs McARTHUR:** Just the funding basis of the party—just like you have referred to the two major parties and their funding.

**Dr RICHINGS:** Okay, well, the donations are all available online. So it is all public information available. I am not sure if you want me to do anything around that, but it is all declared.

**Mrs McARTHUR:** So let us go to the government disrupting the nature of the environment. I wonder if you have had a chance to look at what is happening in Bacchus Marsh in relation to the PFAS-contaminated soil that will be exposed there and potentially affect the waterways of the Parwan Creek and Werribee River and the agricultural production just neighbouring that site and also where the transmission lines will potentially go, where the biolink particularly is and the Lerderderg Gorge and the Merrimu Reservoir, which will be affected—how those impacts of government decision-making will affect biodiversity and the environment. Then I will ask a question about horses.

**Dr RICHINGS:** Thank you so much for that question, because you have allowed me to talk about another bit of reproductive biology that I did not manage to get in before.

**Mrs McARTHUR:** I am always here to help.

**Dr RICHINGS:** PFAS is a chemical that has impacts in the body. It is called an endocrine-disrupting chemical, or an EDC, so it has the capacity to act like molecules that we generally find in the body and it can alter various systems in the body. So there are a number of different chemicals. I cannot remember the exact details of PFAS, but it is certainly one of those chemicals. There are some—BPA; everybody has heard of BPA because we all went for the BPA-free plastic. Did anyone ever ask the question—when you picked a plastic bottle that was BPA free, did you ask the question: what did they replace BPA with? The answer is BPS. BPS is also a bisphenyl—BPA is a bisphenyl—and both of them are endocrine-disrupting chemicals. They both have the capacity to act like hormones in the body and change our reproductive biology. PFAS is one of these. As I said, I cannot remember its exact actions, but what it is going to do when it leaches into the environment is if it comes in contact with various species, it is likely to change their biology. So if it gets into the waterway, it is going to be transferred much further than it will be transferred just in land. It gets into the waterway—it is going to go right down the Werribee River, ultimately end up in the marine environment. Disaster.

We heard yesterday from Ms Taylor, who asked about adding chemicals to the environment. This is one of the drivers. This is pollution, and we are choosing to put these chemicals—we have already had them in the environment once; we are choosing to put them into another place in the environment. I do not know all of the details of what it is going to impact. I am happy to look into it for you.

**The CHAIR:** You could maybe take that on notice.

**Dr RICHINGS:** Yes, and look at all the—

**Mrs McARTHUR:** Do you know about the biolink area with—

**Dr RICHINGS:** I do not. I am happy to look into that as well.

**Mrs McARTHUR:** You will look into that. Now, just going back to the issue of wild horses, because there are international studies that suggest that wild horses are actually very beneficial to the environment. One, they reduce the fuel loads so prevent catastrophic, intense bushfires, and two, they also transfer whole species of plants, through their droppings clearly. Do you have a position on the government effectively wanting to shoot the brumbies and reduce that population, not taking into consideration the benefits, let alone any cultural sort of

aspects relating to their history and so on, to the environment of their form of grazing? And as you pointed out, they are lucky to have a live foal in 12 months frequent, and they do not live long in the wild like a horse would in a private environment.

**Dr RICHINGS:** Okay. So as a herbivore, like all herbivores, whether they are introduced or native, yes, they are likely to be putting seeds out when they defecate, and therefore they are likely to be seed spreaders. So yes, that happens. Horses are introduced species in Australia. Like cattle, like cows, like sheep, they are introduced species; they should not be in the Australian environment. There could be places where wild horses are beneficial, where they are indigenous to. They do not belong in the Australian environment, and they have definitely caused damage in those alpine areas. They are very hard-hoofed animals, so they are definitely causing damage. I believe they need to be removed from that environment, but they need to be removed in the most humane way possible. We know that aerial shooting has not worked. It has happened many times. It has not worked. We need other answers.

**The CHAIR:** And with that we are going to have to end there.

**Dr RICHINGS:** Stop there.

**The CHAIR:** Yes. So thank you very much for your contribution and presentation today.

**Witness withdrew.**