LEGISLATIVE ASSEMBLY FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON PUBLIC ACCOUNTS

(Reference: Inquiry into Auditor-General's report No 3 2015: Restoration of the lower Cotter catchment)

Members:

MR B SMYTH (Chair)
MS J BURCH (Deputy Chair)
MS N LAWDER
MR J HINDER

TRANSCRIPT OF EVIDENCE

CANBERRA

THURSDAY, 31 MARCH 2016

Secretary to the committee:
Dr A Cullen (Ph: 620 50142)

By authority of the Legislative Assembly for the Australian Capital Territory

WITNESSES

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Amended 20 May 2013

The committee met at 1.03 pm.

FALCONER, EMERITUS PROFESSOR IAN AO DSc, Water quality consultant

THE CHAIR: Good afternoon, Professor Falconer. Welcome to this public hearing of the Standing Committee on Public Accounts into the review of the Auditor-General's report on the restoration of the lower Cotter catchment. In accordance with the committee's resolution of appointment, all reports of the Auditor-General stand referred to the public accounts committee after their presentation. The committee has established procedures for its examination of such referred reports. The committee considered Auditor-General's report No 3 of 2015 in accordance with these procedures and resolved to inquire further into the audit report. The terms of reference for this inquiry are the information contained within the report.

As part of the proceedings this afternoon the committee will hear from four witnesses, commencing with you, professor, followed by the Minister for Planning and Land Development and Greening Australia, and concluding with the ACT Auditor-General.

Professor Falconer, on behalf of the committee I would like to thank you for attending today. Before you on the desk is a pink card containing the privilege statement. Could you please confirm for the record that you understand the privilege implications of the statement?

Prof Falconer: Yes, I do. I read it in advance.

THE CHAIR: Thank you very much. Can I remind witnesses that the proceedings are being recorded by Hansard for transcription purposes as well as being webstreamed and broadcast. Professor Falconer, would you like to make an opening statement?

Prof Falconer: Thank you. I am pleased to have the opportunity to do it. I am an independent water quality consultant and I have been involved in water quality issues for about 50 years.

My role in the Auditor-General's report which is the subject of your investigation was as an independent water quality consultant. I was under contract to the Auditor-General. The work that I did was all commercial-in-confidence to the Auditor-General, and portions of it were recorded directly into the final Auditor-General's report with my name associated with them so that they could be clearly identified.

The actual report that I submitted to the Auditor-General was quite an extensive document, which has been made available, I understand, on a confidential basis to the appropriate heads of directorates. For example, the Emergency Services Commissioner saw it in advance, the head of Territory and Municipal Services saw it in advance and the head of Environment and Planning saw it in advance. Insofar as the report is concerned, it is quite straightforward and reasonably understood by the relevant directorates.

My submission to you picked out some of the salient features of the report which I

wish to reiterate. Bearing in mind that you are on the public accounts committee, this has implications for accounting and budgetary expenditure, so I felt it was worth putting in a submission.

The management plan of 2007 which the Auditor-General was commissioned to report on was a very good plan. It covered all the salient features required for the management of a catchment. Between the 2003 fires and the time of the finalisation of that plan, a lot of very valuable, capable work was carried out for the restoration of the catchment—road work particularly, but, in addition to closing a lot of roads and putting in sedimentation ponds and culverts, there was a lot of erosion control done, and quite a lot of replanting.

Maintenance in a catchment like that, which is a woeful bit of land and always has been, since the initial clearing in the 1850s, is a large task, but it is critical to the use of it as a resource for drinking water. Now that ACTEW, and indirectly through us, have spent $410 million on putting in the new enlarged dam, we have a significant responsibility, I think, to maintain the water quality in that dam to a level which is perfectly useable on a continuing basis for drinking water supply; otherwise the use of the funds has not been satisfactory.

Unfortunately, because the maintenance of the catchment is a large task, it has slipped. It has slipped because there was no effective funding for the maintenance of it once the initial recovery work was done and there was no effective executive direction for what was done. If you have no budget and no executive direction, the answer is what you have got, which is no action. The only thing that was really done over the last six years was doing up the roads. The roads were done up nicely; I have no criticism of the roadworks that have been done. But pine wildlings were allowed to regrow extensively, which is a fire problem, as well as there being some absolutely atrocious gully erosion and surface erosion, and very large weed invasion, which were not adequately dealt with.

In my view the first thing that should happen is that there should be an effective risk assessment done of the catchment, and done by an independent body. Icon Water's view is that water is just money. Emergency Services' view is that fire hazard is a massive risk. My view is that the catchment itself has a huge risk coming from two sources. One is fire, which potentially, in my view, is catastrophic risk, and there is a high risk from erosion, which will deteriorate the quality of the water for processing for drinking purposes.

The whole thing has to be managed by a capable executive management group, either from ACTEW or jointly between ACTEW and ACT agencies who have a budget which is capable of undertaking the work which is necessary. If those things are done—risk assessment, adequate budget and a capable executive management—it will be good. And if it is not done, it will just carry on being a disaster, as is likely to happen at the moment.

THE CHAIR: Thank you very much for that, professor. Let us start where you finished—risk assessment plus adequate management and good direction. Who, in your opinion, should be in charge of the direction? Obviously Icon has an interest, ESA has an interest and TAMS has an interest. Who is the most effective body?

Prof Falconer: It is a debatable question. Icon Water have the statutory responsibility under the NHMRC drinking water guidelines for maintaining the source water protection. It is a legislated requirement. They have to maintain protection of source waters, and that is a source water, so they have a legislative responsibility to protect it. Whether that means they should do it and pay for it is an arguable issue.

Whether TAMS, who have responsibility for land management, should pay for it and do it is another arguable issue. Whichever way it is handled, if it is going to be done by joint agencies, there has to be a deed of agreement which sets out who does what and who has executive power; otherwise it just falls in a heap again. But I do not have any strong views as to whether it should be a joint thing with a deed or whether the whole thing should be handed to Icon Water and they should be told to get on with it, which, of course, was recommended about 10 years ago by somebody else.

THE CHAIR: In the second-last paragraph of your submission you say:

> Whether this should be entirely in the hands of Icon Water, or under a formal Deed between the appropriate ACT agency and Icon Water, requires resolution for the benefit of the community.

You do not have an opinion on which model would work better?

Prof Falconer: They would both work. I do not think there would be any theoretical difference in outcome if there was a coherent agreement between Icon Water and the ACT agencies or Icon Water was given the total responsibility for management. The only issue, which I think is an accounting issue, is that Icon Water would then have to pay for it, but it is Icon Water who actually gets the financial benefit from doing it, because treatment—for example, charges, costs—depends on the quality of the incoming source water. Water from Bendora Dam, which is very high quality and needs almost no treatment, does not cost much to deal with; water from a rubbish-filled reservoir costs a fortune, if you can treat it at all.

THE CHAIR: How severe is the effect of the pine wildlings?

Prof Falconer: Unfortunately, very. A lot of them are now three to four metres high. Some may be higher than that. In some places, particularly where there is an edge effect, they are so dense that you cannot walk through them. They are a huge fire risk, and you would never put them out if you got a fire into them at the moment. There are two ways of managing them. One is physical removal, which has been advocated, and the other is to burn them and then stop the regrowth, because having burnt it, all the seed in the ground will regrow into more pine wildlings.

THE CHAIR: What is the best way of ensuring that they do not return?

Prof Falconer: You have to chop them out. There is no magic cure for it because you want to revegetate with stable native vegetation, grassy woodlands or simply eucalypt forest. That is the ultimate aim, because you get better water quality and you get better water volume if you can regenerate the catchment into a grassy woodland or light eucalypt cover. Pines take up lots of water, they wreck the soil for growing anything

else and they are a fire hazard. My view is that they are a disaster in a drinking water catchment.

THE CHAIR: Yes, I think a lot of us agree with that. Ms Burch.

MS BURCH: You commented that it does not really matter whether Icon or a government agency manage it; rather, it is around the coordination and making sure that they are all on the same page, so to speak. In the government's response that was tabled in August last year the government agreed with that recommendation around coordination. We heard recently from the environment minister about that group actively now taking shape at the most senior levels within the different agencies. It is yet to be finalised and the outcome is yet to be seen, but that is on the right track. It is about them coming together—Icon Water, Territory and Municipal Services, Environment Protection, Environment and Planning Directorate and Emergency Services working in single step. That is what we need to see. Would you agree with that?

Prof Falconer: Yes, given that there is a finite, concrete agreement between the parties, and it is budgeted. There is no reason why that should not work if it has an adequate budget and a decent deed of agreement that clarifies the roles of the parties.

MS BURCH: You mentioned regrowth of the pine wildlings; it sounds like the wildlings coming over the snow wall! I again refer to the government response, and a recent update by Minister Fitzharris which stated that there is a plan underway to implement pine wildling removal trials within the Blue Range area. That was identified as the most—

Prof Falconer: It is the most critical area because it is just over the New South Wales border. It is high. It always does get lightning strikes.

MS BURCH: It goes on to say "to determine what removal methods best align with the preservation of water". What sort of removal? You made mention of digging them out. Are there better ways of removing these wildlings?

Prof Falconer: It is not easily defined. If it is on a modest slope, you could probably push them over. You still have to burn them. If it is on a steep slope, you probably have to get in there with a chainsaw or something like that. Alternatively, you can burn the whole lot, if you can do it in a controlled manner, and then you control regrowth. I have no very strong feelings about it; it depends on terrain and whether you can actually stop the fire once you have started it, because fires generate winds and heat, and spread and throw embers everywhere. Emergency Services do burn in that area. Since they got my report we had a discussion with Dominic Lane, and he has started doing some very useful burning.

MS BURCH: The method of removal is one thing, but it is about making sure that the regrowth does not come back; that is the absolute priority?

Prof Falconer: Yes; otherwise you are just back where you were in the first place, five years later. It is not easy and it is not cheap, whichever way you do it. But what you cannot do is what they did last time after the fires. They windrowed all the dead

sticks and rubbish into vertical windrows going up the slope, let them dry for a couple of years and then set light to them. They generated burnt earth growing straight up and down, which is just an erosion gully waiting to happen. It was absolutely atrocious management.

THE CHAIR: Ms Lawder.

MS LAWDER: You mentioned, I think, that fire and erosion are the two biggest risks to the water catchment area.

Prof Falconer: Yes.

MS LAWDER: In your reading of the Auditor-General's report, you probably saw that Icon Water and ESA are using different risk approaches to determine the risk of fire in the area.

Prof Falconer: That is correct.

MS LAWDER: And Icon's, I think, was medium and—

Prof Falconer: Yes, moderate.

MS LAWDER: Moderate, yes, and you have already spoken about the pine wildlings. I understand that erosion control is very important so you do not get sediment washed down into the water catchment area itself. I am interested to ask whether you have considered African lovegrass or whether it is just a newly emerging issue. I understand that African lovegrass is spreading exponentially throughout the ACT. Whilst it may be a reasonable erosion control plant, it actually also has a very high fire risk. Have you done much work around that sort of issue?

Prof Falconer: I do not know of any actual research that has been done on those aspects. Certainly, because it has tall stems and large seed heads, it is a fire risk. It will carry grass fire really well. I have not noticed any extensive areas of African lovegrass in that catchment, but I was not specifically looking for it. I think it is highly likely it will get there because it is being carried in by mowers and agricultural machinery. That is how it gets spread up and down the roads.

It certainly would stabilise the soil. It is a deep-rooted, tough plant, like our own native tussock grasses. It is an interesting one, but I am sure that the people that are interested in conservation of the natural ecosystem would hate to see an area covered in African lovegrass, just like they hate to see it covered in blackberries, which is the case now.

MS LAWDER: Do you know whether blackberries are particularly flammable as well?

Prof Falconer: They do burn. They are not hugely inflammable, not like pine wildlings, but they will burn. And they do stabilise the soil, though they are an invasive pest.

MS LAWDER: With the removal of pine wildlings, by whatever method—I think Minister Fitzharris's update told us that they are looking at a trial to determine the best way to remove the pine wildlings—would that also create an additional risk perhaps of those opportunistic weeds moving in?

Prof Falconer: Inevitably it results in lots of bare soil. What you really have got to do—I have no doubt they will be doing it—is reseed, either by aerial reseeding or by running a harrow through followed by a seeder, to get lines of regenerating wattles and eucalyptus. You have always got the problem of revegetation after you have cleared. Greening Australia, to my mind, have done a great job in the catchment already, and there is no reason why they should not continue. They have a lot of people out there understanding what it is about, which is hugely valuable in itself.

MS LAWDER: I think what you said in answer to Mr Smyth's question is that whatever method was chosen, whether burning or chopping down, you do not necessarily advocate one over another, so long as the regrowth is managed?

Prof Falconer: So long as it is adequately revegetated, yes.

MS LAWDER: Adequately revegetated. Are you consulted at all on the trials that the government is undertaking?

Prof Falconer: No, I have not been. I have not had any direct contact with the catchment management since I did the Auditor-General's report. I have been out there with a group of ANU students looking at it as part of their course.

MS LAWDER: Fair enough.

MS BURCH: I thought you said you had been talking to Dominic Lane from the ESA.

Prof Falconer: That was in January 2015; not since.

MS BURCH: Some time ago; thank you.

THE CHAIR: Mr Hinder.

MR HINDER: Professor Falconer, thanks for coming. Are you aware of the planned fuel reduction burns? I understand that that is the process by which a lot of the removal is planned to occur. But I also understand from previous evidence given to this committee that those fuel reduction burns—I think something like two of the five planned ones—had not occurred, largely as a result of unseasonal autumn rainfall, heavy autumn rainfall.

Prof Falconer: Yes.

MR HINDER: If those were carried out, what would you see as the best way of then regenerating? Greening Australia's submission points out they have a huge volunteer base who are very knowledgeable, as you commented, about what is needed and how it will work best. Would that be the appropriate way, do you think, of putting that initial vegetation back in there?

Prof Falconer: Yes. To some extent, it depends on what is burnt. One of the earlier burns in 2015, which was in a critical area on the edge of Blue Range, was almost all eucalypt forest in the first place. Under those conditions, if it is a relatively cool burn it will regenerate itself and you do not have to do anything because there will be enough regeneration of the trees from epicormic growth and so on. There will be enough seed in the ground to restore the shrub layer. So you probably do not need to do much at all if it is eucalypt. But if you are burning out an area of regrown pines and you are just left with ash and soot, you have got to put some effort into regenerating the vegetation because there is no native vegetation there.

MR HINDER: You contributed to the Auditor-General's report, obviously.

Prof Falconer: Yes.

MR HINDER: Do you consider the Auditor-General's report to be adequate to deal with the issues raised?

Prof Falconer: Yes.

MR HINDER: Are you aware that the government has accepted all of the recommendations?

Prof Falconer: No, I was not aware of the outcome, actually. But I am glad to hear it. Yes, I do endorse the recommendations in that report. I gather that Brett Goyne is on your list. You are seeing him with Dr Maxine Cooper later on. He and I worked together. I did the on-ground stuff and he did the legislative and administrative background stuff. It was a combined effort between the two of us, but we both agreed with each other's outcomes.

THE CHAIR: There is not long left to us in terms of time. What needs to happen in relation to sediment control?

Prof Falconer: When the money was available just after the fire, the executive committee which managed it put in a whole series of sediment control ponds. Where there was a gully which was clearly eroding, they put in a dam, essentially, usually a rock gabion with wire on it, across the gully to trap sediment coming down the gully. This works so long as you actually maintain it.

What has happened is that in the catchment, where the gullies have carried a lot of sediment, the sediment control ponds have filled right up; so that raised the level and it is just going straight over the top. They are not doing anything at all. What you have got to do, in fact, is get a front-end loader in and dig it out.

Other ones that were put in got overwhelmed by some heavy storms. The water cut round the sides and just basically turned it into an area of gully erosion with magnitudes up to the size of this room. There was just mega gully erosion in places. It was just lack of management and ongoing attention.

THE CHAIR: And what needs to be done in relation to invasive weeds?

Prof Falconer: Unfortunately, everywhere it is an ongoing problem in perpetuity really. I have been observing things like St John's wort there. Seed lives in the ground for about 10 years. You have really got to keep at it. It is the same with blackberries. If you are going to control blackberries, it is no use spraying them just once and going away for five years. You have just got to hit them every year until you have got the population right down. It is an ongoing and costly job.

THE CHAIR: Recommendations to the government, it would sound like, are: effective management and determination of who is actually in control; address soil erosion; address invasive weed species; and, particularly, address the pine wildlings?

Prof Falconer: Yes.

THE CHAIR: And constant management?

MS LAWDER: Maintenance.

THE CHAIR: Sorry, constant maintenance, yes. Further questions, members?

MS BURCH: Just following on from that, given the government has accepted all of the Auditor-General's report, which covers that, it is around keeping an eye on not only the agreement to the recommendations but fulfilling those actions that are put in place.

Prof Falconer: Yes; implementation is critical. The management plan of 2007 was very good. It was fantastic, great. Only they just signed it and filed it.

MS BURCH: Thank you.

THE CHAIR: Are there any final questions?

MS LAWDER: Yes, I have a brief one. From reading some of your submission you have spoken about erosion gullies, from rain events mostly. Are motor vehicles using the roads a big issue or is it more those big rain events?

Prof Falconer: A lot of the roads were closed to motor vehicles in the remedial work after the fires. Most of the roads that went straight up and down, for example, were closed and have been shut off with pine logs, debris and so on, so that they are filling in, not eroding. Vehicular use is an issue, but if vehicles stay on the roads it is not a problem. The difficulty is four-wheel drives and trail bikes hurtling about all over the place. And they do. Even though a lot of the roads are locked, the trail bike riders just ride around the barriers, of course.

While I was out there with a ranger doing the survey, two trail bike riders came through an area which was closed to trail bike riders. They were not riding on the tracks and roads at all; they were just riding through the bush. This brings me to an issue which I have not accented, but there has to be a recreational management plan for it. It is not my province, but obviously you cannot afford to have people lighting camp fires in a high risk fire area and you cannot afford to have people defecating in a

drinking water supply. You have got to control recreational use.

THE CHAIR: Mr Hinder, a final?

MR HINDER: No, nothing else, chair.

THE CHAIR: Professor Falconer, thank you very much for your attendance today. I do not think you have taken anything on notice. The transcript will be provided when it is available for you to check what you have said and, if necessary, suggest any corrections. With that, we thank you very much for your attendance here today.

Prof Falconer: It is good to have the opportunity to reinforce the Auditor-General's report.

THE CHAIR: We will suspend briefly while we change speakers.

Short suspension.

GENTLEMAN, MR MICK MLA, Minister for Planning and Land Development, Minister for Racing and Gaming, Minister for Workplace Safety and Industrial Relations
BYLES, MR GARY, Director-General, Territory and Municipal Services Directorate
IGLESIAS, MR DANIEL, Director, Parks and Conservation, Parks and Territory Services, Territory and Municipal Services Directorate
COOPER, MR NEIL, Manager, Fire, Forests and Roads, Parks and Conservation, Parks and Territory Services, Territory and Municipal Services Directorate

THE CHAIR: We now have with us Minister Gentleman, Minister for Planning and Land Development, in an interesting role coming to speak with the head of TAMS, but I am sure he will explain those arrangements. We would like to welcome you all here this afternoon on behalf of the committee.

I remind witnesses of the protections and obligations afforded by parliamentary privilege. On the table in front of you is a pink privilege statement. Could you please confirm for the record that you have read and understood the implications of privilege.

Mr Gentleman: Thank you, Mr Chairman, yes.

THE CHAIR: So confirmed, thank you. I also remind witnesses that proceedings are being recorded by Hansard for transcription as well as being webstreamed and broadcast. Before we proceed to questions from the committee, minister, would you like to make an opening statement?

Mr Gentleman: Thank you, Mr Chairman, yes. Thank you to the committee for allowing us to come and discuss with you this afternoon your inquiry into the Auditor-General's performance audit report No 3 of 2015 on the restoration of the lower Cotter catchment, which reviewed the effectiveness of management strategies employed by the ACT government and Icon Water in the lower Cotter catchment. We are, indeed, fortunate that the high quality of water that we enjoy in our everyday use is, in large part, thanks to the upper Cotter catchment that hugs the ACT and New South Wales border. Our forefathers recognised the value water would be to the future national capital and looked to nearby ranges to both collect and protect the quality of our water supply.

As the Cotter River winds its way north of Namadgi national park it enters its lower reaches, which we call the lower Cotter catchment. This area is made up of approximately 6,000 hectares of land that has undergone some considerable change since the early 1900s. It was first cleared for agricultural land and later planted with pines as part of the territory's commercial softwood plantation. You would be aware of that history, of course. The decision to invest in the enlargement of the Cotter Dam has resulted in the provision of up to 25 per cent of the ACT's potable water supply. So more than ever before there is a real need to ensure land management activities in the lower Cotter catchment serve to minimise soil loss by erosion, maximise the area under stabilising vegetation and avoid human-induced impacts on water quality.

The Auditor-General concluded in her report that the natural regeneration of the vegetation cover and the management efforts and resources expended by Icon Water,

TAMS and EPA have been effective in steadily improving water quality and reducing turbidity and sedimentation. That is on page 3 at para 2. I think that is a good starting point. However, the report goes on to note that considerable amounts of sediment are mobilised into the Cotter River after heavy rainfall and some of the erosion and sediment control structures in the lower Cotter catchment are in need of repair or replacement.

Furthermore, the report notes the need to finalise the plan of management, improve management coordination arrangements and ensure that the fire trail network is available to land managers and strikes the right balance between management access and minimisation of sediment runoff.

The government is on the record as agreeing with every one of the report's 12 recommendations and has moved quickly to ensure relevant directorates are activated to respond in a coordinated way. The government announced a total of $7.8 million over four years in the 2015-16 budget to be appropriated to TAMS to address the priorities on ground works within the lower Cotter catchment. This investment has allowed work to commence on the repair of the erosion control structures to better protect water quality to deliver further fuel management activities, such as removal of pine tree regrowth which poses an increased fire hazard, repair fire trails; control pest plants and animals; increase staff presence in the area to ensure illegal activity is minimised; and complete a management plan for the area.

Since then the government has also announced a single conservation agency to be structured and completed in July this year, and it is tasking me as the Minister for Planning and Land Management to go through that program. The single conservation agency in EPD will, particularly in relation to the lower Cotter catchment: lift up the planning and management structures into a more strategic role and be responsible directly to the minister; enhance implementation of the Nature Conservation Act 2014, which creates the statutory roles of the Conservator of Flora and Fauna and the Parks and Conservation Service; strengthen ongoing management of parks and reserves within an environment and catchment management context rather than the previous municipal operational function, if you like; and maintain strong relationships between conservation and the planning of our city. That is a change in the way we have previously looked at that management.

With that, my officials are happy to field questions in regard to the report. But I might just ask Mr Iglesias to provide some responses to questions that were asked of Minister Corbell that he referred to TAMS. He has the answers to those questions that were taken on notice earlier.

Mr Iglesias: Before I start with addressing a number of specific questions, I wonder whether we could disseminate these maps, because I will be making reference to various points. I draw your attention, first of all, to the second of those maps, which is titled "Estimated overall fuel hazard assessment". A question that was asked of EPD was: what are the percentage estimated fuel loads, including extreme fuel loads, in and surrounding the lower Cotter catchment, and can the committee be provided maps showing the estimated fuel loads? What we are looking at here—you can guide yourself with that map in the top corner—is effectively an attempt to classify—

Mr Gentleman: Just to confirm for the committee, this is at page 2, so it is the very start, the blue and orange map.

Mr Iglesias: Fuel hazard assessment is done in a way which looks to characterise exactly what the fuel is doing in any particular point in the environment. We have used a methodology that is outlined in the strategic bushfire management plan, and that allocates land one of five categories: low, moderate, high, very high or extreme. That is a reference to the total fuels, so that is elevated fuels in the form of trees and shrubs as well as fuels on the ground. One of those assessments is allocated to a particular point, and you can see that, scattered throughout this map, there are a number of stars, and they make up a fraction of the many hundreds of sampling stations that we have scattered all over the ACT. From those sampling stations, we are able to extrapolate what the hazard assessment is estimated to be.

If you look at the area of the lower Cotter catchment, which is shown by the hard black line, you can see that the majority of the hazard assessed is in the moderate range, but there are very high and also even extreme pockets throughout the landscape. You can see that outside of the lower Cotter catchment, similarly, there are pockets of extreme, very high and slightly less than that.

What we have here is a mosaic of fuel hazard. This is an important point because, as land managers, it is an accepted practice that from the point of view of managing fuel, we need a mosaic of hazard. We understand that we are never going to achieve low hazard everywhere; there are going to be instances, for various reasons, where fuels will be higher and fuels will be lower. The strategic management plan specifically makes that point and says: where the fuels are high, have a look at what the response might be. That could be any number of responses that the land manager has, and we will go into that in a bit more detail.

The critical takeaway point is that we understand what the hazard is. We understand where the high elements of fuel hazard sit. In fact, you can see on the map that the black hashing relates to a proposal to burn in the next two to three years. That tries to pick up on basically our response, an operational response to the extreme hazard.

What we are also doing in the parks service—and it is true to say that we are probably leading the way in this—is looking at the use of alternative models to try and refine our capacity to understand hazard. We are currently working with some academic partners to test what is called lidar, which is effectively a laser light which is shone from an airplane that goes over a landscape and gives a three dimensional picture of the fuels.

The end game is to be able to understand that data so that we can get a better picture of what the fuel hazard is as opposed to what is common practice across the country at the moment, which is to use these point sources of information that we then extrapolate across the landscape. If we can produce a three-dimensional picture across the landscape, that is an order of magnitude of improvement in understanding hazard. That is something we are working towards, but we are still in that development phase.

THE CHAIR: As a summary of what we are being shown there, five per cent of the land is at low and 95 per cent of it is it at moderate, high, very high or extreme risk,

with probably a third at high, very high or extreme?

Mr Iglesias: I could not tell you the exact hectare break-up, but you can see that the overwhelming majority would be in the moderate range. Yes, there are sections which are significant. There is a bit of red and a bit of yellow through there, and that is where we have looked at those landscapes and have said, "Okay, what's our response?"

THE CHAIR: And "extreme" is how many tonnes per hectare of fuel?

Mr Iglesias: "Tonnes per hectare" is not the descriptor that is used here. "Tonnes per hectare" refers specifically to the ground layer, and this assessment looks at the whole profile.

THE CHAIR: So what does an "extreme" fuel load mean?

Mr Iglesias: An extreme fuel load, if you were to look at the profile, would typically have trees with a lot of bark, exfoliating bark. It would have a strong shrub layer. It would have a lot of fuel resting on the ground, a lot of fine fuels. It may have also a lot of coarse fuels, such as fallen timber and so on. Staff have a mechanism by which they have a photo reference as to what is extreme, what is very high, what is high, what is moderate, what is low and what that looks like. Over time you see the difference as it changes. It moves from one category into the other.

THE CHAIR: We only have an hour, and we are using up time rapidly. Are there other answers, or do you want to table them?

Mr Iglesias: No, I can work through these.

THE CHAIR: Is it possible they could be tabled?

Mr Gentleman : There are a number we would like to get on the record for *Hansard*; then we will table the rest.

THE CHAIR: If we could be quick then, because we are going to run out of time.

Mr Iglesias: Another question was: what works have been and are planned in the Blue Range area to reduce the fuel hazard and bushfire risk? The Blue Range area, if you look at the first map before you, is the area marked in purple in the top middle of the map. There are a number of works that we have completed in this area as well as works that are in progress and works that are planned. As far as completed works are concerned, we have created a fuel break that runs through the middle of that area, and that is specifically to widen an existing track to 30 metres. That is across a length of about two kilometres.

That provides us, as the land manager, with the capacity to have an effective break, for land management reasons but also for fighting fires. That is something that we have been able to deliver. That has involved the pruning and what we call lifting of some of the pines, so removing the lower branches of the pine trees. If fire was to get in, it would not just quickly take and go. It is a tactic to improve the fightability of fires, if you like. We have thinned about 10 hectares of pine wildling regrowth, and

we have also maintained another approximately 15 kilometres of roads in that area.

We have a lot of works in progress and I will summarise them as being more of the same, but also the construction of more strategic advantage areas in that area—in other words, widening existing roads along the length of the road. That breaks up the environment, so it means that if there was a fire on its way, we would have the capacity to present gaps in the fuel which strategically would be of advantage to us.

THE CHAIR: So you have cleared 10 hectares. How many hectares of pine wildlings are there?

Mr Iglesias: In total, there would be a couple of hundred hectares. I would have to check the exact amount. We are currently undertaking a trial, which is point No 6 on that map. That will look to test a few ways and means in which we can deliver this work. This particular area is extremely steep, and maybe one of the reasons the pines have got to this density is that it is quite challenging to manage. We are currently finalising some work to do some trials in there so that we can get a suite of options that we then might be able to roll out across the entire Blue Range area. We think we will remove another hundred hectares of pines next year.

THE CHAIR: So you will take on notice the estimated size of the wildlings?

Mr Iglesias: Of the Blue Range, just to be clear?

THE CHAIR: Blue Range and then across the whole area.

Mr Iglesias: Okay.

Mr Gentleman: Is there anything else there, Mr Iglesias?

Mr Iglesias: Yes.

MS BURCH: If there is, perhaps you could just forward it through as taken on notice.

Mr Gentleman: Yes. With that, we are ready for any questions.

THE CHAIR: We will start with Mr Hinder.

MR HINDER: This water—water being an essential element of life—I understand has got a cross-ministerial responsibility within the government: you, Minister Gentleman, Minister Fitzharris and Minister Rattenbury. Minister Rattenbury provided the government's response to this report. I note that the implementation of your conservation agency and EPD goes towards solving perhaps one of the two issues raised by Professor Falconer's submission.

The other one was about funding that will be required for the maintenance of the catchment. The report refers to the decision-making priority of the commonwealth on funding and talks about the commonwealth basin priority project and the potential for $93 million funding over the next five years. Can you provide any information to the committee about that and where we are on that front?

Mr Gentleman: Yes. Thanks for the question. That area is being looked after by Minister Corbell as the key environment minister for government in the territory. The funding has been, as I understand, successful to government, but there are a number of program plans, if you like, that need to be finalised before the funding can be spent and transferred across. If there is any detail in that that you would specifically like in regard to the catchment, I can take that on notice, unless Mr Byles has any further information on it.

Mr Byles: No. I think that is the appropriate response, given the fact that the matter is still with government and the government are clearly looking at priorities and how they match the funding.

Mr Gentleman: There are some programs, of course, that Minister Corbell has already looked at in regard to catchment flows into Lake Tuggeranong, for example, and some of the water flows down there and possible treatments for that. We have looked at areas of operation across TAMS that have been successful in cleaning water for Lake Burley Griffin. The catchment ponds at Lyneham and O'Connor have provided some great success in cleaning up the waterway before it flows into the lake.

Indeed, some of the work that TAMS have done in regard to the studies on how they have worked and what they have found in some of those studies after 12 or 18 months has been quite interesting. The one at O'Connor, the smaller catchment, has shown some interesting animals that have arrived in the catchment. In fact, a trout was found in the catchment. We are trying to understand how that trout came to be in the pond at O'Connor. Allegedly somebody was fishing there on Friday nights and might have dropped it in as a fingerling and it has grown since then.

Many other successful migrations of animal life have come into the area, and the water treatment from there has been quite successful. But we will certainly come back to you in regard to where that program is at.

MR HINDER: Where the funding is at?

Mr Gentleman: Yes.

MR HINDER: Still probably on funding and the cross-border nature of that Blue Range and further north across the border, whilst the bulk of our catchment appears to be moderate in terms of fire hazard, all of New South Wales's area appears to be high, very high or extreme. How do we deal with that? I understand that all these things cost money. I assume our friends in New South Wales would prefer we paid for it, but I think we have had some tragedy resulting from their lack of action across the border previously.

Mr Gentleman: There is quite a bit of work that the directorate has been doing with councils and the New South Wales government in looking at cross-border operational activities. I have not got a figure on how much New South Wales is spending in that area but I can say that the relationship between us and New South Wales is quite good. In fact, I did a tour with Mr McNamara a number of years ago looking at Namadgi national park and our border and the amount of risk that we have from fires coming in

from New South Wales. There has been quite a bit of work from there. Unless Mr Byles has any more information about funding?

Mr Byles: No but Mr Iglesias may have.

Mr Iglesias: I can let you know that in New South Wales right as we speak they are planning a very large hazard reduction burn in the Brindabella national park to our west. A lot of that land is also privately owned land and there is a requirement from private landowners to also mitigate fuel. In determining our response we are very cognisant of what our colleagues are doing. And we talk. We understand the sorts of fuel hazard programs they have and how they might impact on decisions that we might make in our own jurisdiction.

But it is true to say that routinely we help each other out. We have our own firefighters that will help them deliver work on their side of the border. On occasions they help us as well.

THE CHAIR: Ms Lawder.

MS LAWDER: Mr Iglesias, earlier you referred to manual removal of pine wildlings at point 6 on the map. You said it was difficult because of the terrain. Is that what you were saying? Is it only the terrain? Do you actually have enough physical resources in terms of people and money to manage those pine wildlings?

Mr Iglesias: The terrain is overwhelmingly, I believe, the reason why we have the nature of fuel we have there now, and resources. The terrain remains. We have got some resources now. We believe that by using a bit of ingenuity and calling on the experience of our colleagues in other areas we stand a very good chance of coming up with a cost-effective way to deal with the risk.

Most likely it will mean a number of different options. It could include mechanical; it could even include burning. And it may have to happen over a number of years. But the end game is to reduce the risk.

Mr Gentleman: It might be worth while at this time for Mr Iglesias to give us a bit of potted history on the reduction of fuel risk over the years. We know that the fuel level was incredibly high prior to the 2003 fires but now it is much lower.

Mr Iglesias: Absolutely. If you look at that first map, you will see that there are a number of coloured patches. Let us start with the aqua-lined patches, for want of a better description. You will see that there are dates in the middle of those polygons. These are burns that have been delivered in the recent past.

MS LAWDER: Sorry, can I interrupt. I think we can probably work that out, because it has the dates on it. But thank you for your offer, minister. I want to continue my question. Some of the other things in the Auditor-General's report which make me ask about resources are things like monitoring and maintenance of the sediment control measures, culverts and sediment ponds. There were gabions, those kinds of things, which, according to Professor Falconer, perhaps had not had as much maintenance as they could have. Why would that be if you have sufficient resources?

Mr Iglesias: Since the budget appropriated money to TAMS we have commenced a program to deal with exactly what you have described. We have just recently completed a risk process which has helped us elevate the critical erosion and sediment control works we need to do. We have got $300,000 to deliver that this year. In fact, we have already completed the desilting of one dam and we are in the process of completing work on two more. We are in the process of understanding which gabions in which creek lines we should attack next, the ones that will give us the best bang for our buck if we go and fix them.

The money we have got for weed control helps immeasurably. So does the money that we have spent in closing roads. For example, after the construction of the dam, we ended up with roads that led into the dam that were flooded out. So we spent a lot of that money in rehabilitating the road surface and returning it to a grassy area. That will help quite markedly in reducing sediment inflows into the dam.

We are working with the University of Canberra to get sampling sites along the catchment so that we can (a) understand where all the sediment is coming from—we think we know but this will give us some harder evidence—and (b) be sure that our remediation is having an effect.

MS LAWDER: How big are these gabions? What are we looking at?

Mr Iglesias: My vision of a gabion is a large cage filled with rock. They are used in the urban environment in waterways.

Mr Gentleman: Usually rectangular or square.

Mr Iglesias: Yes. And in this case they are used in creek lines or in streams to slow the flow of water, which allows sediment to drop out before it gets into the dam.

MS LAWDER: So you are saying that you are going around inspecting to see which ones will give you the most bang for your buck?

Mr Iglesias: Yes.

MS LAWDER: Why are you not perhaps clearing out all of them? If they were put in place to stop sediment where erosion is taking place, why are you not clearing them all?

Mr Iglesias: Our intention is to do as much as we can with the resources that we have.

MS LAWDER: Which you said was sufficient.

Mr Iglesias: With the resources that we have, I think what we can do is get the priority ones done, and that is what we would like to do. We would like to understand where all the sediment is so that we can address those issues.

Mr Byles: If I may, Ms Lawder, I trust you would understand that while resources might be finite, work is never finite. There is always work to be done. And it is, as Mr

Iglesias says, about establishing clear priorities and managing those priorities. And there is a very good process to do that.

MS LAWDER: I understand that. I guess that is why I am asking. If you are actually driving around inspecting all of these particular sites and they only are a quarter of the size of the table, I was just wondering whether it would be more cost effective to just give them a bit of a clean out at that time rather than driving around, looking at all of them and then making a plan and then going back. That was what I was trying to understand. What size are we talking about and why are we not cleaning them all out?

Mr Gentleman: To assist, the gabions are boxes, if you like, caged rocks, that act as the filtration system and restore the area. They can be used in numbers as well. You would not simply have just one gabion box; you would have a gabion wall which would suit a particular sedimentation situation, a creek flow into the river, if you like, or into the catchment river. What size would they change to?

Mr Iglesias: The actual gabions?

Mr Gentleman: Yes.

Mr Iglesias: I could not say exactly what it would be, but in reference to driving around having a look, what we have done is closed six roads, over 2.8 kilometres, and the focus of activity has been on fast wins that we can do, if you like, no-brainers, where we can see exactly what you are alluding to, that there are issues. I think that has happened. And I think with the issue about the gabions, whilst we could go in there and do the work, I am concerned that we do it in an informed fashion and that we understand that if we do go in there and spend public funds, it is going to work, it is going to last. That is our strategy.

THE CHAIR: Before we go, you have cleaned one dam and you have got two more. How many dams in total are there?

Mr Iglesias: I could not tell you how many dams are in the catchment. There would be in the vicinity—I would have to get back to you on that one.

THE CHAIR: In the vicinity of—you were about to—

Mr Iglesias: I would imagine maybe not many more than half a dozen in total, if that.

THE CHAIR: And how many sites have gabions in place?

Mr Iglesias: Again, I would have to check for you. I could not tell you.

THE CHAIR: A dozen? Twenty?

Mr Gentleman: Mr Cooper might have some numbers for us.

Mr Cooper: Just on the gabions, we put those gabions in straight after the 2003 fires. The whole landscape was denuded and they were put in in a number of major places and some minor ones. Since that time the whole site has revegetated, there has been

earthworks undertaken, there has been 7,000 hectares of grass seed laid out. So a number of those gabions no longer—

MS LAWDER: Are catching sediment.

Mr Cooper: Yes; they have done their job. We do not go in and pull them out. They have settled, they have stabilised that creek. There was one gabion, in particular, where at a conference in Canberra they estimated that the soil movement was of glacial proportions. That was a geographical conference in Canberra. To answer Mr Smyth's questions, there are now limited numbers of gabions that are still active. As Mr Iglesias was saying before, we are prioritising those ones that are now still relevant. To give you an indication of the number of gabions within the catchment is probably—not to downplay your question—not relevant because some of those are just now structures that stay there and we will never go back to.

THE CHAIR: Of the ones that still serve a useful purpose, how many sites have gabions and how much maintenance is required?

Mr Cooper: Again, that can be answered. It will be a difficult question, because we are going through and on a risk basis determining whether that gabion is still an active gabion that is performing a purpose or whether it is just a relic from gabions that were put in place post 2003.

THE CHAIR: When is that survey going to be finished?

Mr Cooper: It is ongoing. It is exactly the same as to do with fire; it is an ongoing risk assessment. It is a dynamic risk assessment, if you like.

THE CHAIR: If you take it on notice, you will try and give us an indication of how many dams and how many gabion sites will require activity.

MS BURCH: Before I go to a substantive question around coordination, I want to go back to wildlings, particularly in this Blue Range area. You are going through a removal trial. What we have heard this afternoon is that, first, you need to remove them. I think someone used the word "no-brainer". That is a no-brainer. But then how do you ensure that they do not regrow or how do you revegetate in a manner that reduces regrowth?

Mr Iglesias: That is a good question. The end game is to improve water quality. That is what we are wanting to do: improve water quality. As a land management agency, we would like to see that improvement of water quality also come with an improvement in the natural environment. But it is a secondary issue. I would want to be shown an argument where it was justifiable to go to the added expense, time and effort of re-establishing a native cover to a particular area. I suppose what I am saying is that we are open to there being alternative cover if the issue of fire fuels can be managed and if the issues of water quality can be managed. That opens up an analysis of what will be there once the pines are taken out. Can pines—

MS BURCH: But the plan is not to allow the pines to come back?

Mr Iglesias: Not necessarily. Some pines may come back over time. They may be mixed with a native mix. The issue is to deal with the fuel hazard and to deal with water quality. As a land manager we may need to accept that there may be pines in there. If we can demonstrate that that deals with the fire fuel hazard and it deals with water quality, at least in the short term we may have to accept that. I am hopeful that given the nature of that area, surrounded as it is by Namadgi national park, in our removing the pines, we will get a degree of reinvasion of desired native species. That is certainly what happened at block 60 at Tidbinbilla. When the pines were removed over a period of about two or three years, we got fantastic regrowth.

MS BURCH: Will that regrowth form part of your assessment of the trial removal as well?

Mr Iglesias: Absolutely, yes.

MS BURCH: I turn to the question around coordination. We have heard about this this morning. I think Ms Fitzharris's update is that we have to get better coordination. Can you update us? There were various committees and codes of practice that were going to happen on the last day of March. Can you give us an update?

Mr Gentleman: I suppose the best update is the change to bring land management under EPD and, with that, as I said at the beginning, the formation of the single conservation agency. That will give us overall a better management process. But I will ask Mr Byles to give you an update—

Ms BURCH: What agency will be responsible for that—TAMS?

Mr Gentleman: EPD. The current work now is moving some of the officers across to my directorate, and with that, of course, financial control of that area as well. That will mean that EPD will have overall management of land management across the territory. I will ask Mr Byles to give you an update on where we are going in response to some of these committee issues.

Mr Byles: Thank you, minister. Of course, it may have already been mentioned that the directors-general water group looks at a range of issues. One of the subcommittees of the directors-general water group is the working group on the lower Cotter. In fact, they last met on 8 March at 0900—I think it was item 3 on the agenda—to talk about this specific item. Mr Iglesias would be able to provide more information about the outcome of that meeting.

Mr Iglesias: We met yesterday at about 1330, to add to that one. Basically, the interdirectorate working group, which has representation from the ESA, EPD and TAMS, meets regularly to deal with each of the recommendations that have been handed down by the Auditor-General. But it also meets with a view to advise the directors-general water group. That group, if you like, brings together at the most senior level responsibility for the lower Cotter catchment. That was a key recommendation, as you know, from the Auditor-General's report.

MS BURCH: Just to be clear, there are officials that then report up to the D-G group. That D-G group then advises you, as the overarching responsible minister, to make

sure that the coordination happens? Is that right?

Mr Gentleman: Yes.

MS BURCH: Whilst it sits in EPD, there will be other D-Gs that are involved. I imagine that emergency services will have a seat at the table and all of that. One of the big comments we have had is that everyone knows what we need to do but how do you herd the cats to make sure it gets done? Are you now the cat herder?

Mr Gentleman: Yes, I now have the job to do that. Of course, the formation of the single conservation agency will take some time. We have got until July to have that done. But we are well underway. I am pleased with the progress so far.

MS BURCH: The other issue—I think Mr Hinder mentioned it—is having a budget to put to it. Before the single conservation agency, the budget for different activities has been spread. Will that continue or, if we are looking particularly at the lower Cotter catchment, would you have carriage of that budget as well?

Mr Gentleman: That is correct. Mr Byles, did you want to add some more?

Mr Byles: Minister, the only thing I might add—again, this is pretty obvious—is that we work very cooperatively with the other agencies. There is our official directors-general steering group. There is a cluster group that consists of EPD, TAMS and transport Canberra, plus other invited guests. We also discuss these issues. They are not off the agenda. We work collectively to get the very best outcomes. It is not just an item that is addressed at a particular meeting; it is ongoing interaction between officers at all levels.

THE CHAIR: Is the lead agency for the management of the lower Cotter now the single conservation agency?

Mr Gentleman: Yes.

THE CHAIR: What is the relationship—

Mr Gentleman: Well, it will be EPD flowing down through that work, yes.

THE CHAIR: Okay. What is the relationship with Icon Water and how are they involved?

Mr Gentleman: There is a strong relationship with Icon Water. They have done quite a bit of the work that occurred, as Mr Iglesias said, after the 2003 fires. A lot of that work in regard to sediment control was done with Icon Water. Those relationships continue both at the D-G level and at my level. We meet with representatives from Icon Water very regularly, probably monthly. Of course, the working groups meet with them as well.

THE CHAIR: Professor Falconer, in his submission to the committee, suggested that there be a formal deed between the appropriate ACT agency and Icon Water over the management of the lower Cotter catchment. Is the relationship with Icon informal or

formal? If it is formal, under what direction does it come?

Mr Gentleman: Probably the technicality of that I do not have in front of me. But Icon Water certainly has shareholders, which are ministers in government, in cabinet, and, therefore, there would be that formal relationship there.

THE CHAIR: So is there a deed or not? Is there a written agreement that details who is responsible for what?

Mr Byles: Minister, if I may. I am not aware of any deed, Mr Smyth. Having said that, there is probably some credence in looking at that as an option. However, I can say and reinforce the fact that the relationships work very closely based on everyone's willingness to get a good outcome.

Mr Gentleman: Of course, it is a territory-owned corporation, so it responds directly to government in that sense.

THE CHAIR: Yes, but if there is no detail on what the arrangements are, it may well fall to government. Many things fall to government. Could you take on notice what agreements there are between Icon and any agency currently in the ACT government concerning the management of lower Cotter?

Mr Gentleman: Yes.

THE CHAIR: Thanks for that. You mentioned at the start the $7.8 million over four years. Can we have a budget breakdown for the expenditure over the four years and then what it is to be spent on within each of the four years?

Mr Iglesias: Yes, I can provide that detail.

THE CHAIR: That is kind. In regard to the fuel loads and the pine wildlings, what is likely to happen with Blue Range in the immediate future? You have got dates on all the other areas except Blue Range, which is neatly highlighted not in black but in red hatching. Is that to indicate that it is a more dangerous area? Given it is on the north-western compass bearing, and that is where the fires come from, and given it seems to have some of the heaviest fuel loads, what is going to happen there and when is it going to happen?

Mr Iglesias: Next year we are going to create more strategic fuel breaks. I made reference to those 30-metre wide breaks in the landscape. We are going to create more of those. We are going to remove another 100 hectares of pine wildlings. This is all associated with this trial. I am loath to say that we will get rid of this much by this much and that it will be at a particular location, because in some ways it really does depend on what the trial tells us. But we do have funding to commence, if you like, the dismantling of the density of pines that are in that area. That will happen within the next 24 months. We have got funding to do that.

THE CHAIR: So what will happen within the next 24 months?

Mr Iglesias: The creation of fire breaks. We go in there and we look at the existing

roads, both within Blue Range and immediately adjacent, and we look to see whether we can widen those fire trails. The pine trees along the roadsides are lifted. So we remove the biomass along the lower levels. That is all helping us to create a fire break. We will go in there and we will physically remove wildlings. I reckon it will be about 100 hectares associated with these trials. But once we have the word on the trials, we would be in a better position to roll it out across the whole Blue Range. Of course, that will be a process which I envisage will take—it is hard to say exactly but I doubt we could do it in one year. It would probably be over a number of years.

THE CHAIR: The 30-metre wide strategic breaks—how many kilometres worth of breaks have you put in?

Mr Iglesias: Currently we have two kilometres. Next year we hope to fit in another six kilometres, and it may well be that we get a bit more than that as well, depending—

THE CHAIR: Is that next financial year or next calendar year?

Mr Iglesias: Next financial, yes. We are also looking at One Stick Road. From memory, One Stick Road is not in the Cotter catchment; it is outside. But in dealing with that particular site, it gives strategic advantage to the lower Cotter catchment. We are looking at seeing what we can do there in relation to widening it. That would be about four kilometres, Mr Smyth.

We are also looking at other roads, with up to 20 kilometres of specific maintenance work along the roadside. Again, we are looking at the pines, looking at the vegetation and removing the fuel load along the roadside. We are also going to upgrade about another five kilometres of roads. That will all happen in the next 12 to 24 months.

Mr Gentleman: I would add to that that Mr Falconer also put forward some comments in regard to trail bike riding and those sorts of things. There is a process in operation now for closing off the areas to trail bike riders to ensure that we do not see extra erosion occur. That is in process now, I understand.

Mr Iglesias: That is right.

THE CHAIR: If we can just concentrate on fire—we will get to recreation in a moment—No 4 says that the Warks Road burn is not completed. When will that be completed?

Mr Iglesias: It may not need to be completed at all. The reason we did not get to that one was that we assessed the area hazard as a whole and found that we got the strategic advantage we needed from those other burns that we completed. The area around that burn, Mr Smyth, is regenerating eucalypt. Some of it is quite low to the ground. We just do not think we would get the strategic advantage in pursuing that burn.

What we will do, though—it will remain there within the context of our strategic planning, and year on year we will assess it on its merits. So it may be looked at next year. But, again, that depends on the regional picture as to whether we deliver that one

or not.

THE CHAIR: I hope you are right. I spent a bit of time on the Warks Road recently. Professor Falconer mentioned the recreational plan. Is there such a thing being considered?

Mr Iglesias: Specifically for the lower Cotter catchment?

THE CHAIR: Yes.

Mr Iglesias: Within the context of the management plan—I wonder whether that is what Mr Falconer was referring to—we are committed to delivering that.

THE CHAIR: No; I think he suggested that, separate to the entire management plan, recreation needed to be managed.

Mr Iglesias: The reference might have been in relation to an earlier document that dates from 2010 that dealt with recreational pursuits and what was acceptable and what was not. What we are doing at the moment is looking to reviewing the management plan, which will pick up on the recreation issue. It will pick up on the critical questions that we will have in there—where people can go, where they cannot, what is acceptable, what is not.

Mr Gentleman: It is an important question because—

THE CHAIR: Can you provide the committee with a copy of the 2010 plan?

Mr Iglesias: I beg your pardon?

THE CHAIR: Could the committee have a copy of that 2010 plan, please?

Mr Gentleman: Yes, Mr Smyth. It is an important question because, as you just mentioned, you recreate down there. Many of the community do as well. So we want to ensure that not only do we protect our catchment and reduce fire risk but we still are able to go in and recreate in the forests.

THE CHAIR: Right.

MS BURCH: So you could look at discouraging access by certain road closures or by others steps as well?

Mr Gentleman: Yes.

MS BURCH: Part of recreation is about not having people tramping into somewhere where you do not want them.

Mr Gentleman: There are areas that are sensitive, especially in relation to soil disturbance activities like trail bike riding through creeks and those sorts of things. If we can ascertain areas for those trail bike riders to go that do not damage the creeks, then we are in a much better place. In regard to foot access, I think it is pretty open—

Mr Iglesias: It is.

Mr Gentleman: for people to walk through. I think pushbikes are not too much of a problem either. It is normally motorised vehicles.

THE CHAIR: Further questions, Mr Hinder?

MR HINDER: I have one. I should confess to having broken a rib in the catchment, on a motorbike on a road. We have had a fair bit of discussion about the interaction between the different agencies and the various responsible portfolios. In relation to recommendation 9 about the regrowth of pine, which probably covers the wildlings, the fuel reduction issues and particularly Blue Range, there was also a submission put to the auditor from Greening Australia. Once we have defoliated the pine or worked out how best to do it, assuming you find a successful way of doing it, what happens then? I particularly appreciate the labour cost of people like Greening Australia, which is the right price for the territory. But they would also need some funding for whatever they put in there—seedlings and those sorts of things. These people clearly have a wealth of knowledge and expertise around how to do this. Are there ongoing discussions with them about when they will get involved? Will part of the resources be kept aside for the purposes of regenerating the right kind of growth so that we do not have to go back and get rid of the pines again in three years time?

Mr Gentleman: Mr Hinder, we have a great relationship with Greening Australia. I personally have planted with them more than 600 trees around the Mount McDonald area. Originally there were pine trees which were burnt down by fires, and now we have re-established eucalypt there. That work continues. In relation to the funding arrangements with GA, I will ask Mr Iglesias to answer.

Mr Iglesias: Currently, we still have an agreement with Greening Australia to deliver revegetation in the Cotter catchment. That is coming to an end. We have a little bit of money in the appropriated funds to TAMS—just a little bit. Once we understand the need for the revegetation, if we believe that it is not going to come back of its own accord and if we are going to hold those hill slopes and we need to revegetate, we will be able to provide an informed bid to government to get hold of those funds.

We have a great relationship with Greening Australia. As a parks service, if we see an immediate need, we prioritise that and we absorb that. That may well be the case in certain pockets within the lower Cotter catchment. I suppose my answer to your question would be that revegetation is part of the solution. As to who we would use and exactly where we use it, that remains to be seen.

MR HINDER: Getting rid of the fuel is not the end game; it is about making sure we do not have to do it again, I would assume.

Mr Iglesias: Sure.

MR HINDER: The other thing that Professor Falconer raised with us was about the steepest terrain and the erosion that he considered to be excessive at the moment. What is going on around that? I am assuming that is in close to the catchment,

notwithstanding that Blue Range is certainly of that nature. Map 1 does not appear to have a whole lot of activity around the catchment proper, close to the water itself?

Mr Iglesias: There has been a lot of work done already on revegetating around the Cotter Dam, with 40,000 trees planted across 60 hectares in 2012-13. Another 3,000 trees were planted in five hectares in 2013-14 and another 2,000 trees in 2014-15. The majority of that work has happened on those lower reaches around the dam. Where it is particularly steep, where we have those hill slopes that are extremely steep, this is the crux of the problem and it is why they have been left, in my opinion. They are difficult. The solution was not an obvious one; it was an expensive one; and hence our move now to look to those steep slopes and try and crack the nut as to what combination of works we can do to stabilise them.

THE CHAIR: A final question from Ms Lawder, and then we are out of time.

MS LAWDER: It follows on from something Ms Burch asked about pine wildlings. You mentioned, Mr Iglesias, that in the regrowth there might be the odd pine tree et cetera, yet the strategic management plan talks about stable catchments and natural ecosystems. Are you suggesting you might leave some non-native species or allow, for example, something like African lovegrass, which, on one hand, would perhaps have an erosion control function but, on the other hand, would have very high fire risk, just like the pine wildlings?

Mr Iglesias: The point I am trying to make is that we may not be in a position where we can transition from pines to native vegetation, and as a land manager we have to accept that there will be a different mix for a period of time. We have to ask ourselves, "If that is delivering the water quality and the fuel management, can we tolerate that at least for the time being?" I would hope it would not be with African lovegrass. That would be problematic. But it may be with lots of other lower priority weeds that serve to hold the catchment together. As far as we can, where it is practically possible, we will look to make the desired transition. But in making those sorts of decisions, we have to be practical. I am not closing the door on the fact that at least for a period of time we may have a less desired mix of revegetation in those areas.

MS LAWDER: Something like African lovegrass grows quite quickly.

Mr Iglesias: Yes.

MS LAWDER: Would you be working to keep that out?

Mr Iglesias: If we were to get fields of St John's wort or African lovegrass, we would treat those, because they are noxious weeds and we cannot tolerate them. But if we were to get something like fleabane, some thistles or some of the other weeds that we know are transition weeds, that is something that we may tolerate.

THE CHAIR: We might close the discussion at that point. Minister, we thank you and your officials for appearing. A number of questions have been taken on notice. Could we have answers, say, within two weeks from today? That would be appreciated. A copy of the transcript, when available, will be forwarded to witnesses to provide an opportunity to check the transcript and suggest any corrections. With

that we say thank you and call the next witness, from Greening Australia.

Mr Gentleman: Thank you, Mr Chair, and committee members.

WAREHAM, MR HUGH, Director of Conservation and Head of Government Relations, Greening Australia Capital Region

THE CHAIR: Welcome to the public accounts committee, Mr Wareham. On behalf of the committee members, I thank you for your attendance today. On the table before you is a pink card. It is the privilege statement. Could you please confirm for the record that you understand the implications of privilege.

Mr Wareham: Yes, I understand.

THE CHAIR: So agreed. Thank you very much. I inform you that proceedings are being recorded by Hansard for transcription purposes as well as being webstreamed and broadcast.

Before we proceed to questions from the committee, would you like to make an opening statement?

Mr Wareham: Yes; thank you very much. I am delighted to be here following our written submission. I have just a few points to make in reference to being here.

Greening Australia is an independent not-for-profit organisation and has a charter to restore and revegetate natural landscapes across the country. We are particularly pleased with the Auditor-General's detailed and extensive report in relation to the restoration actions undertaken on the lower Cotter catchment. We thought it was a very thorough report and, of course, we are particularly pleased with the recognition of the efforts of Greening Australia and, in particular, the extensive numbers of volunteers and members of the community that have been involved in restoration of the Cotter in partnership with us.

We thought that the recognition of the value of that work could potentially lead to implementation of an additional recommendation. It is probably too late for the audit report, but we particularly thought there was a good opportunity to extend the program of previous revegetation work that has been undertaken in partnership with the community as basically a sound option for managing and improving the catchment and also a good value-for-money option in relation to protecting and restoring the catchment.

We do not have any current funding in relation to works in the lower Cotter catchment, so we are no longer actively engaging with members of the community in that particular catchment area. We do have an ongoing community engagement program. We have identified a number of potential sites, in partnership with TAMS, that could be suitable for community-led restoration. Some of those sites are areas that were potentially covered in the previous discussion—I caught the tail end of the discussion—but, again, with those sorts of things, we would always advocate working in partnership with other organisations.

Overall we think that it is a great opportunity to continue with the work that has been carried out since 2004. There has been some quite extensive work carried out. It has historically been part of the healing process for the community following the

devastating bushfires of 2003, but we also recognise the value of community engagement in and ownership of the vital water quality catchment for Canberra. So there are many potential benefits from the sorts of revegetation activities that we espouse and work with the community to deliver.

That is all I have to say by way of an opening statement. Thanks again for the opportunity to come here. Alongside our submission, I want to mention our report, which we also attached, which is a fairly comprehensive summary of our work with the community over that more than 10-year period. Some quite exciting things have been achieved, I think. We really welcome the opportunity to be here and talk about this report and what potential next steps might be.

THE CHAIR: Thank you very much for that. I note your additional recommendation. What are the areas that you have identified? Is it possible to provide a map for suitable areas that we might perhaps include in our report?

Mr Wareham: I will take that request on notice, if I may. There are some areas highlighted in the letter. We have got some maps in our report in terms of where the plantings have been done. There has been quite a lot of planting done to the west of the catchment, a bit less to the north and the south. There is also the reality that native revegetation means that you need a comprehensive mix of understorey, mid-storey and large trees, and often the case is that some of those are more successful than others and there are some opportunities for us to go back and carry out enhancement plantings where perhaps the understorey has fared less well than the mid-storey and the upper storey plants. So it would be a mixture of sites across the catchment. We have planted, along with the community, something like 500 hectares. We think there is potential for up to an additional hundred hectares of planting, and some habitat enhancement work where planting activity has already been carried out. And if there was some extensive pine removal, that figure would perhaps increase more.

Some of the sites are steeper in their nature—areas like Blue Ridge—and potentially less suitable for community planting. We need to keep health and safety with these sorts of activities at the forefront of our minds, so we would approach those sorts of areas with caution, in terms of both accessibility and general risk. We do have a small specialist bush crew team that could potentially undertake planting activity on steeper areas.

THE CHAIR: On page 13 of the report that you mentioned are the survival rates. The text says that the average survival rate across the funding year stands at 83 per cent. Is that a good percentage? How does that compare to other replanting programs?

Mr Wareham: When you are dealing with nature it is variable. There are some years when there are poorer survival rates, particularly 2006, because we were slap bang in the middle of a pretty deep drought. Overall, because the drought period extended over a number of years, those figures for those plantings are recognised as being a pretty high level in terms of survival. We have got a longstanding volunteer who is still going out and monitoring those sites, and we have data going back to 2004-05, when we did some of the early plantings.

We think that is a pretty good survival rate; it is one that we have publicly promoted

as being a success and one that we think demonstrates our skills in making sure that high numbers of those plants do survive. It does depend quite a bit on the species, when you are planting and the climatic conditions. For tube stock—those plants that are grown initially in a nursery and then planted out—you tend to get higher survival rates than perhaps with seed planting, where you can obviously put a lot more seed in the ground but you tend to get a lower germination and survival rate.

THE CHAIR: Thank you. Ms Burch.

MS BURCH: You have made mention in your report that, through TAMS and Greening Australia, you have identified some areas. I am not quite sure if you were in the room when we talked to TAMS about the involvement of Greening Australia.

Mr Wareham: I just caught the end of the session, yes.

MS BURCH: Would there be other groups, aside from Greening Australia, that would bring such a large volunteer base to this activity? Coordination is necessary; you cannot just send volunteers out with a bit of tube stock.

Mr Wareham: Yes. I think there probably are; it would probably be unfair to say that we are the only organisation that could do it. We have a long history of working with the community, a proven record and an active ongoing volunteer program that we can point to. When I joined the organisation—I had worked for a number of other not-for-profits who had run volunteer programs—I was personally very impressed with the quality of the management and the coordination of the volunteer teams.

We get young and old. We have a large volunteer database, with up to about 4,000 members on our database. Obviously they do not all turn up every week; otherwise we would be overwhelmed. But a lot of the volunteer engagement and our volunteer team, if you like, have been built up over this restoration program with the Cotter. That has been fantastic in building a really high quality program, but it is not the only thing we have been doing.

We have a group of Wednesday volunteers that come into the nursery and do the seed propagation and seed work. We have a slightly more active group that come in on a Thursday and go out on site and do plantings. We also work with a number of disabled groups in the community. At the moment we have a group from early onset Alzheimer's that come in and do primarily nursery work under supervision. It is an important part of who we are, which is really connecting the community with the environment.

MS BURCH: One mention in relation to this was that you made mention of the data and the ongoing monitoring that some of your volunteers do.

Mr Wareham: Yes.

MS BURCH: Do you share that with TAMS and parks management?

Mr Wareham: Yes, we make that available. We generally have an open data approach to all of our information.

MS BURCH: On an 80 per cent success rate—maths was never one of my strong points—if you have put in over 300,000 seedlings, there are over 200,000 trees out there now, courtesy of your volunteer base, to restore the area?

Mr Wareham: Yes.

MS BURCH: I just say to you and your volunteers, "Well done." Can you carry a collective "well done" back to your group for that. I just have one final question. You have also made mention that volunteers not only plant but remove. We have heard a lot about the pine wildlings, but today we have heard that some of them are quite high now—three and four metres. You would not have your volunteers going out and removing those?

Mr Wareham: No; we would not get them involved in anything that needed chainsaws or anything like that. They focus on the smaller scale.

MS LAWDER: I have a question about your volunteer base, specifically in the lower Cotter catchment area. Have some people remained volunteers for that entire period of time? Is there much turnover of volunteers? Are they largely retired people? What sort of demographics do you have?

Mr Wareham: We had a volunteer called Ross Tinson. He was volunteering with us until he moved into an aged-care facility at 91.

MS BURCH: Ninety-one, did you say? Goodness!

Mr Wareham: He had been volunteering with us for 20 years. Maybe that is not typical, but we do have quite a number of longstanding volunteers who have been volunteering with us for a number of years. We also get new volunteers quite regularly. With our green team, with the number we can take out we are limited by the size of our transport, which is a minibus. There is usually a waiting list of people to get on that, go out and do volunteering work for us. We also have larger scale events on things like World Environment Day and National Tree Day. They bring in new people who want to volunteer with us.

The demographic tends to be older semi-retired or retired people, but it is surprising the number of young mums or younger people who are keen on volunteering and can fit it in with their work-life balance or people from a variety of walks of life who want to volunteer with us. Certainly, if you came into our nursery you would notice an older demographic generally.

MS LAWDER: In your submission you talk about weed removal. Specifically, you talk about the pine wildlings, the small pines, before they grow into a big problem. Do you look at any other weeds while you are out there, or provide information to your volunteers to—

Mr Wareham: We do. Most of our revegetation relies on making sure that we can establish new native plants and that they all recolonise, regenerate and push out the weeds. That definitely does not always happen. We do not focus a lot on large-scale

weed removal, brambles and things like that. We tend to make sure that we have the conditions right for our plants to go in and then let nature take its course.

Having said that, we have been involved in a number of interesting projects, with things like the Kosciuszko national park, where we have trained and worked with groups like the Canberra bushwalking group to spot new weeds suddenly appearing in the park, in partnership with the New South Wales parks service. Our general approach is getting the conditions right for re-establishing native vegetation, doing spot weed control and making sure that we do the right preparation to give the natives the best chance of survival, but not large-scale weed removal or tackling big bramble thickets and things like that.

MS LAWDER: You also talk about the reintroduction of ground-storey species. I notice that you mention chocolate lilies.

Mr Wareham: Yes.

MS LAWDER: Is it the case that you propagate them and sell them to nurseries?

Mr Wareham: We do not tend to sell. We have a native plant nursery in Aranda. We do not tend to sell those on the commercial market. At the end of the season we sometimes have a community plant sale. In general, our plants are grown for our projects. We have chocolate lilies in our seedbed facility there. When they are all in flower you get a fantastic aroma from them because they are so concentrated. Over the years we have shifted from a nursery that pretty much just grew eucalypts and acacias to one that has a much broader mix of species, understorey plants, chocolate lilies and bulbs. They are a popular plant because of their smell and their nature. We grow them for ourselves and our projects and we grow a mixture of the species to give a proper habitat restoration as well.

MS LAWDER: When you have planted out trees, for example, have you had the capacity or is it part of your work plan to go back to those areas to check progress of the plantings, clear out invasive weeds and that kind of thing?

Mr Wareham: It depends on the sort of funding and what you are funded to do, but that is a strong focus of our philosophy. We really do not like a project where we just go in and do the planting and that is all we are funded to do, because of the risks to those trees. We want to make sure of the ongoing maintenance and check the survival rates. We would generally build that into a project proposal. Some of the monitoring that we do now is purely voluntary. We are lucky enough to be in the position to have some enthusiastic volunteers who will go out and do that monitoring for free.

MS LAWDER: What is the survival rate of the plantings?

Mr Wareham: In this document that we submitted there are some survival rates on page 13 where we have gone back each year and looked at the various survival rates. They do go up and down a little bit. Overall they have been in excess of 75 per cent, which is a pretty high survival rate.

THE CHAIR: Mr Hinder.

MR HINDER: Thanks, Mr Wareham, for coming in. I do not know whether you heard my question to Mr Iglesias about what needed to be done after the noxious weeds or the pine wildlings were removed.

Mr Wareham: Yes.

MR HINDER: My question was specifically about whether there was enough coordination between the various government organisations and your organisation or whoever. He said that he had a very good relationship with your organisation and that there was an agreement in place. Is that about your monitoring? When he says "agreement", is it just a relationship or is there an actual agreement?

Mr Wareham: There is not a financial agreement in place at the moment for us to undertake any further work in the Cotter. It is part of our welcoming this focus of the audit report on the value of continuing native revegetation in the Cotter catchment. We are obviously keen that that is turned into something, in terms of a financial arrangement, so that we can then deliver some more. I would be keen to get a little more of Daniel's thoughts on what he meant by that.

We do have a very strong relationship with ACT parks. We have done a number of projects over a lot of years. We have identified with them areas, as I mentioned, in the Cotter catchment that have potential for more planting. I would ideally like to see that turn into some on-the-ground action and that we or at least some other organisation are involved in continuing that revegetation work. There is nothing in place at the moment for continuing that work, but I think both sides recognise there is scope for doing some more. From our point of view it is a really important area of work. Parks obviously has to balance a number of different priorities, financial and otherwise, in making that decision.

MR HINDER: The second part of my question to him was whether a portion of the resources was being put aside for that purpose, which leads me to my next question: as a volunteer organisation with a not-for-profit status, what is the cost of putting a seedling in the ground, transport and—

Mr Wareham: That is a sort of "how long is a piece of string" question, but I appreciate where you are coming from. Working with volunteers is, we think, a cost-effective solution but it is not always a particularly cheap option, in that we like to do those sorts of things properly, and make sure they have the right protective equipment and the right briefing, and that we have the right staff on board to coordinate and manage those activities. So it is not just a case of getting a bus of volunteers and saying, "Off you go. Plant these." Making sure that we do it properly and safely means that there is a cost.

Planting, growing and putting a tube stock into the soil can cost as little as $2 and as much as $14 or $15 a plant. With direct seeding, when you put a seed into the ground it is a much cheaper option because you do not have the infrastructure and all the nursery costs with that, but obviously the survival rates are less and that tends to be why we use specialist bush crew with appropriate machinery to do that sort of activity. That can be less than $1 a plant.

THE CHAIR: There being no further questions, Mr Wareham, thank you very much for your attendance here today. I think you took a couple of questions on notice. If we could have an answer to those within two weeks, that would be much appreciated. When available, a proof transcript will be forwarded to you so that you can check the transcript and make any suggestions should you feel the need. We will have a short break and resume again at 3.15 with the Auditor-General.

Sitting suspended from 2.56 to 3.17 pm.

COOPER, DR MAXINE, ACT Auditor-General, ACT Audit Office
GOYNE, MR BRETT, former performance audit senior manager, ACT Audit Office

THE CHAIR: On behalf of the committee I thank you for attending today. This is the public accounts committee inquiry into report No 3 of 2015, on the restoration of the lower Cotter catchment. We particularly welcome back Mr Goyne, who is not to be mistaken with a "groyne", which we have been talking about in terms of stopping erosion in the catchment. With that, I start by reminding you all of the protections and obligations afforded by parliamentary privilege and draw your attention to the pink coloured privilege statement on the table before you. If you could just confirm for the record that you have read and understand the implications of privilege.

Dr Cooper: I understand it.

Mr Goyne: Yes, I understand it.

THE CHAIR: It is so acknowledged. Thank you very much. I also need to remind you that the proceedings are being recorded by Hansard for transcription purposes as well as being webstreamed and broadcast. Auditor-General, would you like to make an opening statement?

Dr Cooper: Thank you very much. We have actually prepared a brief presentation that provides an overview of the audit for the committee. Mr Goyne, who was the engagement leader for this audit, is here to be part of the presentation. I acknowledge his work and his team's work on this audit, but I acknowledge very strongly also Professor Ian Falconer, who was engaged to assist in the audit as a specialist in water quality.

Could we just go to the next image, please. The lower Cotter catchment was extremely damaged by the 2003 fires, which also burnt 90 per cent of the abutting Namadgi national park. Therefore, the water quality in this catchment was adversely affected. To address the degradation, restoration activities were undertaken by the government, Icon Water, formerly ACTEW, and community members.

The restoration of the lower Cotter catchment audit, which is the subject of today's hearing, examined the management and restoration efforts by the government agencies and Icon Water. To do this we relied heavily upon the lower Cotter catchment management plan 2007, which we will refer to as the strategic plan. It was the key reference document for much of our analysis. Importantly, the plan's vision is clean water, healthy landscapes.

The importance of the lower Cotter catchment has increased with the construction of the enlarged Cotter Dam, completed in 2013, which contains 25 per cent of the ACT's potable water supply and represents an investment of $410.5 million.

Mr Goyne: There is a copy of the cover of the clean water, healthy landscape for the lower Cotter catchment strategic management plan, which was released by the ACT government in January 2007. Later in the discussion we will talk briefly about the specific matters that were covered by that plan and look at how they were acquitted.

In the report there is an addendum at the end which goes into each of the objectives and our view as to how it was achieved or not.

Dr Cooper: That is appendix A.

Mr Goyne: It is important to note when we are looking at the plan that the time horizon for this ACT government plan is up to 100 years. We are now in the ninth year. Some of the objectives were for one to three years. It was not unusual for some of them to be 10 or 20 years or longer. So restoration of the lower Cotter catchment is a major commitment of government over a period of time.

The next slide shows a map of the ACT from the strategic plan and shows the catchments. The ACT was originally laid out based on water catchments, and you see that there is the lower Cotter catchment, the Bendora catchment and the Corin catchment, all forming part of the water supply to the ACT. There is a hatched area, cross-hatched, in the upper right-hand side of the catchment. That is actually the lower Cotter catchment, and that is the area that is specifically related to the plan and to protecting the catchment area for the enlarged Cotter Dam.

The lower Cotter catchment is an area of 5,800 hectares approximately and it is ex-forestry estate. Both that cross-hatched area and some areas outside, below to the east and to the north-west, are where pine forests were established originally.

It is worth noting that the area of the lower Cotter catchment has quite unstable soil and is quite steep in parts. It suffered extensively from overgrazing early in the 1900s and had problems with rabbits. The early solution to that was actually to plant the pine forests. The pine forests were planted to stabilise those soils.

When we looked at governance, which is one of the first sections of the audit, the Australian drinking water guidelines are guidelines for all potable water supplies in Australia. They were actually brought into effect by other ACT legislation, but they are guidelines and they require that each catchment have a management plan. We just pulled three ideas out of that that are important and that are picked up through the audit.

It is important that in the drinking water guidelines the policy explicitly states that the highest goal of that catchment is protection of water quality. It is higher than conservation or other values. It also states that in protecting water it is important that you take a risk management approach. It strongly recommends that there be a strong framework of planning, legislative planning. These three features are borne out well in the ACT's arrangements.

Dr Cooper: Brett will bring it out in the presentation, but I emphasise that it was not clear with the different stakeholders that the highest goal was water quality when we did this audit.

Mr Goyne: Yes. They did not understand that, and when we—

MS BURCH: That is all stakeholders—government and general community?

Dr Cooper: Primarily government. Primarily there were mixtures within government. Some would say, "No, no, no, it's conservation." Others would say, "No, no, no, it's water." That certainly was something that came out. I think if the audit has done anything—hopefully it has done a fair bit—one of the things it really clarifies is that the primary goal has to be water quality and then the others are secondary. And that will come out.

MS BURCH: I think we heard that from some of the TAMS officials today.

Dr Cooper: Yes. I think some of the issues in the management, the conflicts, were simply around not having that made very clear. Also, dealing with the community, when you talk about management plans, we do not think you should start with an opening, "Well, what do you think the goal is?" No. "The goal for this place is this. Given that, then how do we talk around recreation?"

Mr Goyne: Yes. Two agencies in particular, both Icon Water and the Emergency Services Agency, were very pleased to hear that, because it gave them a focus of what we are doing when we are in the catchment.

As we point out in the audit, the planning arrangements in the ACT legislation—in the Planning and Development Act and associated legislation, the territory plan 2008—are very strong and are very clear about that value, that protection of the water is the highest goal.

Within the Planning and Development Act there are management objectives for all public land that are required to be stated, and the three management objectives for the catchment are to protect existing and future domestic water supply, to conserve the natural environment and to provide for public use of the area for education, research and low impact recreation.

That third one, the low impact recreation, was also very useful, because the Cotter has had a history of use by all sorts of different groups that would use the land in different ways for their own recreational purposes. Here in the planning legislation it is clear that all that activity has to be low impact. So it is good guidance that has been established.

We talked about it being ex-forestry estate. One of the decisions that was made early on, in 2008, was that there was a change in the territory plan. In the land that you see there, it is in light blue in the centre. There are three parcels: one surrounded by green and then sort of two white. For those three sections in the centre in the territory plan, a new category of land was created. It was titled "PG", and this was water supply catchment. So it was a significant change from the previous use, which was forestry estate, pine forests.

That has been picked up in other legislation, the new Nature Conservation Act 2014. That now mirrors that and has stated that water catchments are specifically for the protection of water quality.

Moving on to clean water, healthy landscapes, the theme of the strategic plan, turbidity is one of the measures of success for the restoration. Turbid water is water

that has sediments in it, and it is harder to process for drinking water. At a certain point, if it is too turbid, it cannot be processed. Notwithstanding the new facilities that have been built at Stromlo, which upgraded its ability to cope with turbid water, the water needs to be clean enough to actually be able to be processed to be drinking water. One of the measures of success is measuring the turbidity. Different parties have been involved in doing that, including the University of Canberra. Later Dr Cooper will show you a slide that shows a measurement of that turbidity improving.

Landscape recovery and diversity was another measure of success, and native revegetation. The ultimate goal for the lower Cotter catchment in the strategic plan would be to return that land over time to a mixture of forest and grasslands. Grassland is particularly beneficial because it does not take up a lot of water while it is growing and the native forests are more resilient to fire. So that is the long-term goal—a mixture of native forest and grasslands, a savannah, if you like. At times, anything that covers the land is useful, including blackberries.

A big theme in the entire audit has been integrated catchment management, and that is the coordinated planning, use and management of water, land, vegetation and other resources on a river or groundwater catchment. In looking at the audit, there are four audited agencies and one additional agency, emergency services. Integrated catchment management is talked about a lot; it is not an easy thing to achieve. For example, TAMS is the land manager, whereas Icon Water is the water user on our behalf. So it is getting all those parties to link up and to cooperate in delivering the final product.

The four auditees were TAMS, land manager; Icon Water, potable water supply; Environment Protection Agency, environment protection and water policy by legislation, by the Water Resources Act 2007, who also authorise burns within the high risk season; and Environment and Planning Directorate, land planning and water policy and also they assist the Conservator of Flora and Fauna.

We realised as the audit developed that ESA, the Emergency Services Agency, and the Rural Fire Service were important. Professor Falconer pointed out the importance of fire management and also fire risk as a really defining factor in the lower Cotter catchment.

In restoring the catchment there was a deed of agreement reached between the ACT government and Icon Water in 2006 that was signed. That enabled Icon Water to expend money and the ACT government to cooperate. It was a very strong coordination body. It had representation from senior decision-makers, and the fact they were decision-makers was very important. They had money they were able to spend, both ACT and Icon Water's money, and they were supported by a very good operational group who put into practice their decisions. That group ceased in October 2009. There was an intention that a body replace it, but the body that replaced it never had the same ability to deliver that coordinated management. That early work by that group meant that a lot of earthworks, gabions, groynes, roadworks and road closures were done, and they had a big effect. As part of the audit, we looked at what happened after that body ceased to exist, and that led to a recommendation.

Dr Cooper: The opinion of the audit, as stated in the front chapter, is:

> Since the … fires, the natural regeneration of the vegetation cover and the management efforts and resources expended by Icon Water, the Territory and Municipal Services Directorate and the Environment Protection Authority, have been effective in steadily improving water quality and reducing turbidity and sedimentation. However, turbidity problems still occur following heavy rainfall events because of the unstable soils and erosion sites in particular parts of the catchment.

The lower Cotter catchment restoration works since the fires represent a really significant achievement for a cooperative approach across several agencies and the community volunteers. However, it needs to continue. I think that is our major emphasis: a lot of good work was done, but then it seemed to have a pause point. Progress in restoring the lower Cotter has been such that we are now entering what we would call a consolidation and maintenance phase whereby you need to do things a little differently. The changes at these stages are likely to be less dramatically visual than has been the case in the initial restoration stage.

In terms of turbidity, have things changed? The answer categorically is yes. There are examples of the turbidity changes. The units are NTU, which is simply a measure of the amount of suspended solids in a column of water, untreated. You can see there that from 2006 to 2014 there was a significant shift. Also significantly out there is the vegetation change. Yes, some of the vegetation may be weedy, but it is a stabilising influence at this early stage of such a restoration project. And, yes, I think it surprised the experts, from the literature we have read, that the regen of natives is quite as prolific as it is. But it is right next to the national park and maybe the fire storm that went over had the seeds. We are not quite sure of the dynamics, but it is a more spectacular recovery, I think, than a lot of people thought would ever occur.

In terms of looking at the strategic management plan, for that one, the results are pretty good. Out of 29 management actions—and our analysis is all in appendix A, and a summary analysis appears on page 101—of all the things they set out to achieve, they achieved 17, which is about 60 per cent; partly achieved was about 30 per cent—eight; and did not achieve was four. So that is pretty significant. However, some of the management actions were rated as "achieved and ongoing" or "partly achieved and ongoing". Clearly, in developing this plan they knew that you would never actually achieve them in one action. That is pretty significant. We will now talk about risks.

Mr Goyne: We talked about the drinking water guidelines asking for a risk management approach. We looked at the work of Dr Falconer. We looked at the work of the Bushfire Cooperative Research Centre. We looked at the work of Icon Water. There is a territory-wide risk plan. We looked at all of the agencies' risk planning.

One of the conclusions that we came to was that the lower Cotter catchment was exposed to significant risks; that is, despite the improvement in water quality, the significant risks are interrelated and could, under adverse conditions, accumulate and could lead to a catastrophic failure of the water catchment. That "catastrophic" term comes out of the territory-wide risk assessment. It is a consequence. The ultimate risk is the movement of large volumes of unmanaged sediment from unstable soils into the reservoir, increasing turbidity and having a detrimental effect on the water that can be

obtained from that 25 per cent of the potable water storage and that investment of the $410 million.

Wildfire is the most significant risk, which will increase with climate change, and requires persistent and effective management efforts. The controls which regulate public access, access of people to the lower Cotter catchment, in the Auditor-General's opinion, were inadequate and they increase the risk of accidental fire, landscape damage and erosion.

If a fire were to occur and if it was followed by heavy rainfall events, there is a significant risk that the under-maintained and damaged sediment control structures which were put in place largely from 2006 to 2009 could be overwhelmed and ineffective, culminating in high levels of turbidity in the catchment and leading to a loss of water quality and increased cost of water treatment or possibly lack of ability to treat the water.

That was the risk conclusion. Also, we saw that the risks as rated by the different agencies varied, and their understanding of those risks varied. A later recommendation is that they do risk management planning together, so that it would have a coordinating function. If they all recognised the same risks, they would tend to direct their solutions and their resources towards solving those risks and it would give them a hierarchy of approaches to take and the order they should be taken in. That was a really key part of the audit and a key part of the thinking and the governance. It has been taken up well by the agencies, who accepted that that was an issue.

We talked about gully erosion. There are aspects in the lower Cotter catchment where there are significant problems in parts and where remediation will be required over time. Some of that can be quite expensive. Some of that will be difficult to achieve given the nature of the soils that are there. We are fortunate as a territory that the biggest volumes of water going into the enlarged Cotter Dam—if you remember that map—come out of those high montane catchments which are protected in a national park with good cover and good native vegetation, which is more resilient to fire. The volume of water going into the enlarged Cotter Dam is predominantly from there. Some of the more turbid areas are diluted by there being less and lower volume. The report goes into that, and there are some considerations of how much goes through Vanity's Crossing versus how much goes through other parts of the catchment.

THE CHAIR: How deep is that gully?

Mr Goyne: I think it is about three metres. We could go back and look.

THE CHAIR: That is okay; I just wanted an indication. Given the photo does not show up in the transcript, it is quite sad to see the depth and width of that gully.

Mr Goyne: It is mentioned in the report that occasionally there would be references by agencies to areas needing remediation where they would be quite expensive and they had not attempted to remedy.

Dr Cooper: And this is not necessarily the deepest one.

MS BURCH: Remediation of that, if it is a long gully, is not easy.

Dr Cooper: No, and it can be expensive. Also the solution to the remediation may not be to put infrastructure in it right there; it may be to divert somewhere upstream. So it is not a simple matter of saying, "I've got the fix. I'll do it." It will involve the interplay of the variables they have to use.

Mr Goyne: Also on that, on sediment in the lower Cotter catchment, the biggest contributor to sediment is roads. When it was a pine forest it was divided up into coupes or allotments, small blocks, to enable harvesting or management. One of the significant decisions early on was to close many of those roads and to rebuild and redesign those roads, which has been done to reduce sediment. Later in the report we suggest that they need to revisit that because the strategic management plan said to do so. The strategic bushfire management plan suggests that you cannot alter all fire risks. Some risks are just unalterable. But the philosophy is to do early burning in strategic firefighting advantage zones where you can get a maximum benefit. Another philosophy is to get in early when it is safe and possible to do so and put out the small fires. So part of that revision of the road network would be to try and rebalance today that road access.

Dr Cooper: First of all, after the 2003 fires, it was about minimising the roads because of the erosion, but now that vegetation has grown, the key issue then is: how do you get access to different areas to fight fires? So it is a dynamic change.

THE CHAIR: Part of the problem in 2003 was access. In the week leading up to the 18th, we were busy cutting roads.

Mr Goyne: Yes.

Dr Cooper: It is about getting that nice balance.

Mr Goyne: In fact, we believe the audit has assisted ESA in some of their approaches there—the importance of that access.

Dr Cooper: It does intersect with the audit we did on ESA previously. So they are very complementary audits.

Mr Goyne: Dr Falconer brought to our attention—and it is known by the Bushfire Council, the Rural Fire Service and ESA—that the lower Cotter catchment was previously forestry estates. There has been some regrowth of pine wildlings.

Dr Cooper: If you go to page 98, the image on that really is quite powerful in terms of the challenge out there.

Mr Goyne: If you get those pine wildlings when they are little, tiny seeds, you can tear them out by hand, and volunteers can do it. Once they regrow, they can become quite impenetrable. There is an area called the Blue Range, which is to the north and west. I know that you are quite familiar with them yourself and you have mentioned it before. It has been well understood by ESA and TAMS. Their management efforts were frustrated by wet years when they could not actually get in. Three of the four

years leading up to 2015 were quite wet in the burn season. The Blue Range is a signal example of steep slopes, difficult access, a mixture of regrowth of very thick pines and native timber. It is a difficult problem to solve. That is one of the things that we brought up in the audit.

Also, to the south and east there are two other patches of pine forest which are of a similar nature. The strategic plan suggested that you cannot do everything at once. It suggested that these are longer range decisions. At some stage in the future we need to address those three areas. The government response has put money towards addressing some of that, and TAMS were well advanced with planning for looking at how to deal with it. Because of the steep slope and the proximity to rivers, if they do burn or chain with bulldozers, it is not a simple process to clear that.

Dr Cooper: We made 12 recommendations—three high priority. With the high priority ones we felt every effort should be made to do them first. They were around reviewing the management and coordination arrangements—in other words, have those who control what is going on get in and control things; the development of a cross-agency specific to the lower Cotter catchment risk plan, so that everybody is talking about how they are managing the same risks; and, given the investment that has gone into this area, remediation of sediment control structures. So that they do not continue to deteriorate, you invest in those. We felt that if you had to pull some levers to really make a difference, they would be the big ones.

That does not lessen, we hope, the importance of the other recommendations, which were around developing a code of catchment management, reviewing a management agreement, looking at all the different practices, finalising plans of management and removing the pine regrowth that is not in the right place and reviewing the road and fire trails. The last recommendation was around somebody having an independent watching brief so that things continue to be implemented. We recommended that the Commissioner for Sustainability and the Environment take on that particular role.

The government have responded. They have accepted all of the recommendations. We assume action is occurring according to that acceptance. They have committed $7.7 million over four years for the lower Cotter. In terms of where people can get access to our report, it is on the Auditor-General's website. This audit was a moderate-size audit that took nine months. It cost $334,000 for this particular audit. It was characterised, I think, by an enormous amount of cooperation and interest by all the agencies. There was an enormous amount of discussion, meetings and sharing of information so that by the time we put the report to the Assembly the agencies all knew what the issues were and had started to think about how they could address some of them.

Importantly, too, as part of that, as Brett mentioned, we had many discussions with the ESA commissioner because it became very clear that if fire is a key, extreme risk in this area he needed to have a place at the table very firmly. Although we did not identify him as an auditee, we certainly respected listening to him and receiving his advice.

Mr Goyne: That is our formal presentation, and we welcome your questions.

THE CHAIR: Thank you for that. With the Blue Range and the wildlings, how important is it that it be controlled and how quickly should it be done?

Dr Cooper: Given that it is on the north-western side of the city where the major winds come from, we think it is absolutely critical. We respect that it is a difficult problem but it is a problem that should be continually worked on. It is not just about the lower Cotter; it also has a knock-on impact into the urban area.

Mr Goyne: As part of the announcement on 20 May by the minister for TAMS, $5.1 million of that $7.8 million was for fire management activities in the lower Cotter catchment. We believe some of that should definitely be directed towards the Blue Range plan.

MS BURCH: Building on that, we heard from TAMS this morning. Everyone recognises that Blue Range and the wildlings are a problem, and they are trialling a few removal options. Like you say, you get in early and you can just pull them up, but now it is beyond that. They are looking at how best to do it because of all of those ripple and bang-on effects. A comment was also made that whilst ideally you get rid of all the wildlings and have native vegetation, it is acceptable through a transition phase to have some pine, as long as there is good cover. I do not know whether you have a view on that or not.

Dr Cooper: Audit would say water quality is the key objective. In order to protect that water quality, you may have to put up with weeds for some time while you get native regeneration. That is far better than having the sediment move. It is a very difficult challenge. I think that answers it. It goes back to the primary objective being water quality.

MS BURCH: The other one we heard this afternoon is that the Minister for Planning and Land Management now will have carriage of collating and coordinating the various responses for agencies. That would go to your point about coordination?

Dr Cooper: Absolutely. We know they have coordinating bodies for catchments that look across the border and there is a lot of money. But in terms of this being a strategically important one, we felt strongly it needed its own detailed focus so that on the agenda for any particular committee meeting it was not just an item; it was the central thing. Clearly, what has happened is that it was focused, there were a lot of activities and then, all of a sudden, other priorities took over.

MS BURCH: I get a sense there is an expectation that this work is ongoing.

Dr Cooper: Absolutely.

MS BURCH: Yes. Through different phases, but there is a new set of work to be done?

Dr Cooper: That is right. It is like the development of our city. I would give as the analogy the fact that a city continually goes on needing to have some focus and emphasis to develop. You need this here. It is not a self-sustaining landscape as you might get up in Namadgi where it is all native and has not been subjected to all the

different changes over time.

MS LAWDER: First, I want to clarify my understanding of something you said earlier when you talked about turbidity as a measure of success.

Mr Goyne: Yes.

MS LAWDER: Do you mean being able to measure turbidity or lower levels of turbidity?

Dr Cooper: Lower levels.

MS LAWDER: In the graph in figure 3.1 about the Cotter turbidity levels from January 2006 to January 2014, which I think Professor Falconer might have provided, presumably the peaks coincided with large rain events, either exactly or quite closely.

Mr Goyne: Yes.

MS LAWDER: The lower levels in the more recent times—were there any large rain events but our turbidity levels are still improving because of the erosion control measures?

Dr Cooper: The latter. You are right on the latter. So you have got, be it weeds—

MS LAWDER: So you did correlate it against the large rain events?

Dr Cooper: That is right. To help you out there, 0.2 is generally the turbidity you would accept in drinking water.

Mr Goyne: I will just check that.

Dr Cooper: Let me check. The maximum is, I think, 0.5. So with these measures, the turbidity is quite high. We will just check with that if you want a precise figure.

Mr Goyne: I think it is up to 20.

Dr Cooper: No, 0.2. NTU less than 0.2 and not to exceed 0.5. That is at page 81 in the footnote.

MR HINDER: Is your scale on that chart 10 per cent or is that 0.1?

Dr Cooper: Sorry?

MR HINDER: The "NTU" on your graph.

Dr Cooper: They are actual units; they are the units they measure it in.

Mr Goyne: We do give a scale for that. The picture that you see there is water that is acceptable for drinking—below 20 is definitely manageable and acceptable for drinking and for management by the Stromlo water management area. I think it is

further back at the start of the audit that we give the range. Yes; here we go.

Dr Cooper: There is one. I have taken it from the report. I think I might be right, if I can just find where it is, because I thought you would ask that question.

Mr Goyne: Yes, page 30.

THE CHAIR: The footnote is on page 10.

Dr Cooper: Thank you for finding that. Yes, it is 0.2.

MS LAWDER: I have asked this question of others today, and you have clarified, of course, that water quality is the overarching goal of the strategic management plan.

Dr Cooper: It is not audit's opinion; it is based on all the legislation—everything.

MS LAWDER: What I have asked others about was weeds coming in, such as African lovegrass. That can have an erosion control function because it has got quite good root structure, but, on the other hand, it is highly inflammable. Bushfire is one of the other greatest risks to water catchment areas. Do you have a view about encouraging native species as opposed to managing weeds to ensure water quality?

Dr Cooper: I think I would leave that to the on-ground experts. They, of course, have a very challenging task, but they would have to weigh it up in terms of management for particular sites.

Mr Goyne: Blackberries are probably the most common issue. Blackberries are commonly associated with pine forests. I understand that from talking to both ESA and TAMS. In the riparian, in the river bank, zones of the lower Cotter catchment, blackberries are a problem, and they require spraying. They are hard to remove. In the ACT weed plan you cannot actually exterminate blackberries but you can control them. And yet a blackberry-covered riparian or river zone is preferable to a dirt river zone because it stabilises the banks. And it is one of those—

Dr Cooper: Wicked problems.

Mr Goyne: Yes.

Dr Cooper: It is an absolute wicked problem, yes.

THE CHAIR: Mr Hinder, to finish off.

MR HINDER: I have read Professor Falconer's submission, and his two issues were about an agency and funding. Minister Gentleman has talked today about the conservation agency within the EPD being the lead agency, so that probably satisfies that. Then there is the $7.7 million, although I think Mr Iglesias was referring to an $8 million odd fund that he had been provided with. He went on to talk about in particular the impending trial in the Blue Range for the removal of those pine growths. He also talked about the roads and how they have used some of that funding to close some of those roads, particularly the ones that run downhill into the water catchment,

which is now at a much higher level, and the fact that they had rehabilitated those to grass for the purposes of reducing the turbidity of that flow.

A lot of the issues that you have raised appear to be well on the agenda and well underway as you have rolled through what is now slightly old information, in my mind at least, in terms of the other evidence we have heard. They seem to have a great understanding of a lot of those things. Clearly, the government has accepted all of the recommendations. Do you have a function where you actually go back and review, or is your work here done?

Dr Cooper: Our work here is done, but we are always interested. Again, we do seven performance audits a year. We could actually go back and audit the way things are being implemented according to what has been agreed, but we mostly focus on areas that are not audited. It has to do with the magnitude of our program.

MR HINDER: Yes, of course, and that was their issue also. Resources are always an issue. There is no aspect of government that cannot accept more cash.

Dr Cooper: Exactly, and that is why we thought it was efficient to say that the Commissioner for Sustainability and the Environment, who has an ability to give advice to the minister if the minister so seeks, be the one that does a regular look at this.

MS BURCH: Or, indeed, this committee could ask for updates from the various agencies.

Dr Cooper: Absolutely. We are all part of a system, are we not?

THE CHAIR: It would appear that is the end of our time and the end of our questions. Thank you very much for your appearance today. Thank you for the initial report that prompted this inquiry. We will forward you the transcript when it is available so you can peruse it. If you have any corrections or suggestions you would like to make, we would gratefully receive them. With that, the public part of the hearings is now over.

The committee adjourned at 3.57 pm.