a program of

**Healthy**
land & water

# Summary of NSW
# Bushfire Inquiry

13 January 2021

## Citation

Queensland Fire & Biodiversity Consortium (2021), *Summary of NSW Bushfire Inquiry,* Healthy Land & Water

## About Healthy Land & Water

Healthy Land & Water is the **peak environmental group** for South East Queensland. For over 20 years, it has been dedicated to investing in and leading initiatives to **build the prosperity, liveability, and sustainability of our 'future region'.**

We are experts in research, monitoring, evaluation and project management. Our team has led many thousands of projects to restore waterways and landscapes, improve native habitats, manage weeds, protect native species, inform policy and educate communities on the best ways to improve and protect the environment for future generations.

Working in partnership with Traditional Owners, government, private industry, utilities and the community, Healthy Land &Water delivers innovative and science-based solutions to challenges affecting the environment. The combination of scientific expertise and on-ground management works to deliver Healthy Land and Water's mission to **lead and connect through science and actions that will preserve and enhance our natural assets and support resilient regions long into the future**.

## About the Queensland Fire and Biodiversity Consortium

Healthy Land & Water's *Queensland Fire and Biodiversity Consortium* is a network of land managers and stakeholders devoted to providing a coordinated response and best-practice recommendations for fire management, fire ecology and the conservation of biodiversity in the state of Queensland through education, community engagement and applied research.

## Disclaimer

It is the responsibility of the user to determine the suitability and appropriateness of the material contained in this publication to specific applications. No person should act or fail to act on the basis of any material contained in this publication without first obtaining specific independent professional advice. Healthy Land & Water and the participants of our network expressly disclaim any and all liability to any person in respect of anything done by any such person in reliance, whether in whole or in part, on this publication. The information contained in this publication does not necessarily represent the views of Healthy Land & Water or the participants of our network.

## Traditional Owner Acknowledgement

We acknowledge that the place we now live in has been nurtured by Australia's First Peoples for tens of thousands of years. We believe the spiritual, cultural and physical consciousness gained through this custodianship is vital to maintaining the future of our region.

## Commitment to our Reconciliation Action Plan

Reconciliation Australia has officially endorsed Healthy Land & Water's comprehensive *Reconciliation Action Plan (RAP)*, which is a practical guide to how the organisation will deliver meaningful changes across the business in support of reconciliation.

## Contact details

For further information about Healthy Land & Water, please email info@hlw.org.au or telephone (07) 3177 9100.

## Contents

# 1    SUMMARY OF NSW BUSHFIRE ENQUIRY

On 30 January 2020 the Premier announced an Inquiry into the 2019-20 bushfire season in New South Wales (NSW), Australia to make recommendations in relation to bushfire preparedness and response and to report by 31 July 2020, ahead of the 2020-21 bush fire season.

The focus of this report is to provide analysis and recommendations for change to ensure that, when bushfire like this happen again, there is less damage to property and our environment and, as much as possible, there are no lives lost. It aims to help NSW and Australia improve systems to be more ready for extreme fires. That said, it shows there are still lots of unknowns that require continuing work, and many of the Inquiry's recommendations refer to them.

The 2019-20 bushfire season challenged conventional assumptions. For example, it appears that the extreme dryness of forested regions over large continuous areas was the determining factor in the size of the fires. When taken together with the weather conditions experienced, the fires became extreme, burning through forests and across bare earth. Previous prescribed burning and hazard reduction activity appears to have reduced fire severity in some instances, but in others it appears to have had no effect on the severity and spread of the fires.

Some immediate fixes will improve things, for example, checking and auditing that processes are followed, will help improving accountability processes, and improving safety equipment and systems for firefighters (truck cabin protection, aircraft, respiratory protection, sustenance, personal protection, etc.).

Over the longer term, some major changes are needed. We need to push available technologies harder, especially fire science, remote sensing, data science and artificial intelligence to equip us better to understand what happens during a bushfire and respond more quickly. Many government systems also need to be improved, especially strengthening cross-agency accountability and governance, training, being more strategic in our land use planning to account for bushfire, and better managing critical infrastructure including fire trails and roads to minimise property and asset damage.

Recognising and accepting what can be defended and what can't be during an extreme fire season may require a big cultural shift for both the fire services and the community. More trucks and more firefighters are not the answer to the scale of the challenge NSW and Australia was confronted with during the 2019-20 bushfire season. Ideally, technology will be harnessed to minimise the risk to first responders. We need to grab what is becoming possible in terms of unmanned aircraft and vehicles and think big about what will make firefighting, and living in the community with fire, safer.

This summary provides a short description of preparation and planning for emergency management, land, and assets. Table 1 below contains section titles and short descriptions with reference to the page number from the original report.

# 2 PREPARATION AND PLANNING – EMERGENCY MANAGEMENT

| Section title and short description | Page Number |
|---|---|
| ## 2.1 The legislative framework<br><br>Key points:<br><br>• The legislative mechanisms in place to enable coordinated firefighting arrangements and trigger a state of emergency are sufficient and were used extensively throughout the 2019-20 fire season.<br><br>• There have been suggestions the statutory bushfire danger period should be extended in light of more frequent extreme weather events. The Inquiry considers this is not required as there is sufficient flexibility in the existing legislation.<br><br>• The Bush Fire Coordinating Committee (BFCC) and Bush Fire Management Committees established under the *Rural Fires Act 1997* are a generally sound governance framework; however, there is a lack of accountability and risk-based performance auditing of BFMCs. The Inquiry considers the governance and accountability framework could be improved.<br><br>**Recommendation 1:** The NSW RFS Commissioner consult with the Fire and Rescue NSW Commissioner and other emergency services develop a protocol in the event that simultaneous emergency events necessitate the re-allocation of resources while a Section 44 declaration is in place. | 105 |
| ## 2.2 NSW governance framework<br><br>Key points:<br><br>• The *Rural Fires Act 1997* provides a governance framework for bushfire prevention, mitigation and suppression at the State and local level.<br><br>• While all relevant agencies and non-government organisations appear to be represented on the BFCC and local Bushfire Management Committees, there is a need to ensure committee members are appropriately senior and can actively participate in decision-making.<br><br>• There is a need to strengthen existing governance mechanisms to ensure the State level committee has appropriate oversight over local committees, and that issues are escalated from the local to the State level to ensure they are resolved in a timely and efficient way.<br><br>• The BFCC should endorse the annual public statement regarding likely fire season risk and the effectiveness of planning and preparation to ensure collective responsibility for identifying and mitigating bushfire risk.<br><br>**Recommendation 2:** To strengthen cross-agency accountability and deliver improved bushfire risk management outcomes:<br><br>a.   BFCC members from NSW government agencies are at the level of Coordinator General/Deputy Secretary/Agency Head/Deputy Commissioner (or equivalent). | 110 |

| Section title and short description | Page Number |
|---|---|
| b. The BFCC ensures all Bush Fire Risk Management Plans, Operation Coordination Plans and Fire Access and Fire Trail (FAFT) Plans are compliant with the timeframes outlined in section 52 of the *Rural Fires Act 1997* as soon as practicable. <br><br> c. The BFCC develops a risk-based performance auditing cycle to ensure Bush Fire Risk Management Plans, Operation Coordination Plans and FAFT Plans are fit-for-purpose and any opportunities for improvement are identified and actioned. <br><br> d. The NSW RFS considers the best way of enhancing the transparency of BFCC decision-making, for example by publishing BFCC membership and minutes on its website. <br><br> e. The BFCC endorses the annual statement to Parliament on the likely fire risk and the effectiveness of planning and preparation. <br><br> f. Relevant agencies review Bush Fire Management Committee (BFMC) membership and confirm to the NSW RFS that members have sufficient discretion and authority to agree and implement risk mitigation activities at the local level. <br><br> g. The NSW RFS Commissioner amends the BFMC Policy to require BFMCs to refer unresolved issues to the BFCC for resolution. | |
| ## 2.3     NSW fire authorities – resourcing <br> Key points: <br><br> • NSW was well prepared for a 'normal' fire season, but the 2019-20 season was extraordinary which stretched resources across the State. The Inquiry found that firefighting personnel numbers for NSW fire authorities have remained stable or increased over the past 10 years. <br><br> • The Inquiry heard numerous times that 'all the firefighters in Australia' couldn't have stopped some of the fires in the 2019-20 season due to their size, speed and ferocity. <br><br> • NSW has Memoranda of Understanding (MOUs) with fire services in other states and territories to provide a 'surge' capacity during peak periods. MOUs are also in place with Canada, the USA and New Zealand. <br><br> • As fire seasons are becoming longer and more extreme in both the northern and southern hemispheres, there is a growing risk this will inhibit fire authorities' ability to release resources to assist other jurisdictions. <br><br> **Recommendation 3:** The NSW RFS works with AFAC to analyse the impact of changing fire seasons on inter-jurisdictional resource sharing agreements, both domestic and international, and determine any flow-on effects for NSW fire-fighting personnel capacity. | 117 |
| ## 2.4     Training <br> Key points: <br><br> • Nationally recognised firefighting qualifications and more general emergency management courses are delivered in-house by NSW government agencies, including NSW RFS, FRNSW, NPWS and Resilience NSW. <br><br> • The Inquiry noted there was a lack of trained aviation specialist personnel during the 2019-20 season and recommends the simulator capability at the NSW RFS Training Academy be expanded. | 126 |

| Section title and short description | Page Number |
|---|---|
| •   The value of undertaking multi-agency exercises and joint training was clearly demonstrated throughout the season and should continue to be done on a regular basis.<br><br>**Recommendation 4:** To expand NSW's specialist aviation personnel safety and capacity, Government expands simulator capabilities at the NSW RFS Training Academy. | |
| ## 2.5   The role of local councils<br><br>•   Given the scale of the 2019-20 bushfire season, many local councils were required to participate in response efforts. The Inquiry acknowledges councils' essential role in the bushfire response, and the substantial efforts of council staff throughout the season.<br>•   Submissions to the Inquiry made it clear there was marked variability across councils in terms of their preparedness. The Inquiry considers this was due to a number of factors, including the size and frequency of natural disasters in particular areas.<br>•   The Inquiry notes that Resilience NSW facilitates this peer-to-peer learning, and encourages this work to continue, particularly with the benefit of experience gained and lessons learned during the 2019-20 season.<br><br>**Recommendation 5:** That, in order to strengthen the capability of local councils in future emergency events:<br><br>a) Resilience NSW, in consultation with local government, develops specific training that focuses on the role, responsibilities and expected functions of the Local Emergency Management Officer (LEMO), including regular 'refresher' components.<br><br>b) Councils support their staff to participate in LEMO training on an ongoing basis and ensure that staff who are LEMOs are appropriately senior and have the authority to commit resources. | 131 |
| ## 2.6   Cross-border and inter-jurisdictional arrangements<br><br>Key points:<br><br>•   AFAC played a crucial national coordination role in the 2019-20 season and ensured resources could be shared among fire authorities. There is an opportunity to standardise how resources are described to minimise confusion and improve resource allocation efficiencies.<br>•   Short-term funding arrangements limit AFAC's ability to continue to contract aviation resources and other assets well in advance of the next fire season. Long-term funding certainty is necessary to ensure resource-sharing arrangements can continue.<br>•   The MOU with Victoria has lapsed and should be progressed as a matter of urgency.<br><br>**Recommendation 6:** The government works with other Australian governments to provide long-term funding certainty to AFAC, including the National Resource Sharing Centre (NRSC) and the National Aerial Firefighting Centre (NAFC). | 132 |

| Section title and short description | Page Number |
|---|---|
| **Recommendation 7:** To ensure updated resource-sharing arrangements are in place, the NSW and Victorian Governments progress and finalise a multi-agency MOU before the 2020-21 fire season commences. | |
| ## 2.7 Fire danger ratings and warnings<br><br>Key points:<br><br>• The six levels of Fire Danger Rating are close to being consistent across Australia, with the exception of Victoria and Tasmania.<br><br>• Differences in terminology can cause confusion for community members, particularly for people living close to the border of NSW and Victoria – NSW uses the national danger rating of 'catastrophic' for the most extreme conditions, whereas Victoria uses its own danger rating of 'code red'.<br><br>**Recommendation 8:** To provide greater consistency in public information and warnings, especially in border areas.<br><br>The Inquiry is of the view the Australian Warning System should be prioritised to provide greater consistency in public information and warnings, especially in border areas. | 135 |
| ## 2.8 Community engagement<br><br>Key points:<br><br>• The NSW RFS has a range of community engagement programs aimed at educating people on bushfire risk and effective mitigation strategies. Programs are aimed at the general community as well as particular cohorts (e.g. rural landholders, Aboriginal communities, people with disability, older people).<br><br>• Community engagement programs have received positive anecdotal feedback but have not been formally evaluated.<br><br>• While the Inquiry has heard through submissions that the community was generally aware of the level of danger ahead of the 2019-20 season and made preparations accordingly, the Inquiry was unable to substantiate this with objective data.<br><br>• Existing community engagement programs should be evaluated, and outcomes-based measures developed to ensure programs are effective and that their impact can be measured over time.<br><br>**Recommendation 9:** The Government commit to:<br><br>a. Evaluating existing bushfire preparedness programs to determine the most effective and efficient approach given increased frequency of extreme fire seasons and develop outcomes-based measures to monitor programs' impact over time.<br><br>b. Post-evaluation of the roll-out in the most effective bushfire preparedness programs to all communities and at-risk cohorts in bushfire prone areas across NSW. | 139 |

| | |
|---|---|
| ## 2.9     Preparedness for tourism businesses and accommodation providers | 144 |

Key points:

- The 2019-20 fire season had a significant impact on tourism operators and tourists in fire affected areas. There is a high probability this could happen again as the peak fire season coincides with the Christmas/New Year holiday period.
- The level of engagement between fire authorities and tourism businesses varies across NSW, and there is no tailored support to help tourism businesses prepare for bushfires.
- There is currently no requirement for holiday rental operators to prepare or display bushfire management and evacuation plans for their property.
- The Inquiry recommends further action to support tourism operators to prepare for a range of natural disasters and ensure tourists can access bushfire management and evacuation plans in holiday rental properties.

**Recommendation 10:** In order to ensure tourism businesses are prepared for natural disasters including bushfires, Resilience NSW works with NSW RFS and Destination NSW to develop bushfire preparedness support for tourism businesses, based on research into existing models. Over time, this support could be expanded to include other natural hazards e.g. flooding.

| | |
|---|---|
| ## 2.10     Community fire safe zones | 146 |

Key points:

- There are already designated bushfire Neighbourhood Safer Places, which include open spaces (e.g. sports ovals). However, as some fires were characterised by significant spotting and ember attacks it was unsafe for people to be in the open, and they instead needed a closed shelter. In 10 communities, people sheltered in the local NSW RFS fire stations which weren't always well-equipped for this purpose.
- There is a need to ensure remote bushfire prone areas have an indoor Neighbourhood Safer Place, so people can take shelter when open spaces are too dangerous due to fire conditions.

**Recommendation 11:** The NSW RFS identifies remote bushfire prone areas that do not already have an indoor Neighbourhood Safer Place (NSP) and upgrades the relevant NSW RFS Stations to meet NSP guidelines. These stations would require adequate Asset Protection Zones and active/passive protection systems to provide short-term protection.

# 3 PREPARATION AND PLANNING – LAND AND ASSETS

| Section title and short description | Page Number |
|---|---|
| ## 3.1 What we value and need to protect<br><br>Key points:<br><br>• There is no system for determining priorities when multiple assets of value are threatened by fire and there are insufficient resources to protect them all.<br>• To avoid uninformed decisions during a fire event on what to protect, a formal mechanism is needed for working out in advance the relative value of different assets that has broad community support. | 149 |
| ## 3.2 Knowing where assets are and recording necessary information to protect them<br><br>Key points:<br><br>• There is no authoritative consolidated State register/repository of things of value/assets/services (along with precise geolocation and other quality-curated, appropriate metadata) to be protected from bushfire.<br>• The State Infrastructure Strategy 2018 had, as part of its emphasis on building resilience against natural hazards, already made recommendations relating to much of this issue. In response to the State Infrastructure Strategy, Spatial Services is building a State Digital Twin. The Inquiry supports this approach but recommends it be accelerated and extended to address the need for comprehensive and reliable data needed for effective firefighting.<br><br>**Recommendation 12:** In order to equip NSW RFS with comprehensive information on all structures and assets at risk of bushfire, government ensures that:<br><br>• There is a single whole-of-government procurement and acquisition program for imagery and LiDAR and that Government accelerate the building of the State Digital Twin and associated Digital Workbench.<br>• Owners/managers of assets (apart from private homeowners whose information will be provided through local councils) in bushfire prone land are required to provide to the Digital Twin, at a minimum the following information/metadata, with quality control certification on an annual basis (with annual census at least two months before the start of the fire season):<br><br>  - Precise geolocation.<br><br>  - Description of asset including picture.<br><br>  - Value level.<br><br>  - Fire treatment on asset.<br><br>  - Asset Protection Zone (APZ) details and how it is maintained.<br><br>  - Access details.<br><br>  - What redundancy is available if relevant. | 151 |

| | |
|---|---|
|     - Any metadata requirements specific to the asset class.<br><br>    - Emergency contact and instructions on how to access where more information is held.<br><br>    - Any restrictions on data access and sharing.<br><br>     - Information about the hazard reduction results for road verges, fire trails, APZs and other defendable space.<br>     - Local information supplied by organisations such as local NSW RFS brigades.<br><br>The Digital Twin must also be able to incorporate:<br><br>•    Information about the hazard reduction results for road verges, fire trails, APZs and other defendable space.<br>•    Local information supplied by organisations such as local NSW RFS brigades. | |
| ## 3.3    Processes for protection<br><br>Key points:<br><br>•    Good preparation for a fire season involves a coordinated effort across all land tenures to reduce the likelihood of fire ignition, to prepare land and structures for fire attack, and ensure, where possible, effective backup and redundancy arrangements are in place.<br>•    Individuals, communities, and governments at all levels have roles to play in this preparation and all need to be willing to cooperate to be ready for a recurrence of fires of the type seen in 2019-20.<br>•    Improving processes for protecting what we value involves deepening our understanding and practices of hazard reduction, strengthening our planning system to address fire issues including legacy issues more comprehensively, and ensuring NSW RFS has full details of the location and arrangements for all critical infrastructure.<br>•    Cultural land management has an important part to play. | 155 |
| ## 3.4    Hazard reduction<br><br>Key points:<br><br>•    The NSW Government, largely through works undertaken on national parks, has met its hazard reduction targets from 2011 to 2019, and the area over which hazard reduction activities have been done annually has on average increased since 2011. The previous State-wide targets are no longer current because the end date has passed, and they have not been replaced. However, NPWS and NSW Forestry Corporation continue to work in collaboration with NSW RFS towards State-wide area targets for hazard reduction across the estates they manage.<br>•    While studies of the impacts of previous bushfires indicate that on balance hazard reduction can reduce the rate of spread and intensity/severity, there is no guarantee that any particular hazard reduction activity will provide protection from a bushfire in every circumstance, especially when fire weather is adverse (i.e. in Severe, Extreme and Catastrophic categories of fire danger) as was experienced on many days during the 2019-20 season. Research also shows that the potential benefits of prescribed burning activities are generally short-lived.<br>•    The degree to which more hazard reduction burning before the 2019-20 fire season, especially broadscale prescribed burning across the landscape, would have | 156 |

influenced the extent of area burnt or damage caused is not fully understood or quantified.

- However, the latest research shows that hazard reduction is most likely to provide some benefit near specific things that communities want to protect. Accordingly, the regionally based approach to planning and coordinating hazard reduction activities through Bush Fire Management Committees should be refreshed so the objectives are very clear, and to make sure that a risk-based approach is being applied rigorously across the State, informed by the best research on risk reduction.

- A suite of targeted and more strategic hazard reduction activities across all tenures, working from the perimeters of settlements outwards, and involving communities in their design and implementation, should be a feature of future fire management planning and preparation.

- We also need a much better understanding of cost-benefit and effectiveness of different hazard reduction techniques, including the public health costs associated with smoke from prescribed burning.

- Public land managers could do more to become good neighbours.

- While existing approval processes are intended to support hazard reduction by private landowners, more education and community engagement is required on the purpose of the processes and how to use them effectively.

**Recommendation 13:** The Government re-commits to the current, regionally based approach to planning and coordinating hazard reduction activities across all tenures through Bush Fire Management Committees (BFMCs) but ensures that it is being implemented at a high-level of quality across NSW. Getting it to a high-level of quality requires:

a. Implementing the Inquiry's recommendation about performance auditing of Bush Fire Risk Management (BFRM) Plans.

b. Prioritising implementation of revised processes for bushfire risk management planning that incorporate new modelling and methods for quantifying risk and the residual risk profile because of proposed hazard reduction works.

c. Ensuring regional priorities for hazard reduction, and how these are determined, are communicated clearly to the community, and their implementation is reported on transparently. This will include being very clear about the objectives of hazard reduction activities and communicating that hazard reduction does not eliminate the risk of fire affecting properties.

d. The methodology for assessing and planning for risk reduction becomes an ongoing area of research and the frameworks are formally reviewed every three years.

**Recommendation 14:** Government, noting that hazard reduction targeted in proximity to assets is more likely to provide help than hinder, should:

a. Support local councils and partner agencies to implement more comprehensive hazard reduction at a local level around towns/cities, communities and local infrastructure assets, and provide incentives for communities to organise themselves to prioritise and implement local hazard reduction initiatives. This will involve a suite of hazard reduction techniques depending on the landscape including prescribed burning, clearing, mowing, and mechanical treatments. This will also include easy disposal of green waste into processors turning it into bioenergy or biofuels.

b. Beyond the local level priorities for hazard reduction, prioritise prescribed burning in parts of the landscape where fuel treatment may help reduce probability of fires escalating quickly and where terrain and potential atmospheric interactions are likely to escalate fires into fire-

generated thunderstorms. This will likely involve a proactive program of treating ridge tops that are prone to dry lightning where reduced fuels may help reduce speed of spread when the fire first starts, or windward or lee slopes that are susceptible to generating extreme fire behaviour and drive fire towards towns. This should include research to understand critical thresholds that, when breached, may render fuel treatment ineffective (*i.e.,* fuel moisture thresholds). It should also include the short, medium and long-term outcomes of hazard reduction burning regimes.

c.    Government commission to research into a range of other hazard reduction techniques to understand the cost versus benefit and the effectiveness of different practices in various circumstances, including grazing.


**Recommendation 15:** That, to improve understanding of optimal hazard reduction techniques and their application in the landscape:

a.    Government extends the recently introduced program of mitigation crews so that hazard reduction activities can be undertaken when conditions are optimal (throughout the week and potentially at night).

b.    All fire authorities review prescribed burning techniques and their implementation, and commission to further research into optimal prescribed burning regimes and techniques.


**Recommendation 16** As part of the spatial technology acceleration program, Government supports deployment of remote sensing and picture processing technologies to monitor and audit how well Asset Protection Zones and defendable space are being maintained, especially around towns.


**Recommendation 17:** Government amends the *Rural Fires Act 1997* so that all public land management agencies be required to forward complaints received about bushfire hazards to the Commissioner of the NSW RFS. As an interim measure, heads of agencies should commence this practice immediately.


**Recommendation 18:** Government agencies managing land (at all levels and through all agencies) be the best neighbours possible by considering their neighbours when undertaking activities related to bushfire preparation and having clear, two-way communication about these activities, with the aspiration that government landholders will be seen as highly desirable neighbours.

## 3.5    Traditional Aboriginal land management

181

Key points:

- There have been widespread calls for Aboriginal cultural fire practices to be employed in hazard reduction.
- The Inquiry heard that cultural burning is one component of a broader practice of traditional land management and does not necessarily have fuel reduction as its primary objective.
- The Inquiry heard that cultural burning is about caring for country and maintaining healthy and ecologically diverse and productive landscapes. It is also about practising cultural traditions.

- It is important that this principle is used by Government, and that wider implementation of Aboriginal land management practices is by Aboriginal people, supported by Government agencies.

**Recommendation 19:** Government adopt the principle that cultural burning is one component of a broader practice of traditional Aboriginal land management and is an important cultural practice, not simply another technique of hazard reduction burning.

**Recommendation 20:** To increase the respectful, collaborative, and effective use of Aboriginal land management practices in planning and preparing for bushfire, Government commit to pursuing greater application of Aboriginal land management, including cultural burning, through a program to be coordinated by Aboriginal Affairs and Department of Planning, Industry and Environment working in partnership with Aboriginal communities. This should be accompanied by a program of evaluation alongside the scaled-up application of these techniques.

## 3.6 Using the planning system for greater bushfire protection

186

Key points:

- While the planning system incorporates extensive and generally effective bushfire resilience into all developments on designated bushfire prone land, there is an opportunity to develop a more proactive and strategic approach to managing the increasing risk presented by bushfires.
- To overcome this in the longer term, Government should move towards a model based on the NSW Flood Prone Land Policy so that it can take a whole-of government strategic planning approach to transition those buildings and places at the greatest risk of an event to other more appropriate uses, including potential acquisition, and provide greater certainty when deciding where new development should be located.
- In the shorter term, Government should take a range of measures to improve education, compliance, auditing, and enforcement in respect of bushfire standards for local developments and assets.

**Recommendation 21:** That government commits to shifting to a strategic approach to planning for bushfire and develop a new *NSW Bush Fire Policy* similar to the *NSW Flood Prone Land Policy* in order to accommodate changing climate conditions and the increasing likelihood of catastrophic bushfire conditions. Government also commits to building greater resilience into both existing and future communities and to decrease costs associated with recovery and rebuilding.

**Recommendation 22:** That Government, acknowledging that a strategic approach to planning for bushfire will take time and to better protect, prepare and build resilience into existing communities, should immediately:

- Prepare, in association with the insurance sector, a model framework and statutory basis for the establishment of an enforcement, compliance and education program which adopts a risk-based approach to routine inspection of local bushfire prone developments. This would ensure that every local development on bushfire prone land

is prepared for future bushfire seasons in accordance with bushfire protection standards of the day, that account for worsening conditions.

- Ensure local government is resourced to enable effective audit, enforcement, and compliance powers in respect of local developments and assets on bushfire land.
- Consider the introduction of subsidies for property owners to undertake site mitigation works to reduce bushfire risk and work with the Insurance Council of Australia to develop an agreed set of measures to insure against with a view to risk reductions resulting in lower insurance premiums.
- Review vegetation clearing policies to ensure that the processes are clear and easy to navigate for the community, and that they enable appropriate bushfire risk management by individual landowners without undue cost or complexity.

## 3.7     Preparing critical infrastructure for bushfire or providing a workaround

196

Key points:

- Telecommunications was the service most valued by members of the community during the 2019-20 bushfire, and the impact of the loss of this service because of damage to telecommunications infrastructure or, more commonly, power infrastructure needs to be anticipated and prepared for.
- Actions that can be taken in the preparation phase that help minimise service disruptions during a bushfire include:
  - Ensuring infrastructure assets are adequately identified, protected and prepared.
  - Making the electricity network more resilient.
  - Ensuring reliable backup plans are in place as part of bushfire planning, including energy supplies to telecommunication towers and expanded roaming arrangements between telecommunications carriers.
  - Understanding and mitigating risks associated with the interdependencies of other parts of the emergency management service system.

**Recommendation 23:** In order to maximise the protection of critical infrastructure in a bushfire, Australian governments revise the regulatory framework for the provision to government authorities of information about all critical infrastructure (public and private) including a possible change to compel the owners of critical assets to provide all needed metadata, updated annually, for appropriate planning, preparation and response for bushfire. This would include information about location, ownership, access, details of service the infrastructure supports, and fire treatments of building and surrounding zones.

**Recommendation 24:** In order to minimise communication outages and extend basic communication coverage during bushfires, the NSW Government work directly, or together with other Australian governments and/or their relevant power and telecommunications regulatory, policy and market bodies, to:

- Ensure there are sufficient redundancy options available (e.g. backup diesel generators, deployed temporary telecommunications facilities, etc.) to supply power to essential telecommunication infrastructure or alternative telecommunications infrastructure.
- Ensure that the telecommunication entities' and electricity network providers' Bush Fire Risk Management (BFRM) Plans are updated annually and reported on in the NSW RFS

Commissioner's annual statement to Parliament on the upcoming bushfire season and include details of all actions taken to mitigate those risks including maintenance of APZs and access roads.

- Ensure there is appropriate auditing of distributors' preparedness for risks arising from network assets being affected by bushfire, as well as the risk of networks initiating a bushfire.
- Facilitate cross-carrier roaming arrangements between carriers and the public for basic text, voice and data during the period of emergency in areas directly affected by fire.
- Enable NSW RFS to require carriers to provide regular information on the status of outages and areas affected by fire.

# 4 GETTING TO WHAT NEEDS PROTECTION AND LEAVING WHEN PROTECTION NOT POSSIBLE

| Section title and short description | Page Number |
|---|---|
| ## 4.1 Roads and roadside vegetation

Key points:

- Although the road system in NSW overall worked well throughout the fires, road closures caused a great deal of stress and impeded firefighting, evacuations and the supply of goods and services. Anticipating how to deal with this is important in planning before bushfires.
- Roads with good bushfire resilience (dual carriageway, wide road shoulders and construction from fireproof materials) were better protected from fire and able to reopen more quickly if fire affected.
- It is not practical to 'fireproof' all NSW roads – in these circumstances, timely public communications systems are required to ensure communities have enough time and information to relocate safely before an emergency.
- A formal bushfire risk assessment is required of all State roads and bridges to identify 'high-risk' communities, ensure all possible access and egress options are built into bushfire planning processes, and identify priorities for State road upgrades, regardless of who manages the road.
- Having systems for how to deal with trees that fall across roads is important.
- The management of roadside vegetation is complex, with bushfire risk and safety considerations needing to be balanced against multiple other factors (e.g. conservation, geotechnical, infrastructure corridors, cultural values, grazing, recreational uses, and development).
- An outcomes-based approach to roadside vegetation management would provide a consistent framework for analysing road priority, utility, amenity, strategic value, and risk and could tie in with other existing strategic land use and biodiversity processes.

**Recommendation 25:** In order to improve bushfire planning and protection of road infrastructure and to ensure communities, freight movers and firefighting agencies have | 207 |

appropriate access and egress in a bushfire event, Government, working with local government as needed.

Develop a formal bush fire risk assessment process for all State roads and bridges, to identify:

- 'High-risk' communities where access and egress in the event of a fire will be affected, for example rural communities connected by a single road surrounded by bushland, and ensure community bushfire planning processes (i.e. Bush Fire Risk Management (BFRM) Plans or Community Protection Plans) include plans to 'leave early' or enforce mandatory evacuation orders.
- How waterways can be integrated better into the transport network as evacuation routes or places of shelter when road and rail transport is unavailable – waterways should be included in regional emergency management plans.
- Route options for rapid identification of needed road closures in the event of fire.
- Key sections of the State's road network for future upgrade to ensure whole corridors are resilient to fire impacts, regardless of who manages the asset.

**Recommendation 26:** Audit, through the NSW RFS Audit Unit (to be established) the inclusion of critical road infrastructure in BFRM Plan prepared by Bush Fire Management Committees (ensuring that appropriate transport representation is provided to BFMCs) and Local Emergency Management Committees across the State.


In support of these measures, it will be critical that the community is given early warning of bushfire events and has ample time to evacuate prior to or during an emergency.

| | |
|---|---|
| ## 4.2     Fire trails <br><br> Key points: <br><br> - The fire trails required for the 2019-20 season were inadequate. <br> - Although the 2017 amendments to the *Rural Fires Act 1997* provide a sound basis for managing a strategic and integrated network of fire trails across NSW, insufficient implementation has occurred. <br> - Implementation needs to be accelerated through deadlines for completion of Fire Access and Fire Trail plans, and better monitoring and review processes. <br> - There is no whole-of-government asset management system for fire trails at present, inhibiting the prioritisation of fire trail creation and maintenance. <br> - The process for negotiating fire trails through land with multiple owners is complex, challenging and not guaranteed of success. <br><br> **Recommendation 27:** As a matter of urgency, to accelerate and finalise a State-wide strategic fire trail network, the NSW RFS Commissioner and Bush Fire Coordinating Committee (BFCC): <br><br> - Set a deadline for Bush Fire Management Committees to complete all outstanding Fire Access and Fire Trail (FAFT) Plans for submission to BFCC for approval, and a related deadline for BFCC review. <br> - Assess the completed suite of FAFT Plans to identify high-priority trails of relative strategic importance across the State for urgent construction or upgrades with reference to the needs of upcoming fire seasons. | 218 |

- Enforce completion of annual fire trail condition assessment reporting by relevant landholders. Following this, the BFCC should, as part of its standard business, undertake an audit of all FAFT Plans and annual fire trail condition assessment reports.
- Develop a single asset management system to capture the outcomes of annual fire trail condition assessment reporting on a tenure-blind basis to support BFCC strategic and budgetary prioritisation and inform funding allocation to agencies for capital works programs.
- Commission a review of FAFT Plans, with particular assessment of containment line potential, following a significant bush fire event in their area, as part of the planned review of BFCC Policy and NSW RFS Standards in 2020-21.

Where it is not feasible to construct a fire trail completely on public land, and private landowners are not satisfied with proposed negotiated arrangements to construct the trail across their land, Government should negotiate acquisition of an easement interest, with appropriate compensation, over private land.

## 4.3   Bushfire smoke

227

Key points:

- Fine particulate (PM2.5) exposure during the 2019-20 bushfire season was unprecedented. Increased exposure to PM2.5 has been associated with multiple health impacts, which are greater for vulnerable people. Evidence shows that sustained exposure (weeks and months) to poor air quality compared to acute exposure (days) produces greater impact. However, the long-term impacts of prolonged exposure to severe bushfire smoke as seen in the 2019-20 season is unknown.
- Given the expected increases in frequency and severity of major bushfires, smoke is one of many effects of fire that could intensify in future seasons. The associated health risks and financial implications as a result of exposure to bush fire smoke must be better balanced, and become essential components of, future fire management. This includes investment in public health research and smoke forecasting/modelling, and improved evidence-based public health messaging.


**Recommendation 28:** To capture and understand the impacts of bushfire smoke better, government invest in operational air quality forecasting and alert systems, and public health research and policy development. This would involve investment to:

- Develop a comprehensive system of forecasting and alerts for air quality incidents and all pollutants of concern, including but not limited to bushfire smoke, ozone and dust, and which is ideally nationally consistent.
- Investigate further the health impacts of bushfire smoke, based on improved data collection and including research on the long-term health impacts of poor air quality as a result of sustained exposure to severe bushfire smoke, particularly for vulnerable and at-risk segments of the community (*e.g.* children, elderly, firefighters, etc).


**Recommendation 29:** To improve the provision of evidence-based public health messaging about air quality during bushfire events, Government develop a public education campaign and supporting systems before the next bushfire season. This should include:

| | |
|---|---|
| • A public education campaign (like sun exposure), to help people make their own decisions about exposure to bush fire smoke.<br><br>• Tailored messaging to target:<br><br>    - Smoke-vulnerable cohorts of the community.<br><br>    - General practitioners, particularly in rural and regional areas, so they can advise patients with relevant, susceptible comorbidities.<br><br>    - Employers, to support development of appropriate workplace health and safety guidance for outdoor workers.<br><br>    - An improved air quality alert system such as an enhanced Air Rater app. | |
| ## 4.4  Planning and adaptation to risks to ecosystems<br><br>Key points<br><br>• Forests support a range of social, environmental, and economic values for the community – health, biodiversity, production, tourism, carbon storage – and management of the landscape over the long-term will influence how effectively the forested regions of NSW can continue to provide those things.<br><br>• The potential for an increasing incidence of megafires is increasing risks to ecosystems, especially in combination with other pressures (ongoing increases in temperature, drought, land use change etc), and may be speeding up the transition of some ecosystems to a different state to what we have now. Many species and ecosystems are at increased risk of decline after the 2019-20 fires, including ones that were not considered at threat before the season.<br><br>• There is also concern in the community about different land management practices and their influence on the flammability of the landscape. However, available research is not yet comprehensive enough to inform management decisions about these issues over the long term.<br><br>• There is a need to be very clear about the priority values the NSW community seeks from its forests and to manage the land in an adaptive way informed by much better long-term monitoring, modelling, forecasting, research and evaluation.<br><br>• There may also be a need to think big, and to be realistic about the effects of climate change and changing fire regime on ecosystems. What if certain ecosystems of high value can no longer persist where they are now because fire will be too frequent, and the climate will not be suitable anymore? How will this challenge paradigms about threatened species/ecosystem management which assume the things we value stay where they are now, which in some cases may be increasingly unlikely, and how bold are we willing to be in our response to this?<br><br>**Recommendation 30:** Government invests in long-term ecosystem and land management monitoring, modelling, forecasting, research and evaluation, and harness citizen science in this effort. This will include, among other things:<br><br>• Tracking and trying to forecast what is happening to ecosystems over decades under projected changes to climate extremes, including fire regime change and better understanding interaction of fire with other disturbances, e.g. drought and hydrological changes in the landscape. | 242 |

| | |
|---|---|
| •    Commissioning experiments and feasibility studies for ecosystem adaptation experiments, for example, facilitating shift of high conservation-value rainforest vegetation communities further south as climatic conditions change.<br>•    Better understanding the influence of different land management practices on landscape flammability (in different landscapes) over the short, medium, and long-term, and enabling an adaptive management approach. | |