LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ENVIRONMENT, CLIMATE CHANGE AND BIODIVERSITY
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Submission Cover Sheet

Inquiry into ACT environment's Bushfire preparedness

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Submission to the
Inquiry into the ACT environment's bushfire preparedness
Standing Committee on Environment, Climate Change and Biodiversity

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Background

I am making this submission in my own right as a Canberra citizen who has extensive knowledge and experience in bushfires and the management of public land to risks of and impacts from bushfires. I want to declare that I am a member of the ACT's Multi-Hazard Advisory Council and was previously a long-term member of the ACT Bushfire Council. I am making this submission personally, not as a member of the Multi-Hazard Advisory Council.

I have been actively involved in forest fire management and suppression of bushfires for more than 40 years. Before 2000, I worked for 29 years in the Victorian Government's forest management agencies, including being the Regional Fire Protection Officer in East Gippsland and performing the role of Incident Controller at many large wildfires. I was the Director of ACT Forests from 1999 to 2005 and a former Deputy Chief Fire Control Officer in the ACT Bushfire Service at the time of the 2001 and 2003 bushfires I was actively involved in the Coronial Inquiry into the 2003 Canberra bushfires, including making 35 recommendations in a submission, most of which were included in the Coroner's recommendations. I was awarded the Australian Fire Service Medal in 2006.

In summary, I consider that the ACT is much better prepared to deal with bushfires than it was in 2003, having implemented major changes to both forest fire management practices and its systems for implementing more effective bushfire suppression operations. However, I have significant concerns that some aspects of the hard learned lessons from 2003 are now being overlooked or diminished and that the current collective bushfire management strategies in the ACT will not be adequate when the next major bushfire occurs. It is my considered view that just doing more of the same, or less of the same as appears to be occurring, will be found to be wanting when Canberra is next threatened by a severe bushfire.

I wish to make comments relevant to five of the Terms of Reference for this Inquiry. I also want to record that many of the issues discussed in this submission were also presented orally to the ACT's Standing Committee on Public Accounts during its Review of the Auditor-General's report No 5 of 2-13 on bushfire preparedness on 17 October 2014. A transcript of that evidence is on the public record at: https://www.hansard.act.gov.au/Hansard/8th-assembly/Committee-transcripts/public22a.pdf

Summary of Key Points and Recommendations

The overall risks to the ACT community from severe bushfires are increasing, partly because the ACT's population has doubled in the past 20 years with a large proportion of the new housing being located on the western and northern edges of the Canberra urban area. There are equally great risks to the resilience of much of the ACT's flora and fauna, particularly to the fire-sensitive vegetation communities, from repeated exposure to high intensity wildfires, which reoccur before the ecosystems have adequately recovered from a previous wildfire. The ACT should seriously consider developing the capacity to artificially regenerate sites of fire sensitive vegetation that are killed by intense wildfire and unable to regenerate naturally.

A failure to implement a key Action under SBMP v4, to improve the assessment and management of bushfire risks across multiple land tenures in the Molonglo valley, indicates that there are weaknesses in the current arrangements within the ACT government related to the management of bushfire risks and bushfire preparedness. The ACT Government should take action to fast-track the implementation of Action 2.6 under SBMP. It should also consider the adequacy of existing mechanisms for accountability and monitoring of the implementation of the SBMP.

Clear evidence exists in the ACT, following the 2020 Orroral Valley bushfire, of the benefits from prescribed burning on reducing fire severity in the forests within Namadgi National Park. Over the past seven years the level of implementation of prescribed burning on public land has been steadily reducing, contrary to the 2003 bushfire inquiries recommendations. To address this major problem, the ACT Government needs to provide clear policy signals that under SBMP v5, the aim should be to implement an annual average of 5-6,000 hectares of prescribed burns for hazard reduction and ecological purposes during each 5-year period and provide adequate funds to PCS to achieve this program. It should also revisit its response to Recommendation 7 in the ACT Bushfire Council's 2021 Bushfire Preparedness Report.

Trials in the Brindabella Ranges have shown that the use of an aerial drip torch to light prescribed burns in mountain forests could double the number of days in a year when prescribed burning can be implemented. Given the effectiveness of this technology, the ACT should purchase an aerial drip torch for its own use as a matter of priority.

The current passive management strategy in both Namadgi National Park and Canberra Nature Park is causing many areas of forest to increase in density and develop substantial understorey components that together increase bushfire hazards substantially. To address these problems, the ACT Government needs to consider the implementation of ecological thinning and enhanced implementation of prescribed burning in its conservation reserves.

Many of roads in the ACT's Strategic Fire Access Network are currently either unfit for purpose or in a condition that compromises the ability of fire suppression equipment and personnel to access a going bushfire in a rapid and safe manner. The inability to transport large bulldozers along about 35 km of the Mt Franklin Road is a very serious problem after a decade of work to upgrade this road to rigid float standard. The ACT Government should properly investigate why this has occurred and implement a

program before the next bushfire season to return the Mt Franklin Road to rigid float standard. The ACT Government needs to substantially increase the funds allocated for Strategic Fire Access road maintenance to enable about 800 km of these works to be implemented annually. The ACT Parks and Conservation Service needs to maintain a staff member with the appropriate technical skills and experience in managing roading programs and the contractors who implement the works.

The level of bushfire protection for the suburb of Denman Prospect is seriously compromised by the ongoing existence of extreme fire hazards in the red stringybark forest in the adjacent Bluetts Block. Despite this issue being of concern to the previous Bushfire Council for a number of years and the apparent inconsistency with fire protection strategies implemented in the adjoining Stromlo Forest Park, the current planning processes across and within government agencies have not been able to resolve this problem. The ACT Government must take steps to ensure that required thinning and prescribed burning activities are completed before next summer.

Having a high-quality strategic assessment of bushfire risks has to be a key component of planning for all new areas or residential development on the western side of Canberra. The preliminary bushfire risk assessment for the Western Edge Study Area, prepared by a consultant in 2021, was considered to be very inadequate by the previous Bushfire Council. The ACT Government needs to commission a new strategic assessment of bushfire risks on rural lands to the west of Canberra.

The Strategic Bushfire Management Plan has an objective and actions related to adaptive management to enable continuous improvement in bushfire management. However, no such lesson learning review has been undertaken since the 2020 bushfires. Therefore, the current process to review and update the Strategic Bushfire Management Plan will not be well informed by an effective evaluation of the current fire management strategies. The ACT Government should reconsider the Multi-Hazard Advisory Council's recommendation for an independent analysis of fire management programs since 2003, that was made in its 2023 report on the ACT's bushfire management since 2003.

It appears that currently some of the recommendations from the two 2003 bushfire inquiries are no longer being complied with while others are only being partially complied with. This situation needs to be reviewed to avoid many of the issues that contributed to the 2003 bushfire outcomes being found to have occurred again.

C. Bushfire risk, resilience and potential impacts, including the impact of bushfire on the ACT community, wildlife and flora.

The ACT has a history of being periodically impacted by bushfires, (e.g. 1920, 1939, 1952, 1979, 1983, 2001, 2003, 2020), and it is at increasing risk of severe bushfires as a result of climate change. The occurrence of bushfires on Black Mountain in 1953 and 1991, together with the multiple fires on Christmas eve of 2001 provide an important reminder of the ongoing risk of a significant bushfire occurring right in the middle of the Canberra urban areas. The 2003 and 2020 bushfires highlighted very clearly the magnitude of the risks to the ACT community and to environmental values, particularly those within Namadgi National Park. The fact that such a large proportion of the ACT's largest conservation reserve has been burnt severely twice in 17 years is a strong indication that the risk of repeated large-scale high intensity bushfires is increasing.

The overall risks to the ACT community from severe bushfires are increasing, partly because the ACT's population has doubled in the past 20 years with a large proportion of the new housing being located on the western and northern edges of the Canberra urban area. These are the areas that are most likely to be impacted by large-scale fast-moving bushfires, which either come out of the Brindabella Ranges and through rural lands east of the Murrumbidgee River or from grassfires in the Wallaroo or Spring Range areas of NSW.

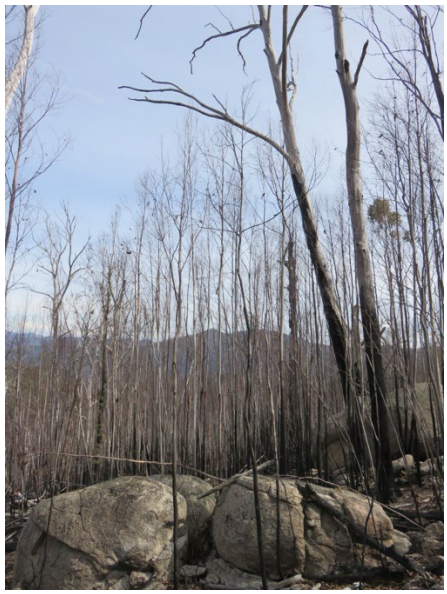
There are equally great risks to the resilience of much of the ACT's flora and fauna from repeated exposure to high intensity wildfires when they reoccur before the ecosystems have adequately recovered from a previous wildfire. The fire sensitive vegetation communities of the Brindabella Ranges, such as alpine bogs, snow gum woodlands and alpine ash forests are at particularly high risk of experiencing severe environmental impacts from these wildfires.

I understand that the impacts of the 2003 and 2020 wildfires on these fire sensitive communities has been studied and that a report on the impacts was prepared about two years ago. My understanding is that the impacts on communities such as the alpine ash forests have been very severe, with the loss of a substantial proportion of this ecosystem occurring as a result of experiencing a second severe wildfire before the regeneration from the 2003 wildfire had reached seed producing maturity.

It is unclear to me why the report of the impacts of the 2003 and 2020 wildfires on Namadgi's fire sensitive vegetation communities has not yet been released. I am quite concerned that the ACT does not appear to be acknowledging this environmental problem or to have developed new strategies, to both better protect the fire sensitive plant communities and to enable the ACT to implement artificial regeneration of fire killed fire sensitive communities. In contrast, Victoria's public land management agencies have been implementing these types of artificial regeneration activities following severe bushfires since and has managed to successfully regenerate about 23,000 hectares of young montane ash forests killed by wildfire since 2003. Without such programs, large scale ecosystem change is occurring in the ACT.

My personal observations of burnt alpine ash forests in Namadgi National Park indicates that these undesirable ecosystem changes are occurring, as evidenced by the following photos.

ACT Alpine Ash 2003 regrowth in 2010.



Same ACT site following 2020 bushfire.

The ACT should seriously consider developing the capacity to artificially regenerate sites of fire sensitive vegetation that are killed by intense wildfire and unable to regenerate naturally. Decisions on whether or not to implement such programs must be made in advance of a wildfire occurring, because in order to implement such a program there needs to be an adequate stock of suitable seed in storage. For example, if the ACT wanted to be able to artificially regenerate 2,500 hectares of fire killed alpine ash forests it would need to have 1000 kg of alpine ash seed in storage.

D. Management of bushfire risks and bushfire preparedness of ACT parks, reserves and other open spaces.

I wish to make comments on two matters: the preparation and planning for bushfires; and the importance of implanting an adequate program of prescribed burning.

i) Preparation and Planning for bushfires in the Molonglo River Corridor

During the public consultation period in 2019 for the development of Version 4 of the Strategic Bushfire Management Plan (SBMP) various community members raised concerns about the adequacy of the current arrangements for reducing risks of bushfires both to the emerging suburbs in the Molonglo Valley and the existing suburbs in Weston Creek. To address this concern a new Action (2.6) was included in SBMP version 4. A commitment was made to develop a program to coordinate and prioritise bushfire operations across rural lands and river corridors.

In essence the problem raised by the community is that the area of land around the Molonglo River between the Murrumbidgee River and the suburbs of Kambah and Holt is managed by a lot of different land managers and there is no holistic plan for identifying the bushfire risks and the actions to reduce these risks. My understanding is that to date, four years after the approval of SBMPv4, there has been no substantial progress made to implement the identified SBMP Action.

This area has a well know bushfire history (2001 and 2003 being the most recent bushfires) and in the future because of increased residential development a greater number of residential properties will be exposed to these risks. Without having a coordinated bushfire management plan for these areas, the current approach of individual agency Bushfire Operational Plans and multiple Farm Firewise plans presents a serious risk that there will be gaps in the level of protection should a bushfire occur in this area.

This suggests that there are weaknesses in the current arrangements within the ACT government related to the management of bushfire risks and bushfire preparedness. To address this problem, the ACT Government should take action to fast-track the implementation of this approved strategic action under SBMP. It should also consider the adequacy of existing mechanisms for accountability and monitoring of the implementation of the SBMP.

ii) Prescribed burning achievements in the ACT

Background:

On public land, particularly on areas of native forest, implementation of prescribed burning is the most effective activity available for reducing fuel hazards over large areas. The inadequate implementation of prescribed burning was a major issue considered in both the McLeod Inquiry and the Coronial Inquiry following the devastating 2003 bushfires. Both these Inquiries made recommendations about the importance of

significantly increasing the level of prescribed burning undertaken on public land in the ACT.

The McLeod Inquiry Report, published in August 2003, recommended that:

- The ACT Bushfire Fuel Management Plan should be reviewed in the light of changed circumstances since the January 2003 fires. Increased emphasis should be given to controlled burning as a fuel reduction strategy. (Recommendation 1)
- An annual audit of achievements under the Bushfire Fuel Management Plan should be conducted, with the results reported to government and published. (Recommendation 4)

The Coronial Inquiry Report, published in December 2006) recommended that:

- A hazard-reduction program be introduced, involving regular and strategic burning in all areas of the ACT – including the catchment areas – with a view to having fuel-reduced areas in a pattern across the landscape, excluding only small areas of particular ecological or conservation importance. (Recommendation 32)
- The Strategic Bushfire Management Plan provide for a fuel reduction regime in the 'Land Management Zone' (which covers about 70% of the ACT) that is equivalent to that contemplated for corridors designated as the 'Landscape Division Zone' (now called the Landscape Management Zone) and that the regime involve burning areas in rotation to achieve an appropriately varying fire age spectrum across the entire landscape. (Recommendation 34)

In the aftermath of these two Inquiries, the ACT Government accepted all four of these recommendations.

The previous ACT Bushfire Council monitored the planning and implementation of prescribed burning programs annually and included details of the achievements and any comments or recommendations in its annual report on Bushfire Preparedness to the Minister for Police and Emergency Services, with each of these reports being on the public record and posted on the ESA website, together with the responses from the Minister.

The Bushfire Council's 2021 Bushfire Preparedness Report[1] presented details of the level of achievements over the previous five years against each category of activity under the EPSDD Bushfire Operational Plan. That enabled monitoring to occur over an appropriate time frame to take account of any weather-related challenges that occur in different years. That Bushfire Preparedness Report also summarised the implementation of prescribed burning on EPSDD managed land over the previous 10 years and presented that data as Table 2 (reproduced here):

[1] https://esa.act.gov.au/sites/default/files/2022-03/Bushfire%20Preparedness%20Report%202021.pdf

TABLE 2 - Prescribed burning achievements by EPSDD over the past 10 years

Period 2011-12 to 2015-16		Period 2016-17 to 2020-21	
2011-12	5,316 ha	2016-17	504 ha
2012-13	12,452 ha	2017-18	2,004 ha
2013-14	502 ha	2018-19	5,082 ha
2014-15	5,328 ha	2019-20	5,289 ha
2015-16	6,663 ha	2020-21	1,561 ha
5 Year Total	30,261 ha	**5 Year Total**	14,440 ha
Annual Average	6,052 ha	**Annual Average**	2,888 ha

This data clearly shows that the area treated by prescribed burning has been decreasing over time. The previous Bushfire Council's analysis of the significance of this information, as reported in the 2021 Bushfire Preparedness Report, is reproduced below:

> The data presented here suggests that, even allowing for seasonal and block size differences, there has been a very significant decrease in the prescribed burning achieved in the most recent five-year period. In the 5-year period from 2011-12 to 2015-16, PCS achieved an annual average of 6,052 hectares of prescribed burning. In the 5-year period from 2016-17 to 2020-21, PCS only achieved an annual average of 2,888 hectares of prescribed burning. This represents a 52% reduction on the previous 5-year annual average. The reasons for this reduction in the 5-yearly program of prescribed burning are not clear to Council, but it could relate to budget pressures and/or increasing constraints on the implementation of the planned burns. Both these issues have been raised as matters of concern by the Council in previous annual preparedness reports. Council considers that this matter should be further considered, preferably with some independent analysis, given the increasing likelihood of the ACT experiencing more frequent and more severe bushfires under the predicted climate change scenarios.

In its 2021 Bushfire Preparedness Report, the Bushfire Council made two recommendations related to prescribed burning. They are reproduced below:

> **Recommendation 7:**
> That the Minister commission an independent review of the effectiveness of prescribed burning on land managed by the Parks and Conservation Service, taking account of the lessons and impacts from the Orroral bushfire, with a view to recommending a balanced future program of hazard reduction and ecological burns to limit the undesirable impacts from severe bushfires on built assets, water catchments and ecological values.

Recommendation 8:
That the ACT Government reconsiders the cut the PCS fire management budget by 13% and conducts an independent review of the budget and other constraints that impact on the ability of the Parks and Conservation Service to achieve the level of prescribed burns and other important fire management strategies approved under Bushfire Operational Plans within a 5-year period, taking account of cost increases and the additional bushfire risks associated with both an expanding urban footprint and climate change.

The ACT Government's response to the recommendations made by the Bushfire Council is also publicly available[2]. That response document shows that neither of these two recommendations were agreed to be the ACT Government.

Since the changes made in 2022 to the *Emergencies Act, 2004*, that changed the Bushfire Council into a Natural Hazards Advisory Council, those annual reports on Bushfire Preparedness are no longer being prepared. As a result, there is no longer an independent mechanism for reviewing and reporting the achievements against planned prescribed burning.

In my personal view, the absence of independent monitoring of prescribed burning implementation presents a risk to the ACT that, over time, there will be inadequate implementation of prescribed burning and no clear mechanism for the community to become aware of that situation. Such an outcome will increase the risk of severe bushfires recurring in the ACT, which will cause significant negative impacts to the ACT community and its environment. The data on prescribed burning achievements on public land over the past three years is not easily sourced. However, my understanding is that the average area annually treated by prescribed burning in the ACT over the past three years has fallen to less than 1,000 hectares. Given that the ACT has more than 150,000 hectares of public land, the current level of prescribed burning no longer seems to be consistent with the recommendations from the 2003 Inquiries.

In summary, despite having a very clear policy basis for increasing the extent of prescribed burning undertaken on public land, the impetus for implementing the Inquiries' recommendations on prescribed burning has steadily declined over the past seven years to the point where at the current level of implementation it will take about 75 years to implement prescribed burning on half of the ACT's public land estate. To address this major problem, the ACT Government needs to provide clear policy signals that under SBMP v5, the aim should be to implement an annual average of 5-6,000 hectares of prescribed burns for hazard reduction and ecological purposes during each 5-year period and provide adequate funds to PCS to achieve this program.

Why is prescribed burning so important?
Of the factors that influence bushfire behaviour, it is only fuel loads within forests and grasslands that can be manipulated through management practices, including through

[2] https://esa.act.gov.au/sites/default/files/2022-03/Response%20to%20ACTBFC%202021-22%20Preparedness%20Report%20Recommendations.pdf

the use of prescribed burning, mechanical treatment of woody fuels or slashing. Prescribed burns are planned and conducted to achieve specific management objectives under defined weather conditions and they vary in size from a few hectares to thousands of hectares.

While some commentators on the merits of prescribed burning focus on its effectiveness in reducing losses of built assets, forest fire managers know that there are four key reasons for conducting prescribed burning in relation to managing fuel hazards:

1. Protection of built assets and critical infrastructure;
2. Increasing the probability of success of direct fire suppression operations while fires are small in areas where it has been undertaken within the past 5-7 years;
3. Enhancing the options and practicality of conducting indirect suppression operations when initial suppression operations fail, when implemented in proximity to strategic fire trails;
4. Reducing the severity of wildfires in parts of large-forested landscape and thereby providing flora and fauna refugia in landscape-scale wildfires.

When large landscape-scale bushfires burn over prolonged periods, fire intensity generally varies considerably, depending on the prevailing weather conditions, the topography, the nature of the vegetation being burnt and the level of available fuels. Following the 2020 Orroral Valley bushfire, It is quite clear that the areas of Namadgi National Park, that had been subject to prescribed burning in recent years, burnt in a much less severe manner than areas that had not been prescribed burnt. Ironically, some forest areas adjacent to Corin Dam that were burnt in a very severe manner, had been excluded from a prescribed burn area, due to concerns that prescribed burning might lead to soil erosion that would impact on water quality in the dam. The difference in fire intensity, as a result of the 2020 Orroral Valley bushfire, within and outside areas subject to prescribed burning is clearly evident in the following two photos.

Green areas were prescribed burnt

Fire intensity in areas excluded from burns

Research has also demonstrated that prescribed burning can have an impact on reducing fire severity during large bushfires. Hilsop *et al*. (2020)[3] undertook a quantitative assessment of the effectiveness of fuel-reduction burning in reducing fire severity within areas burnt by the 2019–20 Black Summer bushfires in NSW and Victoria, by examining 307 fuel-reduction burn sites, that were over 200 hectares in size and which had been undertaken in the last five years. They found that about half of the prescribed burns resulted in statistically significant decreased fire severity. more recent fuel-reduction burns had a greater impact, with 66% of one-year-old burns significantly reducing severity, compared with 42% from five-year-old burns. In another study on the effects of prescribed burning during the 2019-20 bushfires in Victoria, Collins *et al* (2023)[4] found that prescribed burning decreased the occurrence of fires that defoliate the canopy for up to 3–5 years in shrubland, 3–8 years in open forest and 5 to >8 years in tall-open forest.

The role of technology in increasing days suitable for prescribed burning

In recent years concerns have been raised that, as a result of climate change, the number of days each year that are suitable for the implementation of prescribed burning will decrease. It is too early to know to what extent this will occur.

Forest land managers are able to utilise innovative technologies to extend the number of days on which prescribed burning can be undertaken. In the 1980s, aerial drip torch technologies were used to improve the efficiency and safety of implementing high-intensity regeneration burns in native forests of Victoria, following logging operations. At that time, this technology was not used to any great extent during the implementation of low intensity prescribed burning. Since 2020, NSW's Parks and Wildlife Service has been trialling the use of an aerial drip torch, attached to a light helicopter, to implement prescribed burning in mountain forests of the Brindabella Ranges[5].

[3] Hislop, S., Stone, C., Haywood, A. and Skidmore, A. (2020). The effectiveness of fuel reduction burning for wildfire mitigation in sclerophyll forests*. Australian Forestry, 83:4, 255-264.*

[4] Collins, L., Trouvé, R., Baker, P.J., Cirulus, B., Nitschke, C.R., Nolan, R.H., Smith, L. and Penman, T.D. (2023). Fuel reduction burning reduces wildfire severity during extreme fire events in south-eastern Australia. *Journal of Environmental Management*, *343*, p.118171.

[5] https://theaustralianalpsnationalparks.org/wp-content/uploads/2021/05/ALPS-eblast-69.pdf


Aerial Drip Torch and Prescribed burn implementation (photos ex Ian Dicker NWPS)

Using conventional techniques to implement prescribed burns, the following prescriptions were used to achieve effective burn results:

Parameter	Prescription
Temperature	18-25 °C
Humidity	≤ 45%
Fuel Moisture	11-14%

When using an aerial drip torch the following prescriptions achieved effective burn results:

Parameter	Prescription
Temperature	≥ 11 °C
Humidity	≤ 60%
Fuel Moisture	16-18%

This meant the land managers were able to implement effective prescribed burns under much cooler and damper conditions than when they used the conventional techniques. The use of this technology to light prescribed burns in mountain areas could double the number of days in a year when prescribed burning can be implemented.

The ACT Parks and Conservation Service trialled the use of the NSW aerial drip torch in autumn of 2023 to commence a prescribed burn in the northern part of Namadgi National Park. However, they had to return the equipment to NSW before that prescribed burn was completed. Given the effectiveness of this technology, the ACT should purchase an aerial drip torch for its own use as a matter of priority.

E. The condition of ACT parks, reserves and other open spaces, including consideration of fuel loads and emergency access.

I wish to make comments on two matters: the increasing fuel loads associated with changed vegetation structure; and the condition of the Strategic Fire Trail Network.

i) Changing forest structures and increasing fuel loads

The predominant strategy that is used in ACT parks and reserves is passive management, under which the ecosystems are largely left alone in accordance with the philosophy that passive management will achieve effective conservation of the forest ecosystems. In recent times, ANU scientists[6] have been suggesting that peak flammability of native forests occurs in forests between 10 and 70 years after disturbance by logging or burning and to address this we need to limit further disturbance-based management such as logging or prescribed burning so that the forest can transition to an older less flammable state. In my view this philosophy is not based on properly replicated scientific studies across the range of Australian forest ecosystems, nor does it not match the lived fire experience in the ACT's forests, including both the fire-sensitive alpine forests and the long unburnt dry forest types in southern Namadgi National Park. Moreover, it is increasingly acknowledged that Aboriginal people used managed fire (currently termed cultural burning) for a variety of purposes across most Australian forest types, which meant that the structure of the forests were very different to that which we see in protected forests today.

When forests are managed passively, they invariably become less open as a result of major increases in the number or eucalypt trees per hectare and in the density of understorey plants. This situation is currently occurring in both Namadgi National Park and many of the reserves that make up the Canberra Nature Park. For example, in the Red Hill Nature Reserve, under a largely passive management approach, the density of eucalypt trees has significantly increased since 2001, with some areas now carrying more than 5000 trees per hectare (5 times the density of pine plantations), and over the past three years the density of understorey plants, such as *Cassinia aculeata*, has also increased. The open grassy red gum-yellow box woodlands, for which this reserve was well known, are disappearing and the bushfire hazards and risks are increasing substantially. These two changes in the vegetation are evident in the following photos:

[6] Lindenmayer, D. and Zylstra, P. (2023) Identifying and managing disturbance-simulated flammability in woody ecosystems. *Biological Reviews*. doi: 10.1111/brv.13041

Red Hill dense eucalypt regeneration

Red Hill very dense understorey vegegation

Most of the Red Hill Nature Reserve was burnt by wildfire in 2001 and since then prescribed burning has been conducted in only a few small areas. The fuel hazards in this reserve have changed substantially and as a result any wildfire that occurs will burn fiercely and where there is dense understorey vegetation the flames will be carried up into the tree crowns. At present there are no scheduled activities under the EPSDD Bushfire Operational Plan to reduce fuel hazards within the Red Hill Nature Reserve. In fact, no such activities were included in the most recent version of the PCS Regional Fire Management Plan, despite me raising concerns during the consultation that fuel hazards were changing on Red Hill and therefore some activities should be planned during the period 2019-2023.

In the Brindabella Ranges, including the areas of Namadgi National Park north of the area that was burnt in 2019-20, there is an increasing risk of a severe bushfire developing and not being able to be controlled at a small size. While some areas have been subject to prescribed burning in the past decade, the majority of the forests in these areas now have high fuel loads that are approaching equilibrium levels, because they have not been burnt since the 2003 bushfire. The risk Canberra is that these areas are located to the north-west of much of the urban areas, which are therefore potentially directly in the path of a major bushfire run under catastrophic fire danger conditions. In my view, it is imperative that increased efforts are made to scale up the implementation prescribed burning in these areas over the next few years. It is only a matter of time until lightning causes another large bushfire in these areas.

It is equally important that prescribed burning recommences next year in strategic areas of Namadgi National Park that were burnt by the 2019-20 bushfire, consistent with the intent of Recommendation 34 from the 2003 Coronial Inquiry Report. It is an unacceptable risk, to the Canberra community as well as to environmental and water catchment values, to maintain over 80,000 hectares of forest fuels at a single age class originating from the 2019-20 bushfire. This issue was also identified in the previous Bushfire Council's 2021 annual report on Bushfire Preparedness. In my opinion, a strategic goal should be set and incorporated in version 5 of the Strategic Bushfire Management Plan to implement 3-4,000 hectares of prescribed burning annually within the 2019-20 bushfire area, for at least the next 10 years. Priorities should be given to treating areas that might offer better protection from the next major bushfire, to

significant areas of fire-sensitive vegetation by reducing fire severity as the bushfire progresses towards the fire sensitive vegetation.

To address these problems of the changing vegetation structure and the associated increased bushfire hazard, the ACT Government needs to consider the implementation of ecological thinning and enhanced implementation of prescribed burning in its conservation reserves.

ii) The Condition of the Strategic Fire Access Network

The inadequate state of the ACT's fire access network was also a major issue considered in both the McLeod Inquiry and the Coronial Inquiry following the devastating 2003 bushfires. Both these Inquiries made recommendations about the importance of significantly improving the Strategic Fire Access Network on public land in the ACT.

The McLeod Inquiry Report recommended that:

- Clear policy guidelines should be developed and implemented to support the identification of a strategic network of fire tracks and trails and their establishment and maintenance. An audit process should be instituted to ensure that the policy's effectiveness is regularly monitored. (Recommendation 7)
- Sufficient funding should be provided for additional crews and plant, so that a program of improved fire access and trail and site maintenance can be implemented. (Recommendation 11)

The Coronial Inquiry Report recommended that:

- A program be implemented to ensure that existing tracks and trails are cleared and accessible at all times and that a network of additional fire trails be established so as to allow direct fire suppression operations without undue delay in the event of a wildfire. (Recommendation 38)

In the aftermath of these two Inquiries, the ACT Government accepted all three of these recommendations.

Overall, there are serious issues the current state of the ACT's Strategic Fire Access Network, with many important fire trails either being unfit for purpose or in a condition that compromises the ability of fire suppression equipment and personnel to access a going bushfire in a rapid and safe manner. The condition of the Strategic Fire Access Network has deteriorated very substantially since the 2019-20 Orroral Valley bushfire. I will make comments on three aspects:

i) Rigid Float Access along the Mt Franklin Road

When a bushfire burning in remote mountainous forest is unable to be controlled by first attack operations, it then becomes essential to have access to large bulldozers and for them to be efficiently deployed to construct fire control lines. For example, during

the 1983 Gudgenby bushfire in Namadgi National Park, a fleet of 10 bulldozers were used to establish the control lines around a 36,000 hectare bushfire.

During the first week of the 2003 bushfires, I was managing the fire suppression operations in Namadgi National Park for the Bendora, Stockyard Spur and Mt Gingera bushfires. During that period, there were significant challenges in deploying the large bulldozers onto these fires because rigid float vehicles could only access the northern most section of the Mt Franklin Road. Large bulldozers, which are all privately owned, are not designed to walk long distances and when they do significant damage can be done to the metal tracks which enable the bulldozer to move.

A major upgrade of the Mt Franklin Road to rigid float standard was identified in the Strategic Bushfire Management Plan Version 1 (January 2005). The ACT Government allocated about $10 million of capital works funds for the upgrade and a lengthy and complex environmental approval process was undertaken prior to the implementation works, which were finally completed in 2015.

In the Spring of 2023, I became aware that, due to erosion, a significant proportion of the Mt Franklin Road between Mt Ginini and the Orroral Valley could no longer be accessed by a rigid float. I estimate that about 35 km of the Mt Franklin Road is in that condition, which means that at present large bulldozers could not be readily deployed to bushfires in the upper part of the Cotter Catchment south of the Corin Dam. Given the strategic significance of the Mt Franklin Road and the very protracted process to upgrade it to rigid float standard, I am of the opinion that this is a major issue that needs to be properly investigated and a program implemented before the next bushfire season to return it to rigid float standard.

ii) Inadequate maintenance of the roads and tracks used for fire access and other purposes

My understanding is that the ACT Parks and Conservation Service is responsible for maintaining over 2,500 km of roads and tracks that form a major part of the Strategic Fire Access Network. It is acknowledged that many roads and tracks have been damaged by storms that have occurred during the period of *La Niña* and that implementation of road maintenance activities is difficult in mountain areas during periods of continuous wet weather.

However, the current problems with many parts of the ACT's Strategic Fire Access Network cannot all be attributed to the recent *La Niña* weather conditions. On the basis of my previous forest management experience, I consider that much of the current damage to the Fire Access Network is due to inadequate basic road maintenance programs. When the drainage from road surfaces and table drains are not maintained regularly on sloping roads, the runoff during rain events runs down the road creating its own channels, which get deeper every time it rains. There is ample evidence of this situation occurring within the Canberra Nature Parks and within Namadgi National Park. To my knowledge no road maintenance programs have been implemented within Red Hill Nature Reserve in the past 5 or 6 years. Some examples of eroded fire trails within Red Hill Nature Reserve are shown in the following two photos.

Eroded boundary fire trail

Eroded internal fire trail

Ideally every part of the Strategic Road Access Network should receive road maintenance once every three years at the very minimum. If the ACT has about 2,500 km of strategic fire access trails, it needs sufficient budget to enable about 800 km of this network to be maintained (graded) each year. My understanding is that current budget allocations for road maintenance only enable about 250 km of the road network to be maintained each year. Clearly the ACT Government needs to substantially increase the funds allocated for basic road maintenance of the Strategic Fire Access Network.

iii) Technical skills to manage roading programs and roading contractors.

When I was the Director of ACT Forests, I took action to ensure that the agency had a technical officer who had the necessary skills to plan and manage the forest roading program. I facilitated one of the existing blue-collar staff members to obtain a technical qualification in forest management over a period of three years. That person subsequently managed the roading program for ACT Forests and then the ACT Parks and Conservation Service, until he retired a couple of years ago. To my knowledge the ACT Parks and Conservation Service has not yet replaced this officer with a person who has the technical skills and experience in managing contractors that implement forest roading programs. Without having this skill set in the organisation it is very difficult to see how the ACT Parks and Conservation Service can effectively and efficiently manage a large annual forest roading program. The ACT Parks and Conservation Service needs to maintain a staff member with the appropriate technical skills and experience in managing roading programs and the contractors used to implement the required works. This needs to be addressed as a matter of urgency.

F. Coordination between environmental agencies and other government agencies in relation to bushfire risk and management.

As Canberra expands to the west of the current urban area, it is very important that the new suburbs are built to a very high standard of bushfire protection, given the previous bushfire history. In fact, these new developments should be constructed to a standard that will enable the residences to withstand the impacts from bushfires of greater intensity than those that Canberra experienced in 2003 and 2020.

I have two concerns about the effectiveness of coordination between environmental, planning and emergency management agencies that are related to the current and future developments on the western side of Canberra.

i) Bushfire Protection at Denman Prospect

For several years I have been raising my concerns about the adequacy of bushfire protection on the western side of the new suburb of Denman Prospect, particularly in relation to Block 12. In particular, I am most concerned about the proximity of the Bluetts Block (Blackies Hill) red stringybark forest to the new residences and the extreme fire hazard that currently exists in this forest block.

The previous Bushfire Council raised its concerns about bushfire risks at an early stage of the development of Denman Prospect. In the early stages the Council was advised that the development approval for Block 12 included a requirement for the red stringybark forest to be thinned to reduce bushfire risks. The Bushfire Council identified aspects of its concerns in its 2019, 2020 and 2021 Bushire Preparedness reports to the Minister. In 2020 it requested a study to be undertaken of bushfire risks to Denman Prospect using the Phoenix Rapidfire Model. On the basis of that study the Council expressed the following concern it its 2020 Bushfire Preparedness report[7]:

> Council maintains its strong concern about the appropriateness and adequacy of bushfire protection measures for the new suburb of Denman Prospect and in particular, that multiple existing houses at Denman Prospect could be destroyed in the event of a bushfire under catastrophic conditions.

On the basis of that concern the Bushfire Council made the following recommendation:

> Recommendation 15:
> That funding be provided in 2020-21 for an independent assessment of bushfire risks to all urban and proposed urban areas on the western and northern sides of Canberra.

The 2003 bushfires clearly demonstrated the extreme risk from bushfires to residences on and close to the urban edge. While the Inquiries focussed on the impacts from the pine plantations, the facts show that many houses that were destroyed were impacted by fire burning in either natural forest, for example on Cooleman Ridge Nature Reserve,

[7] https://esa.act.gov.au/sites/default/files/2021-03/Bushfire%20Preparedness%20Report%202020.PDF

or grasslands, for example the horse paddocks adjacent to the western edge of Chapman. The following image shows the destruction that occurred in Chauvel Circuit, where the residences were located about 750 metres from the pine plantations, 350 metres from the grasslands and about 150 metres from the native forest.

Chauvel Circuit, Chapman February 2003

Following the 2003 bushfires the ACT Government implemented a study into the future use of non-urban lands that had been impacted by the bushfires. As part of that process, it was agreed that the burnt pine plantations around Mt Stromlo would be cleared and replanted with native trees to become the Mt Stromlo Forest Park. Careful consideration was given to the nature of reforestation activities in order to reduce bushfire risks to the western suburbs. It was decided to replant much of the former pine plantations with Brittle Gum (*Eucalyptus maculata*) to establish an open woodland forest and to manage the area in a way that restricted the establishment of understorey vegetation. Brittle Gum was chosen because it was native to the area and considered to have a lower bushfire risk, because of its smooth bark. In my view this was a strategic and very sensible approach to reducing bushfire risks in a forest area adjacent to suburbs. Unfortunately, it appears that the same cannot be said for the development planning for parts of the new suburb of Denman Prospect, which is located adjacent to Stromlo Park and is bordered by existing Red Stringybark (*Eucalyptus macrorhynca*) forest around Blackies Hill in Bluetts Block.

The following photos, show part of the 20-year-old brittle gum woodland within Stromlo Forest Park and part of the location of the red stringybark forest to the west of Denman Prospect.

Stromlo Park Planted brittle gum forest

Blackies Hill and future Denman Prospect

Of all the eucalypt species that are native to the ACT, red stringybark presents the greatest fire risk because of its very fibrous bark which facilitate flames moving into the tree crowns and the generation of burning fire brands which can be deposited downwind of the fire front. In Victoria, the Country Fire Authority classifies red stringybark as 'not firewise' and recommends that it should not be planted in a garden or used when landscaping for bushfire. While this patch of remnant red stringybark forest has existed on this site for a very long time, its condition has changed dramatically since being severely burnt by the 2003 bushfire. There has been extensive natural regeneration (both seedling and coppice) which has transformed the site from a sparse woodland to a very dense forest. In addition, there has been no prescribed burning carried out on this site since it was burnt in 2003, which means that the fuel loads in this forest are now very high.

Dense Red Stringybark regeneration

Red Stringybark fuel hazards

The proposed bushfire management plan for the next stage of this development, called Stromlo Reach and extending to the edge of the red stringybark forest, indicates that the red stringybark forest currently has an extreme bushfire risk. That plan also shows parts of the proposed 60-metre-wide Asset Protection Zone coinciding with parts of the existing red stringybark forest. I am concerned that development is proceeding in this high-risk bushfire area, without any apparent effort to reduce the bushfire risks.

While the ACT Parks and Conservation Service has included a proposal to implement a prescribed burn to reduce fuel hazards on each of its Bushfire Operational Plans for the past three years, to date only a very small area adjacent to the Urriara Road has been burnt. My understanding is that the prescribed burning has not been able to be undertaken because environmental approvals are yet to be obtained for these activities. While the planned prescribed burn is listed in the 2023-24 Bushfire Operational Plan, there is no indication yet that it will be able to be conducted in the autumn of 2024, because even the approval to construct boundary fire control lines is yet to occur. Therefore, I consider that there is a great risk that these extreme fuel hazards adjacent to Denman Prospect will remain as we enter the next *El Niño* weather period, with its higher risk of experiencing severe bushfires.

I cannot understand why there seems to be no progress in either thinning the red stringybark forest on Blackies Hill, when previous strategic decisions have been made to ensure that forests adjacent to these suburbs were maintained in as open woodland to reduce bushfire risks. From my perspective, this situation which has been ongoing over the past 5 years without appropriate resolution, demonstrates that significant problems exist in relation to the effectiveness of coordination between environmental, planning and emergency management agencies to reduce bushfire risks adjacent to new developments on Canberra's western edge.

Following the 2003 bushfires, I conducted research on house destruction in the urban interface areas of Duffy and Holder, with the results published in a journal article[8]. That research found that even with grassed buffers of between 55 and 82 metres in width between forested areas and residences, forty-three percent of the residences in the first two rows of houses at the urban interface were destroyed as a result of ember attack. My understanding is that the new residential developments at Denman Prospect will primarily be protected by an Inner Asset Protection Zone of 60 meters in width. This highlights the critical importance of urgently reducing the extreme fuel hazards that exist on public land in Bluetts Block.

This situation is completely untenable as Canberra moves towards a period of greater bushfire risk under the next *El Niño* weather period. The ACT Government must take steps to ensure that required thinning and prescribed burning activities are completed in Bluetts Block before next summer.

ii) Bushfire Risk Assessment for the Western Edge Study

In 2021 EPSDD commissioned Ecological Australia to prepare a preliminary bushfire risk assessment for its Western Edge Study Area. The minutes of the ACT Bushfire Council for June 2021[9] record that the Council received a presentation from the consultant who prepared the bushfire risk assessment and note that several Council members questioned the assessment finding that 95% of the study area, including areas such as Mt Stromlo, were rated as low bushfire risk. The Council's 2021 Bushfire

[8] Bartlett A.G., 2012. Fire management strategies for *Pinus radiata* plantations near urban areas. Australian Forestry 75 (1) 43 - 53.
[9] https://esa.act.gov.au/sites/default/files/2021-07/BFC%20Minutes-%20June_0.pdf

Preparedness Report to the Minister[10] noted the following in relation to this preliminary bushfire risk assessment:

> The Council has very significant concerns about the quality of the bushfire risk assessment, and it had sought, but did not receive, further details on the methodology used in the bushfire risk assessment. Council does not believe that the bushfire risk assessment appropriately considers the bushfire history, topography and vegetation systems in the investigation area or the predicted climate change scenarios for Canberra. Six specific concerns about the quality of the assessment report were listed.

To the best of my knowledge, EPSDD has not yet commissioned an improved strategic bushfire risk assessment for the land within the Western Edge Study area, which includes all the land between the current western edge of the suburbs and the Murrumbidgee River. A recent check of the ACT Government Planning website found that the preliminary bushfire risk assessment is no longer on the website[11]. It is not clear why this document is no longer publicly available.

Having a high-quality strategic assessment of bushfire risks has to be a key component of planning for all new areas or residential development on the western side of Canberra. Because of the history of bushfires in this area, I consider that it is imperative that another strategic bushfire risk assessment is prepared as a matter of urgency to guide further considerations of future urban development on the western side of Canberra.

[10] https://esa.act.gov.au/sites/default/files/2022-03/Bushfire%20Preparedness%20Report%202021.pdf
[11] https://www.planning.act.gov.au/__data/assets/pdf_file/0004/2021692/7.-Preliminary-Bushfire-Risk-Assessment,-December-2020_Redacted.pdf

H. Other matters related to environmental preparedness for bushfires.

i) Adaptive Management

The Strategic Bushfire Management Plan (SBMP) is the overarching document that directs all levels of bushfire planning in the ACT. Its purpose is to provide a strategic framework to protect the ACT community from bushfires and reduce resulting harm to physical, social, cultural, economic and environmental values of the ACT. Both SBMPv3 and SBMPv4 contained an objective and actions related to adaptive management to enable continuous improvement in bushfire management and to address the increasing bushfire risks from climate change. In particular, SBMPv4 contains two specific actions (Actions 9.1 and 9.6) that require review of firefighting performance and climate change modelling to reflect findings in fire management plans, operational doctrine, community awareness, fuel management, as well as bushfire response capability.

Under Objective 9 of SBMPv4 there is a policy statement that the ACT Government will adopt an adaptive management process to address increasing bushfire risks, including climate change, and support continuous improvement based on sound research, modelling, monitoring, evaluation and lessons learned. It is well understood by experienced bushfire management personnel, that one of the most effective mechanisms for adaptive bushfire management is to implement an independent strategic review of bushfire management and suppression strategies following a major bushfire, to identify the lessons learned and propose strategies and actions to improve existing arrangements.

Despite the magnitude of the 2020 Orroral Valley bushfire, the potential threats to urban and rural properties in the south of Canberra and its very significant impacts on environmental values, there has not been an appropriate review of either the effectiveness of the firefighting strategies or the effectiveness of the range of bushfire management activities that were implemented by the ACT Parks and Conservation Service in the 10 years leading up to the 2020 bushfire. Because of this situation, there is no clear evidence that the ACT Government is actually adopting an adaptive management process to address increasing bushfire risks. The previous Bushfire Council recommended the conduct of such an independent review in both its 2020[12] (Recommendation 2) and 2021[13] (Recommendation 3) Bushfire Preparedness reports to the Minister.

The current Multi-Hazard Advisory Council also made a similar recommendation (Recommendation No 3) in its 2023 report on the ACT's bushfire management since 2003[14]. All of these recommendations are on the public record. That recommendation stated:

[12] https://esa.act.gov.au/sites/default/files/2021-03/Bushfire%20Preparedness%20Report%202020.PDF
[13] https://esa.act.gov.au/sites/default/files/2022-03/Bushfire%20Preparedness%20Report%202021.pdf
[14] https://esa.act.gov.au/sites/default/files/2023-01/Report%20-%20ACT%20Multi-Hazard%20Advisory%20Council%20-%20Report%20on%20ACT%20Bushfire%20Management%202022_0.PDF

EPSDD and ESA should jointly commission appropriate fire experts to conduct an independent analysis of fire management programs since 2003 with a view to establishing which activities have assisted bushfire suppression operations and how mitigation activities have impacted on environmental, cultural and water catchment values, with a view to the lessons learnt from this analysis informing future policy and planning.

However, to date, the ACT has not been willing to agree to conduct this type of lesson learning review. The Operational Review that was conducted in 2020 did not examine any of the fire suppression strategies or the effectiveness of the fire management activities that had been implemented over the previous decade. In my view this is a major missed opportunity and it raises significant concerns that the current process to review and update the Strategic Bushfire Management Plan will not be well informed by an effective evaluation of the current fire management strategies.

In relation to the issue of impacts on fire-sensitive vegetation that I raised under Point C of the Terms of Reference, I consider that the ACT must implement some adaptive management strategies as a matter of priority. These could include: identifying areas where enhanced implementation of prescribed burning for ecological purposes could be undertaken to increase protection of significant areas of remnant fire-sensitive vegetation; and development of seed collection and storage for key fire sensitive species, together with building capacity within the PCS staff to implement a program similar to that which is undertaken in Victoria.

The ACT Government should reconsider the Multi-Hazard Advisory Council's recommendation for an independent analysis of fire management programs since 2003, that was made in its 2023 report on the ACT's bushfire management since 2003.

ii) Maintaining the intent of Bushfire Inquiry Recommendations

While the ACT Government accepted all bar a very small number of the 130 recommendations from the McLeod and Coronial Inquiries, it appears that 20 years on from these Inquiries some of the recommendations are no longer being followed. All of the recommendations were made on the basis of lengthy consideration of the issues that contributed to the devastating outcomes from the 2003 bushfires. In the past, the ACT Bushfire Council was tasked with monitoring ongoing implementation of the Inquiry recommendations. A detailed review was undertaken in 2009[15], with the support of a consultant Dr. Bob Smith, and a follow up analysis and report[16] was prepared by the Bushfire Council in 2012, which examined the status of bushfire management arrangement, including the two Inquiries' recommendations 10 years after the bushfires. That report identified about 10 areas where management actions either only

[15] Smith 2009, "Government Agreed Recommendations from McLeod Report and Doogan Coronial Inquiry into the 2003 Canberra Bushfires - Implementation Report", 28th June 2009
[16] https://esa.act.gov.au/sites/default/files/2023-01/A%20Review%20of%20Fire%20Management%20Arrangements%20in%20the%20ACT%2010%20Years%20After%20the%202003%20Bushfires_0.pdf

partially or did not conform with the intent of the recommendations. The ACT Bushfire Council continued to monitor and provide advice on the outstanding issues in its annual Bushfire Preparedness report to the Minister.

Since the establishment of the ACT Multi-Hazard Advisory Council in 2022 this monitoring function is no longer undertaken by the Council, because of changes in its Terms of Reference.

It is not possible to undertake a thorough analysis of the current status of implementation of the various Inquiry recommendations due to the lack of publicly available information. However, in my view, it appears that currently some of the recommendations are no longer being complied with while others are only being partially complied with. There may be good reasons why this is the case, or it may be because many of the staff in ESA and PCS are unfamiliar with the issues that occurred in 2003 or the Inquiries' recommendations. I am unaware of any formal process to review the body of recommendations and for the ACT Government to agree where changes should be made. My concern is that, without such a process, it is very likely that in the event of another catastrophic bushfire that significantly impacts on rural lands and the urban areas of Canberra, many of the issues that contributed to the 2003 bushfire outcomes will be found to have occurred again.

The recommendations from the Coronial Inquiry which I think are no longer being complied with are:
Recommendations 25 and 26 – to do with the rapid deployment of Remote Area Fire Fighting Teams; and
Recommendation 41 – to do with senior personnel in the land management agency having appropriate experience in fire management.

The recommendations from the McLeod Inquiry which I think may only be partially complied with are:
Recommendations 7 and 11 – to do with fire access; and
Recommendations 21, 32 and 37 – to do with incident management on public land.

The recommendations from the Coronial Inquiry which I think may only be partially complied with are:
Recommendations 10, 12, 13 and 15 – in relation to risk management for severe fire seasons, and the appointment and skills of people in incident management teams that will manage a severe bushfire in the ACT;
Recommendations 24, 29 and 39 – to do with remote area fire suppression and initial response responsibility on public land;
Recommendations 32 and 34 – to do with the scale of fuel management on public land; and
Recommendation 38 – to do with existing fire tracks being accessible at all times;