

Report on ACT Bushfire Management since 2003

- ACT Multi Hazard Advisory Council, January 2023

Executive Summary

It has been 20 years since the 2003 Bushfires that had an enormous impact on the lands and people of the ACT, including significant loss of life and damage to property. The ACT's Multi Hazard Advisory Council (the Council) has reviewed the changes in bushfire management arrangements over the past 20 years to understand progress and suggest priorities for the future.

The bushfire management arrangements in the ACT are significantly improved since 2003. The Emergencies Act 2004 overhauled emergency management arrangements, establishing the Emergency Services Agency (ESA) and a statutory planning framework including the ACT Emergency Plan, the Elevated Fire Danger Plan and the Strategic Bushfire Management Plan (SBMP). On public land, the implementation by the Environment, Planning and Sustainable Development Directorate (EPSDD) of bushfire risk reduction activities, such as fuel management and improving access for bushfire suppression, has been substantially increased. Several inquiries have been undertaken over the years and the ACT has implemented most of the associated recommendations, resulting in a vastly improved strategic and operational capability for bushfire disaster risk reduction and response.

With a backdrop of climate change and growing population in the ACT, the risk that bushfire will present to the citizens and environments of the ACT is predicted to increase. We need to continually review our knowledge and systems to seek ways to better mitigate and respond to that ever-increasing and changing risk.

To that end, the Council has identified the following eight key issues:

1. The ACT needs a holistic view of bushfire management objectives under climate change
 - As bushfire risk increases, we need a commensurate increase in bushfire management planning and operations; and a holistic view of bushfire management objectives
2. Learning from past and recent bushfire events is not sufficient nor fully leveraged
 - Capture the data and use independent, expert-based assessment of history of bushfires, bushfire management actions and outcomes - together with cultural burning knowledge and practices - to feed into future bushfire risk mitigation, bushfire suppression and post bushfire recovery;
3. Adaptive systems are essential and rely on proper monitoring, reporting and evaluation
 - Reporting and reviewing progress on implementing recommendations from previous fire-related inquiries, and in implementing strategic plans
 - We need continual review processes to drive improvements in bushfire risk management
4. Agencies need sufficient operational capability and supportive government policy
 - Increased capability is needed to mitigate and respond to the increased frequency, duration and severity of bushfire
5. Agencies and volunteers need to be properly resourced to reach agreed bushfire risk mitigation, suppression and recovery objectives

- We need a continuing conversation about what outcomes we desire and what resources are needed to achieve them
6. Communities should be fully empowered to manage their own bushfire preparedness and recovery
 - Support community-led capability development in tandem with traditional government-directed suppression responses
 7. The growing urban-edge population needs to be better protected from bushfire risk
 - Ensuring best practice bushfire risk management in planning and developing the northern and western edges of Canberra
 8. Science and technology implementation needs coordination and acceleration
 - Take advantage of new technologies and information to further improve bushfire forecasting, communications, planning, mitigation, detection and response

To address these 8 key issues, the Council has made 23 recommendations.

List of recommendations

- (1) *It is recommended that the SBMP 5 should explicitly address climate-related increases in bushfire risk by identifying strategic objectives and associated outcome measures for bushfire risk management including*
 - *Protection of life and property outcomes*
 - *Ecological, social, cultural, water and economic outcomes*
 - *Community, agency and government preparedness: capability for response and for recovery*

so that we can more easily see progress and so that the areas needing more attention – more work, more information, more innovation – can be more easily identified.
- (2) *The ACT Government should develop a 5-year plan for further development of Territory-wide geospatial planning of bushfire mitigation and response activities, seeking to build planning tools and processes that underpin a rolling prioritised risk management program, appropriate to the increased bushfire risks predicted for future climate scenarios, that support integrated evaluation of all risk management options against protection of life and assets, as well as ecological, water, cultural, social and economic outcomes. Such tools would both underpin and be informed by the Regional Fire Management Plan and the development of annual Bushfire Operations Plans and Farm FireWise plans.*
- (3) *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*
- (4) *The ACT Government should introduce policies, standards, tools and procedures to ensure the availability of comprehensive, structured data describing future bushfire events and support the creation of an integrated bushfire data management system that holds data on bushfire detection, bushfire mitigation, bushfire suppression activities and bushfire outcomes.*

- (5) *DD should continue its work to recognise and understand the historic use of fire by the traditional owners of lands of the ACT, and its role in indigenous culture and to integrate this knowledge into land and fire management practices, and to support Traditional Owners to implement more cultural burning programs.*
- (6) *A review of the implementation of the SBMP be made by an entity external to the ACT Government at least once each planning cycle to examine resourcing, achievement of planned risk mitigation and risk response measures, and ultimately the achievement of bushfire management objectives.*
- (7) *Reporting on implementation of all recommendations from inquiries into relevant bushfires be included in the Whole of Government annual reporting process*
- (8) *10-year capability plans for relevant government agencies including ESA and EPSDD should be developed to identify the capability that will be required in the medium term for increasingly long concurrent multiple disasters, including campaign bushfires – and to then be resourced to develop and maintain that capability. This includes maintaining capability in both agencies in*
 - *Bushfire forecasting, analysis and planning*
 - *Senior incident management roles, particularly Level 2 and 3 incident controllers, with experience in managing large bushfires*
 - *Remote area firefighting*
 - *Operational bushfire response and community asset protection units*
 - *Management of bushfire data, research, technology development, innovation and adoption programs, including in partnership with research institutions and non-government organisations*
- (9) *The ACT Government should develop and review policies to underpin increasing capability for bushfire risk management, including*
 - *Developing a suite of social, cultural, ecological and economic objectives for bushfire management*
 - *Developing and using processes to set levels of acceptable risk against which to evaluate options for bushfire mitigation*
 - *Identifying the necessary agency capabilities and resourcing required to achieve desired objectives for bushfire management*
 - *Promoting community capability to appropriately prepare for bushfires and supporting community response and recovery from bushfire incidents*
 - *Identifying and where possible reducing unnecessary planning and development requirements that currently apply to bushfire mitigation activities and increase cost for little environmental or social benefit.*
 - *Promoting and supporting the incorporation of science and innovation into ACT's bushfire management*
 - *Ensuring continuity of operation in essential services such as hospitals, power and telecommunication.*
- (10) *The Memorandum of Understanding for bushfire responsibilities between ESA and EPSDD should be reviewed at least biennially to ensure that it contains appropriate mechanisms for such things as complementary human resources management and training; purchase and use of equipment, sharing of information between counterparts across all levels of seniority.*

- (11) *The ACT government should conduct a forward-looking assessment of the annual resource levels required to implement SBMP5, published to accompany the release of SBMP5; noting the desired improvements in*
- *Preparedness, including community cohesion & volunteering*
 - *Bushfire risk management planning and data management*
 - *Mitigation of bushfire risk especially for the western and northern edges of Canberra and maintenance of the strategic fire access network*
 - *Early bushfire detection including testing of new technologies*
 - *Bushfire suppression resources*
 - *Recovery*
- (12) *The ACT Government should introduce a system by which the resources available to provide bushfire protection along the rural-urban interface automatically increases to be commensurate with the length of rural-urban interface managed.*
- (13) *The ACT Government should introduce policies, procedures and approaches for supporting and empowering communities and individuals to identify their own resources, capabilities and needs, and to do their own planning for bushfire preparedness and response. In doing this, to be especially cognisant of changing demographics and vulnerabilities in northern and western edges of Canberra.*
- (14) *The ACT Government should commit to an ongoing program to increase the number of Community Fire Units (CFU) in order to ensure that all suburbs that include significant areas zoned as Bushfire Prone Areas have an appropriate CFU capability. Priority should be given to the new suburbs on the western and northern edges of Canberra.*
- (15) *The ACT Government should introduce broader, more inclusive models of volunteering before, during and after bushfires, recognising that each person has a different capability to give, but that every contribution is valuable. A volunteer workforce that reflects the diversity of our community will have stronger connection with the broader ACT community*
- (16) *The ACT Government should develop a medium term (5 year) whole of government plan for investment to attract, grow, and maintain a substantially increased volunteer workforce. The plan should be developed in consultation with the ACT community, particularly: the extant Rural Fire Service volunteers and Community Fire Unit personnel, ACT Rural Landholders, ACT Multicultural Advisory Council, the ACT Reconciliation Council, LGBTIQ+ Ministerial Advisory Council, ACT Disability Reference Group, and also with the Education and Community Services Directorates and include volunteers already working with the ACT community on behalf of non-government entities (e.g. Red Cross).*
- (17) *EPSDD should ensure that bushfire considerations be given increased priority in planning legislation and processes and that credible bushfire experts prepare the bushfire risk assessments, so that achieving improved bushfire protection becomes a primary consideration throughout the planning and development of urban lands.*
- (18) *The ACT Government should ensure that plans under the Emergencies Act 2004 are appropriately recognised within other ACT planning instruments, particularly those relating to land use, development and construction.*

- (19) *The ACT government should develop prescriptions for the overall acceptable bushfire risk for a development area against which variations in individual protective measures can be assessed for the contribution they make to that overall risk protection level.*
- (20) *The ACT Government should take urgent action to mandate that all new and substantially altered buildings within Bushfire Prone Areas comply with AS3959 to reduce their vulnerability to increased levels of bushfire risk, and conduct and publish the results of audits of existing building stock within Bushfire Prone Areas.*
- (21) *Both EPSDD and ACT ESA (Rural Fire Service) should have a research and development manager responsible for:*
- *Defining research and innovation priorities with respect to bushfire management objectives;*
 - *Exploring opportunities and developing strategies to address agreed priorities*
 - *Staying on top of research findings and where appropriate ensuring their adoption*
 - *Supervising the implementation of research and innovation plans within their agency*
 - *Developing and supervising research projects conducted or commissioned by their agency, or developed in partnership with other organisations*
 - *Ensuring access to resources, data (where necessary) and expertise to conduct agreed research*
 - *Evaluating the overall benefit to be gained from proposed research*
 - *Coordinating with other ACT government agencies and non-government agencies that will participate in or directly benefit from the research*
- (22) *The ACT government should develop policy to guide research and innovation for bushfire management that addresses:*
- *Partnership agreements for research and development*
 - *Intellectual Property arrangements including data access rights*
 - *Adoption and communication of research outcomes*
 - *Development of business cases for adoption of new technologies or knowledge*
- (23) *The ACT government should develop a strategic investment plan to accelerate innovation and technological developments (and adoption) in*
- *Forecasting bushfire risk and behaviour*
 - *Communications – real-time information provided to, & collected from, the community*
 - *Bushfire mitigation and suppression planning*
 - *Bushfire detection*
 - *Bushfire suppression strategies and tactics*

Overview

The 2003 ACT Bushfires

On the 8th of January 2003, lightning ignited six bushfires in the Brindabella Ranges on both sides of the ACT/NSW border. None of the fires were controlled while small and by the 17th of January the three ACT fires had burnt about 5,600 hectares while the McIntyre Hut fire in NSW had burnt about 10,000 hectares. On the 18th of January, under extreme fire weather conditions, these bushfires made intense runs to the east through rural lands, plantations and nature reserves and burnt into the western suburbs of Canberra. These bushfires, which affected 70 km of the Canberra urban interface, killed four people, injured 435 people and destroyed 488 residences and 23 commercial premises. The bushfires burnt 157,000 hectares or 70% of the ACT, including 110,000 hectares of conservation reserves, 10,500 hectares of pine plantations and 31,000 hectares of rural land. The bushfires caused at least \$610 million in damage, as well as significant but unquantifiable losses to the ACT's water supply and biodiversity values.

Following these devastating bushfires, there were two major inquiries into the 2003 bushfires: "Inquiry into the Operational Response to the January 2003 Bushfire in the ACT"^[1] by Ron McLeod (known as the McLeod Report), which included 61 recommendations; and a Coronial Inquiry "The Canberra Firestorm: Inquests and Inquiry into Four Deaths and Four Fires between 8 and 18 January 2003"^[2] undertaken by Maria Doogan (known as the Doogan Coronial Report), which made 71 recommendations. Following the release of the McLeod Report in August 2003, the ACT Government commenced a process to develop new emergencies legislation, establish a new Emergency Services Authority, develop the Strategic Bushfire Management Plan and reconstitute the role and composition of the ACT Bushfire Council. The Doogan Coronial Report was released in December 2006, and the ACT Government provided its response to the report and its recommendations in February 2007. Five of the Coroner's recommendations related to having an independent taskforce that monitors and reviews the implementation of the recommendations from these two inquiries. The ACT Government decided that this task would be more appropriately performed by the then ACT Bushfire Council.

The key issues that contributed to the devastating impacts from the 2003 bushfires were:

- Prolonged dry period during the winter and spring of 2002
- Inadequate management of road and track network and the fuel loads in public forests
- Ineffective tactics and inadequate resource deployment for first attack
- Inadequate implementation of the Australasian Inter-Service Incident Management System and having key incident management positions occupied by people without significant bushfire experience
- Lack of options to effectively implement indirect suppression operations
- Poor integration of bushfire suppression operations between the ACT and NSW
- A day of catastrophic fire weather occurring 10 days into the bushfires, with large areas of uncontained bushfire burning in the ACT and NSW
- Inadequate communication of the impending risk to Canberra suburbs in the lead up to a day of catastrophic fire danger

Key events and changes since 2003

Since 2003, the management of bushfire risk in the ACT has undergone a massive change in legislative, policy and procedural arrangements and in government capacity. The overhaul of emergency arrangements in the *ACT Emergencies Act 2004*; the establishment of the Emergency Services Authority; the creation of the ACT Emergency Plan and its sub plans including the Fire Sub Plan and the Strategic Bushfire Management Plan; and the continued work of the ACT Bushfire Council have all substantially improved the management of bushfire risk and response.

The Environment, Planning and Sustainable Development Directorate (EPSDD) is the largest manager of public land in the ACT, managing about 160,000 hectares including Namadgi National Park, Tidbinbilla Nature Reserve, the Canberra Nature Park and Kowen Forest. Since 2003, EPSDD has significantly improved its fire management programs. As a direct result of the bushfire inquiries, the Parks and Conservation Service Fire Management Unit was established, fire suppression capability was enhanced, the strategic fire access network has been identified, the Mt Franklin Road was upgraded to float standard, and additional helipads and water points have been established, all contributing to improved access for bushfire suppression. EPSDD prepares very comprehensive Bushfire Operational Plans annually and has been implementing hazard reduction burning across its estate. To improve the strategic focus of planned fire management activities, such as prescribed burns and road upgrades, 10-year Regional Fire Management Plans have been developed. Automatic weather stations have been established within the forest estate to provide local weather data for use in both bushfire suppression and prescribed burning.

These improvements have created clearer responsibilities, information, organisational arrangements, planning, and procedures that are applied to prevention, preparedness, response and recovery from bushfire. Improvements are particularly notable in:

- Strategic and operational bushfire planning
- Implementation of the national system for managing bushfires and other emergencies
- Agency capabilities, including emergency management facilities and firefighting equipment
- Provision of bushfire information and resources (in the form of Community Fire Units) to the community

Strategic Bushfire Management Plan

The Strategic Bushfire Management Plan (SBMP) was introduced following the 2003 Canberra bushfires to provide a strategic framework to protect the ACT community from bushfires and reduce harm to the physical, social, cultural and economic environment of the Territory. The SBMP seeks to coordinate the efforts and guide investment by all involved in managing bushfire risk in the ACT.

Prior to 2003, no such strategic framework for bushfire management existed and as a result, bushfire management was comparatively uncoordinated across the various entities involved in managing bushfire risk. In addition, the SBMP shifted the emphasis of bushfire

management from response to be more balanced across prevention, preparedness, response, recovery and research.

Under the *Emergencies ACT 2004*, the Emergency Services Agency is required to prepare a SBMP every five years for approval by the Minister; ACT Government entities are required to implement the plan as far as is practicable. ACT Government land managers are required to develop annual Bushfire Operations Plans (BOP) identifying the actions they are planning to ensure the bushfire risk management actions in the SBMP are implemented on their land.

The first version of the SBMP was approved in 2005 and there have now been four versions of the plan. Over this time, the SBMP has evolved from largely operationalising recommendations made in the McLeod Inquiry into the 2003 Canberra bushfires, especially establishing the foundations for significantly increased fuel hazard reduction management programs, to being a truly comprehensive plan for the management of bushfire risk by the ACT Government and community.

Broadly, the current version of the SBMP (SBMP4), sets objectives and actions for:

- agency and community preparation and response for bushfires,
- bushfire hazard assessment and risk analysis,
- bushfire prevention, including hazard reduction, and
- adaptive management to apply best practice to bushfire management and prevention practices in the ACT in a changing environment.

SBMP4 specifically identifies the following factors as playing an increasing role in bushfire risk management and this is reflected in the actions listed in the plan:

- the important role of the ACT community
- the use of technology and data in bushfire management
- adaptive management for climate change
- recognising the culture of Aboriginal and Torres Strait Islander people
- bushfire and community recovery

SBMP4 sees the continuation of and commencement of a number of new initiatives, examples include:

- participation of 170 out of 176 rural leases in Farm Fire Wise programs,
- regulatory and enforcement work which has resulted in a 53% reduction in abandoned vehicles which are a significant cause of ignitions,
- the operation of a Specialist Intelligence Gathering Helicopter able to share intelligence from the field back to the office in real-time.
- the development of "tenure-blind" maps of fuel management activities,
- exploration of advanced fire detection technologies such as cameras on fire towers and lightning detectors,
- the introduction of advanced methods for assessing risk and the effect of planned mitigation actions on risk (residual risk), and
- increased training and skills development in specialist roles such as Fire Behaviour Analyst and Intelligence Officer.

Significantly, a new governance framework has been introduced, including a SBMP Governance Committee including representatives from across the ACT Government who supervise the implementation of the SBMP. The ACT Multi Hazard Advisory Council (MHAC) is represented on the SBMP Governance Committee.

The 2020 Orroral Valley Bushfire

On 27 January 2020 a helicopter landing light ignited a bushfire in the Orroral Valley within Namadgi National Park, for which a late reporting of the ignition and difficult terrain made initial control unsuccessful. On 1 February, under extreme fire weather, the bushfire increased in size to 26,000 hectares and spotted into NSW on the eastern side of the Clear Range. Over the next 10 days, during a period of south-easterly winds, the bushfire burnt through Namadgi to the Corin Dam and Tidbinbilla Nature Reserve, which resulted in about 84,000 hectares of Namadgi and Tidbinbilla reserves being burnt as well as about 4,000 hectares of leased rural lands.

Following the 2019-20 bushfire season, the ACT Government conducted two internal inquiries: the “ACT Emergency Services Agency Operational Review of the Bushfire Season 2019/20”^[3], which made 31 recommendations; and the “Review of Whole of ACT Government Coordination and Response during the 2019-20 Bushfire Season”^[4], which made 35 recommendations. In addition, the ACT Legislative Assembly’s Standing Committee on Justice and Community Safety conducted a review and reported on the “ACT Emergency Services Responses to the 2019-20 Bushfire Season”^[5] which included 26 recommendations. The ACT also participated in the national Royal Commission into National Natural Disaster Arrangements and some of its recommendations are relevant to the ACT.

The key issues that contributed to the impacts of the 2020 Orroral Valley bushfire were:

- Prolonged dry period during the winter and spring of 2019
- Delayed reporting of the bushfire ignition
- Inability to contain the bushfire with first attack tactics
- Very dry forest fuels with extended periods of elevated fire danger including during the nights

Bushfire Council – a change to an all-Hazards approach

In December 2021, the ACT Government amended the Emergencies Act 2004 and replaced the ACT Bushfire Council with the ACT Multi-Hazard Advisory Council (MHAC), which has the function to provide advice to the Minister for Emergency Services about matters relating to natural hazards, which includes bushfires. Given the ongoing threat to the ACT from bushfires, particularly in a changing climate, the MHAC decided it would prepare this report on the status of bushfire management in the ACT to coincide with the 20th anniversary of the 2003 bushfires.

For the past 20 years, the former ACT Bushfire Council monitored the implementation of recommendations from various Bushfire inquiries, annually reviewed the state of ACT bushfire risk management and suggested improvements to the Minister for Emergency Services. Over that time, the capacities of the agencies involved in physical fire risk

management and suppression have matured and become greatly more sophisticated, as have the legislative and planning frameworks used to manage bushfire risk for the ACT. Most of the recommendations from formal inquiries and concerns expressed in annual reviews have been substantially addressed, evidence of great commitment over many years from successive agencies, organisations and individuals to improve bushfire risk reduction.

The last annual report from the former ACT Bushfire Council was made in September 2021, and outlined several issues. The MHAC has used these and its own exploration of bushfire arrangements during 2022 to identify a set of issues that need to be addressed:

1. The ACT needs a holistic view of bushfire management objectives under climate change
 - As bushfire risk increases, we need a commensurate increase in bushfire management planning and operations; and a holistic view of bushfire management objectives
2. Learning from past and recent bushfire events is not sufficient nor fully leveraged
 - Capture the data and use independent, expert-based assessment of history of bushfires, bushfire management actions and outcomes - together with cultural burning knowledge and practices - to feed into future bushfire risk mitigation, bushfire suppression and post bushfire recovery;
3. Adaptive systems are essential and rely on proper monitoring, reporting and evaluation
 - Reporting and reviewing progress on implementing recommendations from previous fire-related inquiries, and in implementing strategic plans
 - We need continual review processes to drive improvements in bushfire risk management
4. Agencies need sufficient operational capability and supportive government policy
 - Increased capability is needed to mitigate and respond to the increased frequency, duration and severity of bushfire
5. Agencies and volunteers need to be properly resourced to reach agreed bushfire risk mitigation, suppression and recovery objectives
 - We need a continuing conversation about what outcomes we desire and what resources are needed to achieve them
6. Communities should be fully empowered to manage their own bushfire preparedness and recovery
 - Support community-led capability development in tandem with traditional government-directed suppression responses
7. The growing urban-edge population needs to be better protected from bushfire risk
 - Ensuring best practice bushfire risk management in planning and developing the northern and western edges of Canberra
8. Science and technology implementation needs coordination and acceleration
 - Take advantage of new technologies and information to further improve bushfire forecasting, communications, planning, mitigation, detection and response

Issues and Recommendations

1: Climate change & increasing complexity – next-generation risk management

- We know that climate change is already causing longer, more frequent and more severe periods of bushfire danger. The bushfire season is starting earlier, lasting longer, and creating long campaigns of bushfire management rather than single significant bushfires. This provides sufficient evidence for the need for action, to ensure that the ACT is better prepared to deal with this increasing risk.
- While the ACT Government has undertaken a strategic climate change risk assessment, it largely focuses on threats to government assets and services and there appears to have been few practical actions implemented to combat the effects of climate change on bushfire risk, and those that have been implemented have been opportunistic rather than strategic.
- We are also increasingly aware of the complex bushfire history of the ACT, and both the impacts and importance of fire on social, cultural, ecological and economic values.
- Given this increasing climate-related risk and more complex understanding of bushfire, the required responses are not necessarily different in type but different in scale – and to achieve that we need to be smarter, more efficient and more effective in our bushfire management.
- In the initial stages of developing any adaptive system, the focus is necessarily on tracking resources, inputs and activity because the outcomes are hard to identify in measurable terms and there is usually a time lag in achieving them. Nonetheless, there is value in continuing to develop ways of measuring the achievement of bushfire risk management objectives, particularly if the information on inputs becomes meaningless or equally difficult to measure.
- Clearer objectives relating to the role and management of fire in the landscape are needed. We need a system that can better accommodate fire management in all its forms and its impacts - whether preparing, mitigating or suppressing bushfire, or using fire as a tool to achieve risk reduction or cultural or ecological outcomes.
- Working towards such a goal is essential to address the challenges that climate change will bring.
- This requires a shift change from considering bushfire as an occurrence requiring a time-bound response, to a more complex view that includes the landscape, all land tenures, indigenous culture, ACT communities, ACT agencies, and the role of fire within those over the longer term.
- Fire management planning and implementation on public land needs to continue to evolve in an adaptive manner, drawing on both research and lived experiences, to better address multiple objectives while balancing short-, and long-term risks both from bushfires and to the environment.
- This proposed approach would explicitly determine acceptable bushfire risk levels to assets and environmental values in an iterative way, including identifying the resources required and finding a balance between desired bushfire risk reduction level, activities required, resources required, and other associated (desirable and undesirable) outcomes from those planned activities - to iteratively set risk levels acceptable to the community.

- The current fire planning processes seek to prioritise planned bushfire mitigation activities on EPSDD-managed public lands to reduce the risks to built assets from bushfires to achieve an agreed residual level of risk - these are important first steps.
- The next steps are to develop our capacity to better understand and evaluate the effectiveness of a wide range of potential bushfire management strategies and actions:
 - Optimising our investment in maintaining critical infrastructure – including the 2,800 km road and track access network in the ACT that supports bushfire mitigation and suppression activities.
 - Expanding our understanding of planned bushfire mitigation to all Territory lands, irrespective of land tenure, to identify optimal reduction of bushfire risk
 - Optimising bushfire risk management outcomes: Developing a capacity to understand and evaluate options for mitigation vs suppression in terms of bushfire outcomes. This would inform setting the balance between investment in preparedness/mitigation and suppression.
 - Optimising mitigation outcomes: evaluating bushfire mitigation/management options for a wider diversity of outcomes – incorporating not just protection of life and built assets, but also ecological, water, cultural, social and economic outcomes.

It is recommended that:

- (1) *The SBMP 5 should explicitly address climate-related increases in bushfire risk by identifying strategic objectives and associated outcome measures for bushfire risk management including*
 - *Protection of life and property outcomes*
 - *Ecological, social, cultural, water and economic outcomes*
 - *Community, agency and government preparedness: capability for response and for recovery*

so that we can more easily see progress and so that the areas needing more attention – more work, more information, more innovation – can be more easily identified.
- (2) *The ACT Government should develop a 5 year plan for further development of Territory-wide geospatial planning of bushfire mitigation and response activities, seeking to build planning tools and processes that underpin a rolling prioritised risk management program, appropriate to the increased bushfire risks predicted for future climate scenarios, that support integrated evaluation of all options against protection of life and assets, ecological, water, cultural, social and economic outcomes. Such tools would both underpin and be informed by the Regional Fire Management Plan and the development of annual Bushfire Operations Plans and Farm FireWise plans.*

2: Learning from the past including from recent events

- With the increase in number, duration and severity of bushfire danger conditions, there have been corresponding changes in fire behaviour (eg fast travelling fires at night). There is an urgent need to learn from recent bushfires to feed back into understanding of the effectiveness of various risk mitigation and fire suppression options – their impact on resulting fire outcomes and also on asset, ecological, cultural, social and economic

attributes, and their utility in various forecast fire conditions. (eg does the impact of fuel reduction and fire suppression activities vary in moderate vs catastrophic conditions – what activities are most effective in what conditions)

- There is a recognition and willingness to understand the historical use of fire by the traditional owners of lands of the ACT, and its role in indigenous culture, however the knowledge is still not fully integrated into land and fire management practices. In addition, the process of empowering Traditional Owners to implement cultural burning on public lands is quite slow with only two to four burns being conducted each year.
- Systematically analysing information and lessons from previous risk mitigation programs and bushfire events is a critical part of the adaptive management cycle articulated in SBMPv4. Learning from the past requires comprehensive data describing past events. Currently, such data is poorly structured, spread across multiple systems and in some cases lacking.

It is recommended that:

- (3) *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*
- (4) *The ACT Government should introduce policies, standards, tools and procedures to ensure the availability of comprehensive, structured data describing future bushfire events and support the creation of an integrated bushfire data management system that holds data on bushfire detection, bushfire mitigation, bushfire suppression activities and bushfire outcomes.*
- (5) *EPsDD should continue its work to recognise and understand the historic use of fire by the traditional owners of lands of the ACT, and its role in indigenous culture and to integrate this knowledge into land and fire management practices, and to support Traditional Owners to implement more cultural burning programs.*

3: Monitoring and reporting progress of implementing SBMP actions and bushfire inquiry recommendations

- As a result of the loss of the ACT community's confidence in the adequacy of bushfire management following the 2003 bushfires, both inquiries made recommendations related to the need for transparent monitoring and reporting of the implementation of bushfire management activities and inquiry recommendations.
- Adaptive management has been raised in several reviews and is a feature of the SBMP4. Adaptive management relies on clarity of objectives and activities and a continual process of evaluation and adjustment.
- The establishment of the SBMP Governance Committee, a cross-government implementation mechanism to coordinate implementing the SBMP and to monitor progress over the planning cycle, has been a welcome improvement. Reporting on the

implementation of the SBMP needs to ensure there is an adequate focus on the achievement of objectives as well as the implementation of actions. This is best done by a careful, periodic external review to consider the actions and their outcomes relative to the stated objectives of the SBMP.

- Following the 2019-20 bushfires there were three inquiries in the ACT, as well as the national Royal Commission into National Natural Disaster Arrangements. Each of these inquiries made a series of recommendations which provide opportunities for the ACT to improve its systems for bushfire management. With the shift from the Bushfire Council to the Multi Hazard Advisory Council, it is not clear whether there is any mechanism for external monitoring of the implementation of recommendations.
- The inclusion of strategic and operational bushfire management activities in the ACT's whole of government annual report is an excellent development, this should be enhanced with inclusion of progress with implementation of all recommendations from relevant inquiries into the 2019-20 bushfires, including explaining how operational procedures have been improved based on the lessons from these bushfires.

It is recommended that:

- (6) *A review of the implementation of the SBMP be made by an entity external to the ACT Government at least once each planning cycle to examine resourcing, achievement of planned risk mitigation and risk response measures, and ultimately the achievement of bushfire management objectives.*
- (7) *Reporting on implementation of all recommendations from inquiries into relevant bushfires be included in the Whole of Government annual reporting process*

4: Agency & government capability

- With climate change, we will increase having prolonged, multiple disasters, which require considerable depth in capacity in our emergency services, both in the paid workforces in ESA and EPSDD and the volunteer workforce.
- After decades of sustained change, ESA and the Parks and Conservation Service within EPSDD may be reaching the limits of their capacity within their current resourcing levels for significant, rapid improvement and innovation in operations for mitigation and suppression. Whilst incremental improvement will still continue, as further significant improvements in mitigation, preparedness, response and recovery are required to correspond to increased risks associated with climate change, those improvements will require either a significant change in operational resourcing, and/or strategic change at a policy, not operational, level.
- With regard to resourcing operations, government agencies need to develop medium- to long-term plans outlining the capabilities they require and the resources needed to develop, build and/or maintain that capability. This is particularly important as there are long lead times in developing appropriate capability through staffing, acquisition of equipment and new technology.
- Strategic, whole-of-government policy development is also needed to unlock further capacity, remove unnecessary barriers and underpin effective operations on the part of agencies. Significant policy reviews are suggested in various recommendations in this

report, seeking to improve the arrangements that underpin agency capability for effective bushfire risk management:

- Clarify social, economic, cultural, ecological objectives, and support mechanisms that create capacity for these to be explicitly considered together in fire management planning
 - Determine desired agency capability for the medium term to achieve those objectives and the resourcing required to achieve it
 - Promote community capability & preparedness for bushfires,
 - Support community response and recovery from bushfires,
 - Determine levels of acceptable residual risk for mitigation investment
 - Support cost-effective mitigation actions, including providing appropriate exemptions from planning and development requirements
 - Ensure collection and curation of data from bushfires to support learning from past events in a more scientific and rigorous way
 - Promote & support incorporation of science and innovation into ACT's bushfire management
 - Require periodic external expert review of arrangements to identify successes and areas for further attention and innovation
- Further substantial improvements in bushfire preparedness, mitigation, response, recovery of bushfire management rely on Whole of Government mechanisms. The changes to the implementation of SBMP 4 have led to much greater whole of government awareness and consideration of bushfire management relating to bushfire prevention, mitigation and suppression; this now needs to expand in SBMP5 to also better encompass community preparedness, community response, and recovery.
 - As responsibility for bushfire mitigation and suppression falls across two government agencies (ACT ESA and EPSDD), careful ongoing attention to that relationship will always be needed to achieve integrated bushfire management outcomes, ensure complementary bushfire management processes and to remove unnecessary duplication.

It is recommended that:

- (8) *10-year capability plans for relevant government agencies including ESA and EPSDD are developed to identify the capability that will be required in the medium term for increasingly long concurrent multiple disasters, including campaign bushfires – and to then be resourced to develop and maintain that capability. This includes maintaining capability in both agencies in*
- *Bushfire forecasting, analysis and planning*
 - *Senior incident management roles, particularly Level 2 and 3 incident controllers, with experience in managing large bushfires*
 - *Remote area firefighting*
 - *Operational bushfire response and community asset protection units*
 - *Management of bushfire data, research, technology development, innovation and adoption programs, including in partnership with research institutions and non-government organisations*

- (9) *The ACT Government should develop and review policies to underpin increasing capability for bushfire risk management, including*
- *Developing a suite of social, cultural, ecological and economic objectives for bushfire management*
 - *Developing and using processes to set levels of acceptable risk against which to evaluate options for bushfire mitigation*
 - *Identifying the necessary agency capabilities and resourcing required to achieve desired objectives for bushfire management*
 - *Promoting community capability to appropriately prepare for bushfires and supporting community response and recovery from bushfire incidents*
 - *Identifying and where possible reducing unnecessary planning and development requirements that currently apply to bushfire mitigation activities and increase cost for little environmental or social benefit.*
 - *Promoting and supporting the incorporation of science and innovation into ACT's bushfire management*
 - *Ensuring continuity of operation in essential services such as hospitals, power and telecommunication.*
- (10) *The Memorandum of Understanding for bushfire responsibilities between ESA and EPSDD be reviewed at least biennially to ensure that it contains appropriate mechanisms for such things as complementary human resources management and training; purchase and use of equipment, sharing of information between counterparts across all levels of seniority.*

5: Resourcing proportionate to the level of risk we wish to accept

- It may be time to rethink the need for transparency of resourcing for SBMP implementation that was contemplated in the original Emergencies Act 2004 – in previous years the required explicit accompanying statement of resources and capabilities needed to implement the SBMP has either not been forthcoming or presented in an opaque way.
- Given the predicted increases in bushfire risk associated with climate change, it is appropriate to review the resourcing required and ensure it is commensurate with our bushfire management objectives, which are interchangeable with the levels of residual risk that the ACT community is prepared to accept.
- As Canberra develops, the length of the rural-urban interface increases which increases the costs and management burden on those agencies responsible for providing bushfire protection along the rural-urban interface. There is no mechanism for ensuring the resources available for bushfire protection increase commensurate with the length of the rural-urban interface. As a result, the resources being provided are spread thinner and thinner resulting in an ever-decreasing standard of protection being provided. This problem is further exacerbated by increases in bushfire risk due to climate change.

It is recommended that:

- (11) *The ACT government should conduct a forward-looking assessment of the annual resource levels required to implement SBMP5, published to accompany the release of SBMP5; noting the desired improvements in*
- *Preparedness, including community cohesion & volunteering*
 - *Bushfire risk management planning and data management*
 - *Mitigation of bushfire risk especially for the western and northern edges of Canberra and maintenance of the strategic fire access network*
 - *Early bushfire detection including testing of new technologies*
 - *Bushfire suppression resources*
 - *Recovery*
- (12) *The ACT Government should introduce a system by which the resources available to provide bushfire protection along the rural-urban interface automatically increases to be commensurate with the length of rural-urban interface managed.*

6: Community-led disaster capability

- Given the inevitability of bushfires, many previous inquiries have stressed that all Australians must learn how to live with them. We must continue to work towards government, individuals, communities and organisations being fully conversant with the risks of bushfire and engaged in the development, implementation and review of arrangements to mitigate, respond and recover from bushfire.
- Substantial work has been done nationally and within the ACT to improve the information available to communities regarding bushfire preparedness and bushfire incidents, but much more is needed. Communities need to have a good understanding of the services that can be expected from government in the event of a bushfire, and to plan their own response accordingly.
- Disasters affect people and communities disproportionately and consideration should be especially given to mechanisms that reach and support the vulnerable within our communities to make appropriate plans, identifying their capabilities, resources and making provision for any support that is required.
- We need a step change in our approaches to community engagement – moving from government-led one-way communications to a more integrated approach which includes supporting and empowering communities to identify their own resources, capabilities and needs, and to do their own planning for fire preparedness and response
- Since the 2003 bushfires, the ACT has established 58 Community Fire Units (CFUs), managed under the ACT Fire and Rescue Service, with around 850 active members. These CFUs are located in many of the suburbs where there is a high risk of bushfire impacts. However, there are a number of new suburbs in the Molonglo Valley and North Gungahlin areas, where residential areas have been zoned as Bushfire Prone Areas, where CFUs have not yet been established. In addition, four of the existing CFUs are currently experiencing difficulties in recruiting volunteers to participate in the CFU.
- An important part of community disaster capability is social cohesion, which urgently needs enhancement so that all sectors of the community are equally prepared to respond appropriately. Social cohesion should be one of the targets of campaigns to encourage volunteering so that all ACT citizens are supported to contribute to their communities. We need an active public discussion about roles and responsibilities of

citizens, and how to make a contribution to one's own community, so that the question becomes not whether one volunteers, but how one does so. This would recognise that the capacity to give varies, but that everyone has something to give: time, ideas, labour, resources, compassion. This requires moving away from the existing, narrow model of a volunteer to a more inclusive model which has multiple modes for supporting and harnessing community volunteers.

- A whole of government focus is needed to improve social cohesion & community capability, and the way in which government can foster this through policy & services to achieve (amongst other things) better bushfire-related risk management. This may include engaging with citizens through community services and also with families through education services. The ACT Wellbeing Framework is a great basis to develop understanding of the interconnected nature of mechanisms to support communities, especially for vulnerable sectors.
- With finite government budgets, we need to more effectively leverage the resources within the ACT community in order to help mitigate the increasing risks to the urban-interface communities from bushfire. The return on investment in volunteer work force is substantial.

It is recommended that:

- (13) The ACT Government should introduce policies, procedures and approaches for supporting and empowering communities and individuals to identify their own resources, capabilities and needs, and to do their own planning for bushfire preparedness and response. In doing this, to be especially cognisant of changing demographics and vulnerabilities in northern and western edges of Canberra.*
- (14) The ACT Government should commit to an ongoing program to increase the number of Community Fire Units (CFU) in order to ensure that all suburbs that include significant areas zoned as Bushfire Prone Areas have an appropriate CFU capability. Priority should be given to the new suburbs on the western and northern edges of Canberra.*
- (15) The ACT Government should introduce broader, more inclusive models of volunteering before, during and after bushfires, recognising that each person has a different capability to give, but that every contribution is valuable. A volunteer workforce that reflects the diversity of our community will have stronger connection with the broader ACT community.*
- (16) The ACT Government should develop a medium term (5 year) whole of government plan for investment to attract, grow, and maintain a substantially increased volunteer workforce. The plan should be developed in consultation with the ACT community, particularly: the extant Rural Fire Service volunteers and Community Fire Unit personnel, ACT Rural Landholders, ACT Multicultural Advisory Council, the ACT Reconciliation Council, LGBTIQ+ Ministerial Advisory Council, ACT Disability Reference Group, and also with the Education and Community Services Directorates and include volunteers already working with the ACT community on behalf of non-government entities (e.g. Red Cross).*

7: Protecting Canberra's growing population – better management of bushfire risk mandated in planning and developing urban areas

Planning

- The release of the ACT's Climate Change Risk Assessment, and the review and reform of the Territory's planning system provide an opportunity for Bushfire risk management to be made an initial and high-level consideration in all processes for development of urban areas.
- If new urban developments are to be less vulnerable to bushfires under a changing climate it is vital that bushfire risk is adequately considered in all stages of the development planning process. This is particularly important for the Western Edge Investigation project, which covers all the rural lands east of the Murrumbidgee River between Belconnen and Tuggeranong. Most of these lands were severely impacted by the 2003 bushfires and therefore should be considered to have a high risk from future bushfires.

Developing

- A suite of protective measures works together in the ACT to reduce bushfire risk; these include identification of Bushfire Prone Areas, requirement for appropriate building standards in those areas, and development of Asset Protection Zones with associated access roads and plantings and fuel management requirements. Bushfire risk, especially to new developments, can be increased by incremental reductions in individual protective measures considered in isolation from the full suite of measures. Currently, the overall acceptable bushfire management risk is not articulated so that changes in one measure are not compensated for by an increase in protection in complementary measures; nor are areas for development adequately considered for their defensibility with regard to terrain, proximity to fire-prone areas and likely fire behaviour. The cumulative results of incremental reductions in protective measures are considered too late in the planning process and operational staff are therefore left to try and make the least bad outcome within already-agreed parameters, which often create insurmountable constraints.
- The processes to update the Planning for Bushfire Risk Mitigation General Code 2008 and legislate the requirement to apply appropriate bushfire-related construction requirements for all new and substantially altered residential dwellings in bushfire prone areas have been very protracted. Currently, clause 44 of the ACT Building regulation states that the Building Code in Bushfire Prone Areas only applies to land that is non-urban. As a result, the measures to reduce the vulnerability of dwellings to bushfires in Bushfire Prone Areas, such as complying with AS3959, have only been voluntary and therefore the majority of new and substantially altered buildings have not been built to the standards required elsewhere in Australia. Better mandatory requirements, and associated audit, compliance and enforcement activities are needed to ensure bushfire prone areas are appropriately constructed to reduce bushfire risk and maximise defensibility in event of bushfire
- The ACT Bushfire Management Standards include specifications for Asset Protection Zones and road access standards associated with new developments. In many new developments, Asset Protection Zones are being minimised.

It is recommended that:

- (17) *EPSDD give bushfire considerations increased priority in planning legislation and processes and that credible bushfire experts prepare the bushfire risk assessments, so that achieving improved bushfire protection becomes a primary consideration throughout the planning and development of urban lands.*
- (18) *The ACT Government ensure that plans under the Emergencies Act 2004 are appropriately recognised within other ACT planning instruments, particularly those relating to land use, development and construction.*
- (19) *The ACT government should develop prescriptions for the overall acceptable bushfire risk for a development area against which variations in individual protective measures can be assessed for the contribution they make to that overall risk protection level.*
- (20) *The ACT Government should take urgent action to mandate that all new and substantially altered buildings within Bushfire Prone Areas comply with AS3959 to reduce their vulnerability to increased levels of bushfire risk, and conduct and publish the results of audits of existing building stock within Bushfire Prone Areas.*

8: New technologies and fostering Innovation

- There are ever-growing technological possibilities to improve bushfire risk and behaviour forecasting, communication, planning, detection, suppression – these need to be evaluated, tested, harnessed in accelerated, coordinated ways that promote uptake, effectiveness and further innovation.
- Whilst it is a challenge for a small jurisdiction such as the ACT to directly fund the development of technologies, the smallness of jurisdiction and reduced levels of government can be attractive for testing potential solutions.
- Partnerships with external organisations and universities can be a cost-effective way of acquiring knowledge and testing technology. As partnerships are not a strictly commercial transaction but involve intangibles such as goodwill, knowledge interchange and access to previous IP, they need to be developed and managed carefully in order to ensure that requirements and expectations are clear and able to be met by all the parties involved. While the ACT Parks and Conservation Service within EPSDD has a fire research utilisation manager to coordinate and guide research projects, ACT ESA does not appear to have a similar in-house role.
- ACT ESA is partnering with commercial companies, research institutions and universities to develop and test a variety of technologies, particularly in improving early detection and suppression of bushfires. However, there is not currently a clear balance between the agreements made with private companies, that sometimes include data access exclusiveness, and those with universities, that need timely access to that data to conduct agreed research.
- There has been substantial research into the management of bushfire risk in Australia, including the Bushfire Cooperative Research Centre (CRC) and its successor, the Bushfire and Natural Hazards CRC and Natural Hazards Research Australia (NHRA). The accelerated adoption of research outcomes needs intentional facilitation, otherwise it can take years, or even decades, for research findings to filter into operational practice.

We can ill afford these time lags in our quest for the best possible bushfire risk management within our available resources.

- We need policies that appropriately balance the need for commercial partnership to develop and test new technologies against the capacity for innovation associated with collaboration with universities, open-source data and open access technologies. Much technological development is associated with the development of bushfire ignition, danger and behaviour models and automated fire detection using novel hardware and sensors and for example artificial intelligence; these all rely on the quality and availability of the base data.

It is recommended that:

- (21) *EPSDD and ESA (RFS) each have a research and development manager responsible for:*
- *Defining research and innovation priorities with respect to bushfire management objectives;*
 - *Exploring opportunities and developing strategies to address agreed research priorities*
 - *Staying on top of research findings and where appropriate ensuring their adoption*
 - *Supervising the implementation of research and innovation plans within their agency*
 - *Developing and supervising research projects conducted or commissioned by their agency, or developed in partnership with other organisations*
 - *Ensuring access to resources, data (where necessary) and expertise to conduct agreed research*
 - *Evaluating the overall benefit to be gained from proposed research*
 - *Coordinating with other ACT government agencies and non-government agencies that will participate in or directly benefit from the research*
- (22) *The ACT government should develop policy to guide research and innovation for bushfire management that addresses:*
- *Partnership agreements for research and development*
 - *Intellectual Property arrangements including data access rights*
 - *Adoption and communication of research outcomes*
 - *Development of business cases for adoption of new technologies or knowledge*
- (23) *The ACT government should develop a strategic investment plan to accelerate innovation and technological developments (and adoption) in*
- *Forecasting bushfire risk and behaviour*
 - *Communications – real-time information provided to, & collected from, the community*
 - *Bushfire mitigation and suppression planning*
 - *Bushfire detection*
 - *Bushfire suppression strategies and tactics*

References

- ^[1] https://www.cmtedd.act.gov.au/functions/publications/archived/mcleod_inquiry/report
- ^[2] <https://www.courts.act.gov.au/magistrates/publications/1074>
- ^[3] <https://esa.act.gov.au/sites/default/files/2020-08/ACT%20Emergency%20Services%20Agency%20Operational%20Review%20of%20the%20Bushfire%20Season%202019-20.PDF>
- ^[4] <https://esa.act.gov.au/sites/default/files/2020-08/Report%20on%20ACT%20Gov%20Coord%20%20Response%20during%202019-20%20Bushfire%20Season.pdf>
- ^[5] https://www.parliament.act.gov.au/_data/assets/pdf_file/0005/1634396/JCS-Report-10-Report-on-Review-of-ACT-Emergency-Services-Responses-to-the-2019-20-Bushfire-Season.pdf