

Global Wildfire Resilience: Australia's Journey

How government, businesses, and communities can work together to reduce risk



Hosted by the Milliman Climate Resilience Initiative

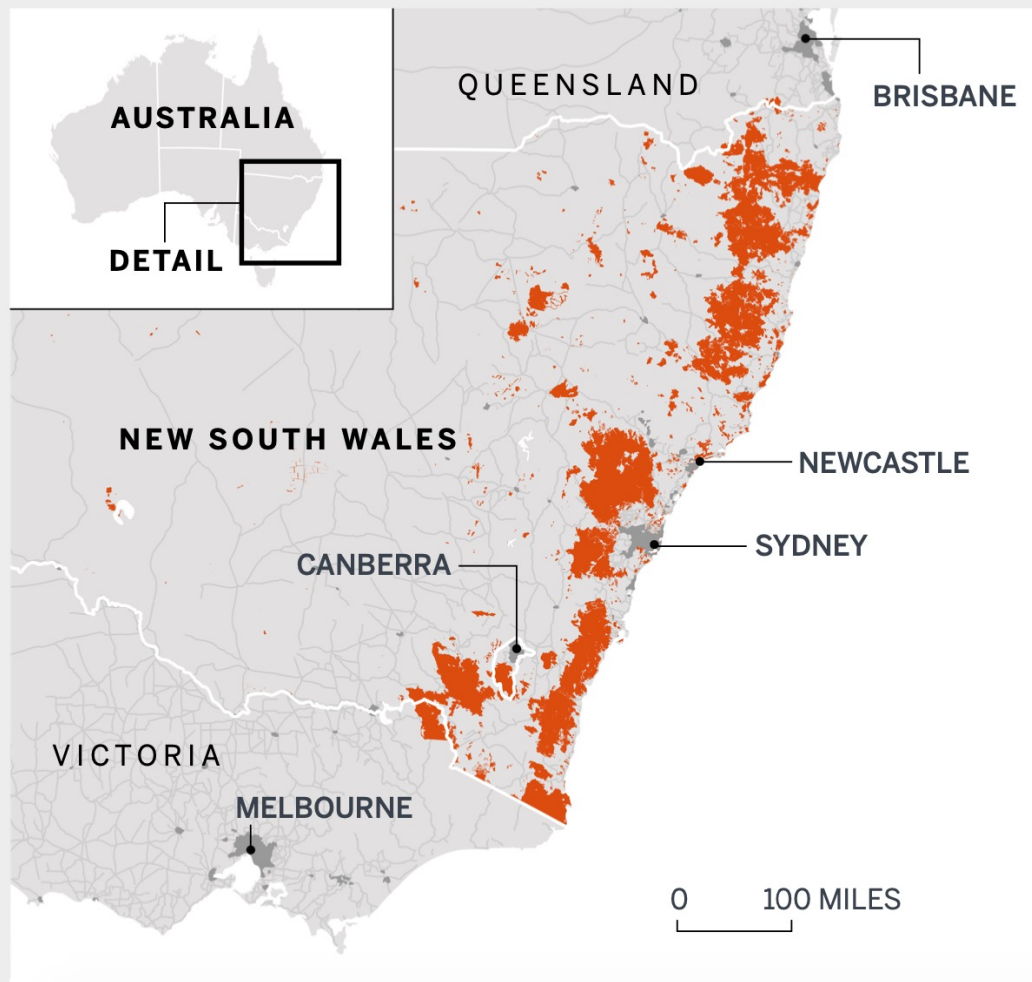
Dominique Hogan-Doran SC
Australian Bar

Senior Counsel Assisting the 2020 Royal Commission into National Natural Disaster Arrangements in Australia

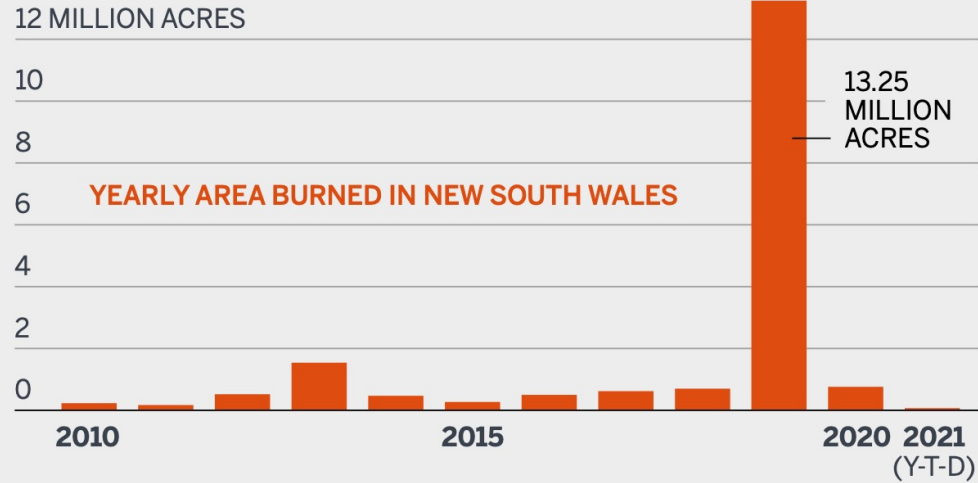
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27 October 2021

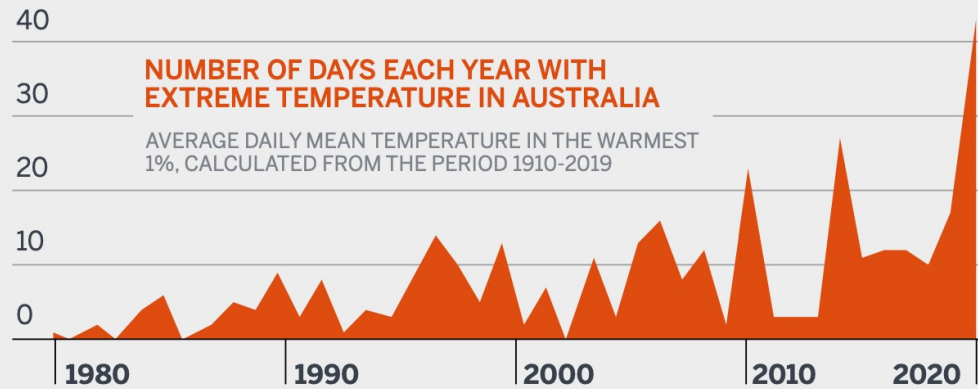
■ AREA THAT HAS BURNED AT LEAST ONCE BETWEEN 2010 AND 2021



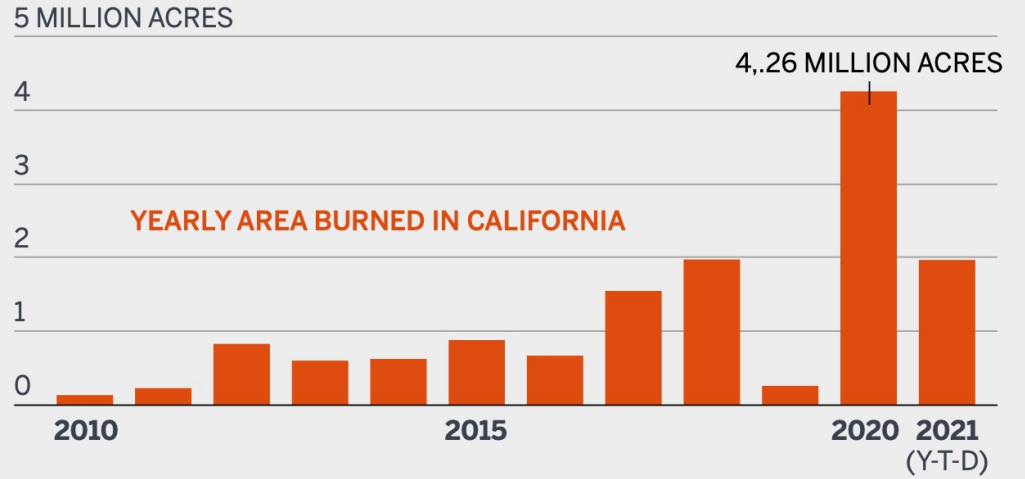
ACRES BURNED SPIKED IN 2019-2020



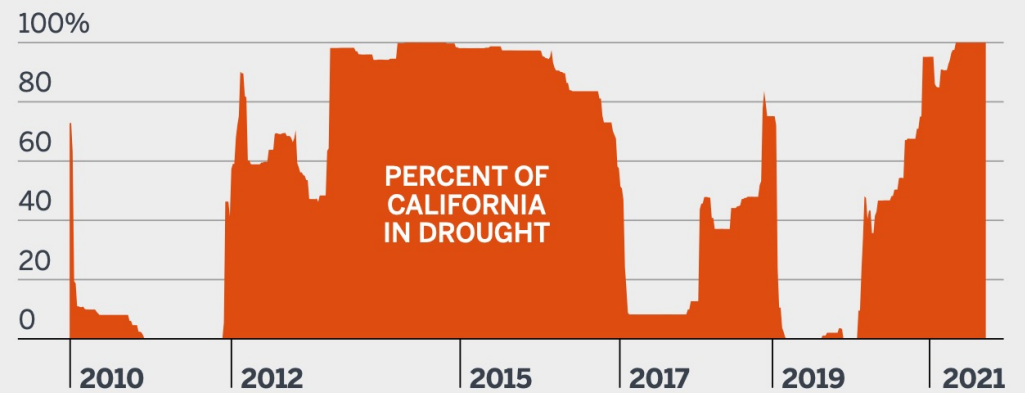
LAST DECADE HOTTEST ON RECORD FOR AUSTRALIA

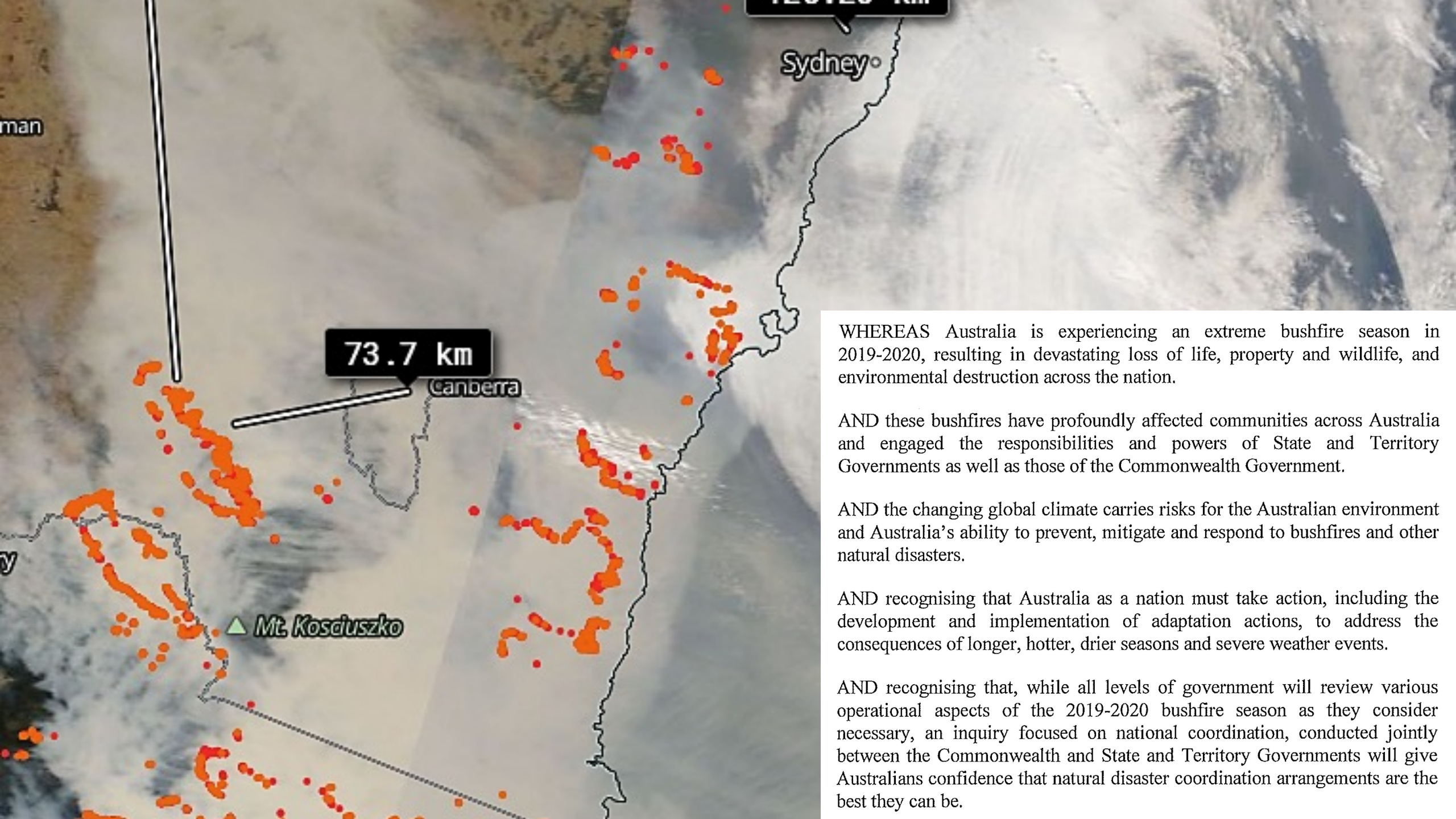


ACRES BURNED SPIKED IN 2020



WILDFIRES CORRELATE TO EXTREME DROUGHT





WHEREAS Australia is experiencing an extreme bushfire season in 2019-2020, resulting in devastating loss of life, property and wildlife, and environmental destruction across the nation.

AND these bushfires have profoundly affected communities across Australia and engaged the responsibilities and powers of State and Territory Governments as well as those of the Commonwealth Government.

AND the changing global climate carries risks for the Australian environment and Australia's ability to prevent, mitigate and respond to bushfires and other natural disasters.

AND recognising that Australia as a nation must take action, including the development and implementation of adaptation actions, to address the consequences of longer, hotter, drier seasons and severe weather events.

AND recognising that, while all levels of government will review various operational aspects of the 2019-2020 bushfire season as they consider necessary, an inquiry focused on national coordination, conducted jointly between the Commonwealth and State and Territory Governments will give Australians confidence that natural disaster coordination arrangements are the best they can be.

Australia's 2020 Royal Commission into National Natural Disaster Arrangements

Broad terms of reference, directed to examine, among other things:

- Responsibilities of, and coordination between, Australian, state, territory and local governments relating to natural disasters.
- Australia's arrangements for improving resilience and adapting to changing climatic conditions.
- What actions should be taken to mitigate the impacts of natural disasters.
- Whether changes are needed to Australia's legal framework for the involvement of the Commonwealth in responding to national emergencies.

Commissioners directed to make any recommendations they considered appropriate, including recommendations about any policy, legislative, administrative or structural reforms.





The Royal Commission into National Natural Disaster Arrangements Report

Conclusions informed and driven by the scientific evidence

- Australia's disaster outlook is '*alarming*' and requires a '*fundamental shift in strategic thinking about national natural disaster risk management*'.
- Clearly signals urgent need to improve disaster management capacity, resilience & adaptation in Australia as natural hazard events become more frequent & severe under climate change.

Expert reactions

- "*Overall, this seems a realistic report that incorporates a diverse and complex body of evidence*" - Professor Bowman, Professor of Pyrogeography & Fire Science, University of Tasmania
- "*It's an extraordinary read ... they go across an extraordinary breadth.*" - Dr Annagretta Hunter, Australian National University

Royal Commissions in Australia: expectations & impact

Royal Commissions are entrenched feature of Australian public life

- *Expectations loom large*: qualities of independence, neutrality, and transparency, as well as delivery of a reasoned report, make them attractive tools to government
- *Potential for considerable impact*: can extend far beyond specific investigations & remit, with changes to public policy & government administration
- *In the balance*: cost, efficiency, timeliness, commitment, capacity for recommendations to be implemented

Reasons why Government may establish a Royal Commission

- *Urgency*: Government confronted with an issue or problem where *immediate* action is 'necessary'
- *Fills a gap*: Government agencies lack expertise, coercive powers, or public confidence, to handle an issue or investigation
- *Big & tricky*: want to explore a very complex matter in manner beyond scope of administrative resources
- *Messy & ugly*: want to investigate allegations of impropriety where government, or individual working in government, involved

Instrument of Executive power – type of "public executive inquiry"

- *Historic*: Traces back to the *Domesday Book* in England
- *Ad hoc* and temporary
- *Unique*: Non-judicial and non-administrative governmental investigation
- *Exercise of the prerogative*: established by Letters Patent issued by the Governor-General acting with advice of Executive Council with possible complementary Letters Patent by State Governors
- *Compulsory powers*: depend on legislation

Royal Commission: fast-tracked joint inquiry, national policy focus

Model and purpose:

- Joint federal & state governments authority
- 3 Commissioners, mix of expertise
- First Royal Commission to review all 3 levels of government across the nation
- TOR called for broad examination of issues at a national level
- Reporting date 'before next disaster season'
- Not a 'blame game'
- Policy and forward focussed
- Constructive, not adversarial

Logistical Challenges:

- Declarations of States of Disaster/Public Health Emergencies due to COVID-19 pandemic created significant logistical challenges.
- Commissioners, Counsel Assisting team, Solicitors and Staff co-located Canberra or WFH to manage State border closures.
- Capacity and participation by State and Territory governments & emergency/health agencies affected.
- Delays in document production and difficulties in witness availability, narrowed approach to certain topics.

Royal Commission: a national inquiry in a national emergency

Methodology:

- 10 weeks of public hearings
- 301 witness appearances
- 3,079 exhibits tendered
- 1,772 public submissions
- 16 community forums
- 6 expert consultation forums
- 5 Background Papers
- 4 Issues Papers
- Notices to produce documents & Statements of Information
- Interim Observations
- Draft recommendations
- Final submissions

Recalibrated Witness Plans:

- Hearings not held in person but 'virtual', livestreamed
- 301 witness appearances (some more than once) by video-link, often using panel format
- Community witnesses also pre-recorded to reduce risk of trauma, minimise logistics
- 38 witness appearances from Australian Government
- 107 witness appearances from state and territory governments
- 22 witness appearances from local governments
- 134 witness appearances from broader community and experts



Royal Commission: role of Counsel Assisting

‘Servants of all, yet of none’

Hearing preparation:

- ‘Bring alive’ the terms of reference (TOR)
- Direct enquiries along particular lines a/c to TOR
- Superintend re evidence:
 - Collection
 - Analysis
 - Collation
- Presentation of evidence:
 - Hearing themes
 - Selection of witnesses
 - Documents for tender

‘Represent the public interest’

Witness examination:

- Impartiality
- Procedural fairness
 - ‘Notice rule’
 - ‘Hearing rule’
- Proper basis for allegations of fact or law, challenge to credit

Other work:

- Opening statement
 - use caution & restraint
- Closing statement
 - evidence & recommendations
- Assist in Report preparation



Examining NSW's Emergency Leaders

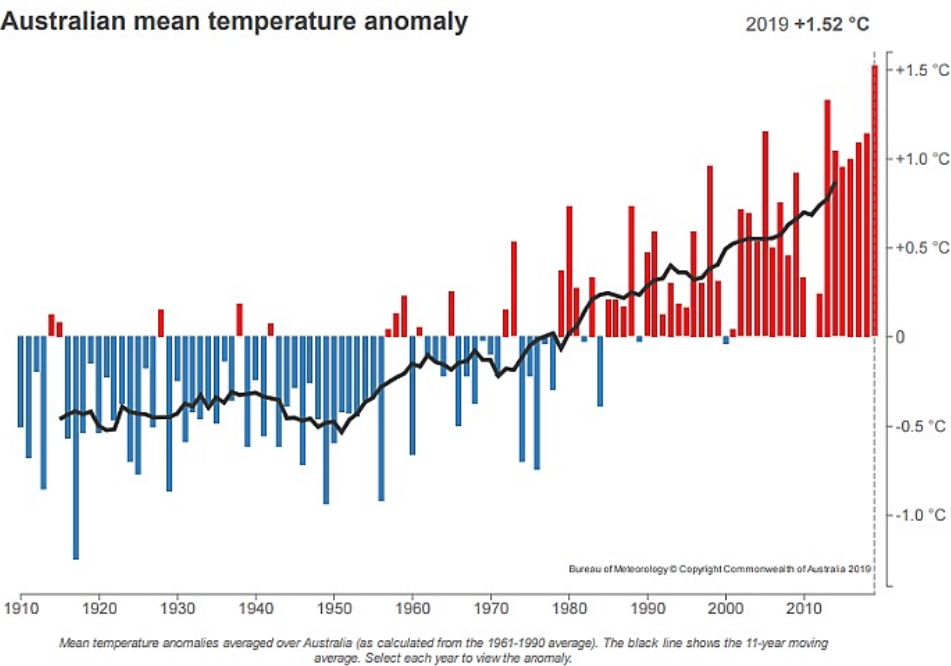


Examining Australia's Chief Scientist

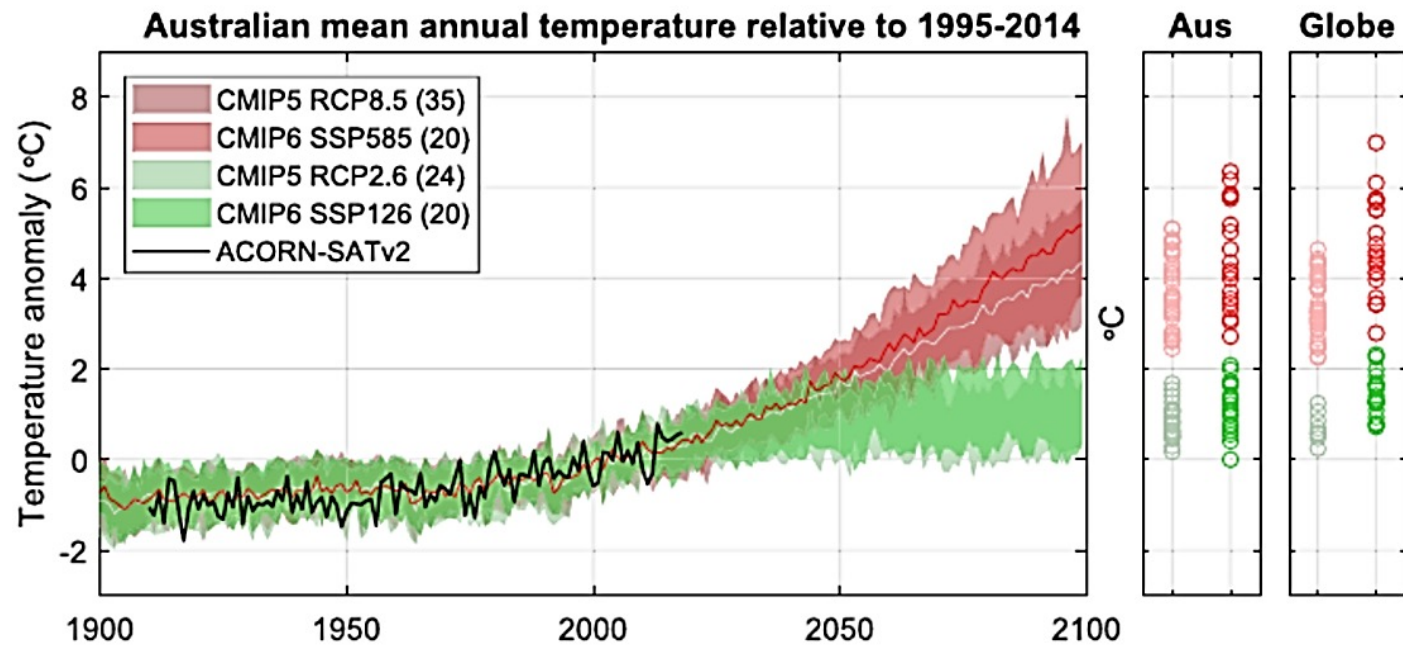


Royal Commission: Bushfires in Australia

Climate-driven natural hazards have already increased and are intensifying



Australian mean temperature anomaly, 1910-2019



Projected change in average temperature in Australia using CMIP5 and CMIP6 across 'low' (green) and 'high' (red) greenhouse gas emission scenarios.

Source: BOM, CSIRO

Royal Commission Findings: Bushfires Outlook is Alarming

Long-term increase in dangerous fire weather across large parts of Australia.

Long term reduction in time between catastrophic bushfire events of Australian history.

Fire weather season now arrives more than 3 months earlier than in mid-20th century in parts of Australia.

Lengthening of fire season reducing opportunities to undertake prescribed burning, and likely to get worse in future.

Increased frequency of days with a high FFDI (forest fire danger index) likely to result in reduced intervals between fire events, and increase fire intensities, which could make fighting fires harder.

Future projections of fire weather conditions show increasing fire danger days.

Increase in frequency and severity of fire weather since 1950 in southern and eastern Australia. Trend projected to continue.

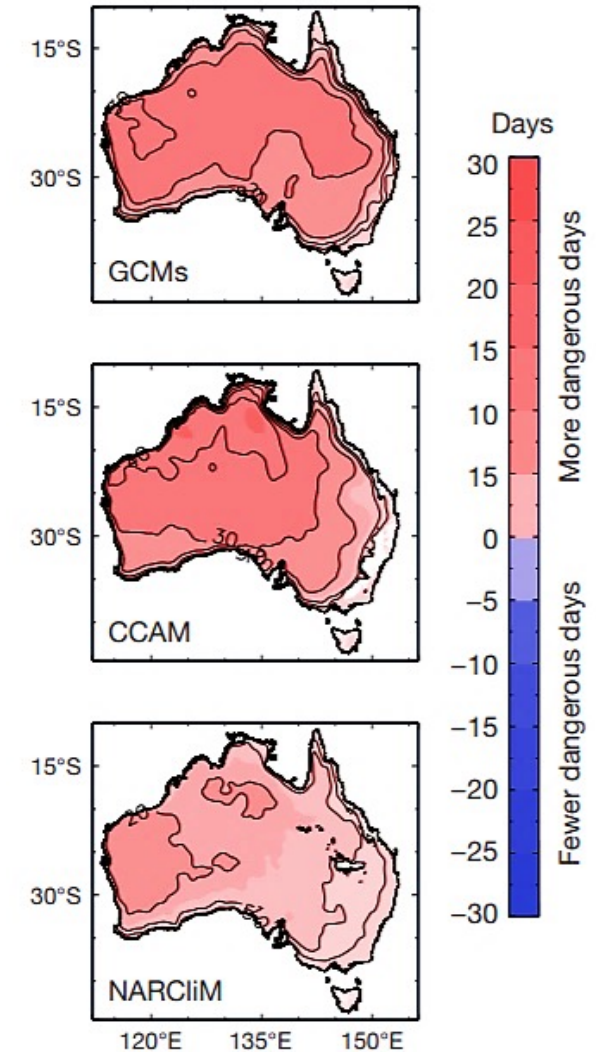
In northern and central Australia, monsoonal rainfall and the spread of invasive weeds (such as gamba grass) has increased in recent decades, resulting in increased fuel growth. May lead to more dangerous fire conditions during the dry season.

Projections for changes in fire conditions in northern and central Australia are less certain than for southern and eastern Australia, as incidence of fire is strongly related to fuel availability and occurrence of episodic rain events. However, predictions indicate that dry season fires will be more dangerous.

Climate projections show that more dangerous weather conditions for bushfires are very likely to occur throughout Australia in the future due to a warming climate.

The change in climate is also likely to result in changes to the amount, structure and type of bushfire fuel.

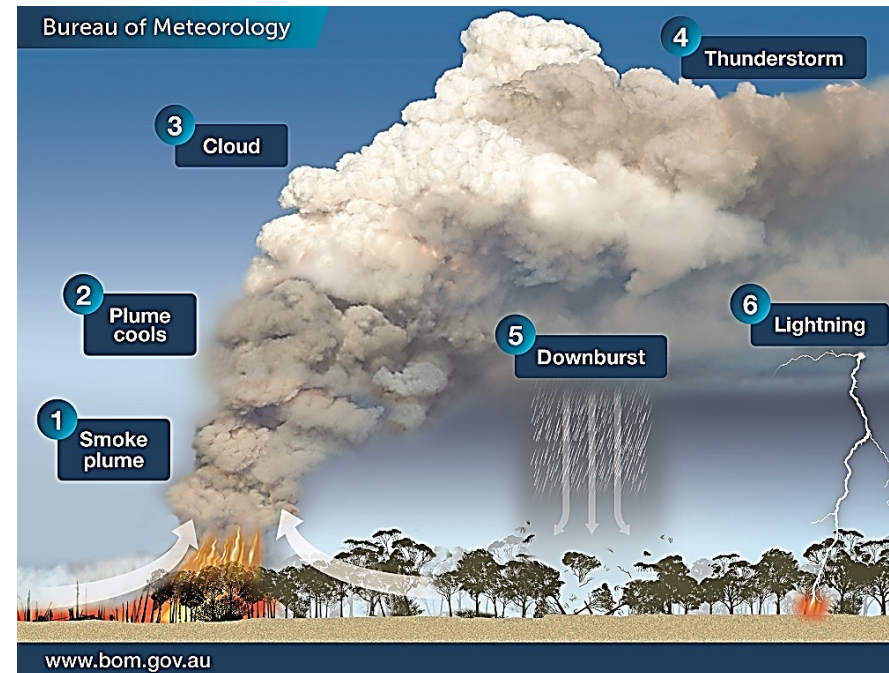
Climate models also indicate a future increase in dangerous pyro-convection conditions for many regions of southern Australia



Fire-generated weather

“... this last summer there was a near doubling of the record of these events in one event, and that assembly of data goes back about 30 years. So something happened this last summer which is truly extraordinary because - what we would call statistically a black swan event - we saw a flock of black swans. That just shouldn't have happened.”

Professor David Bowman, University of Tasmania



Formation of pyrocumulonimbus clouds
and fire-generated thunderstorms

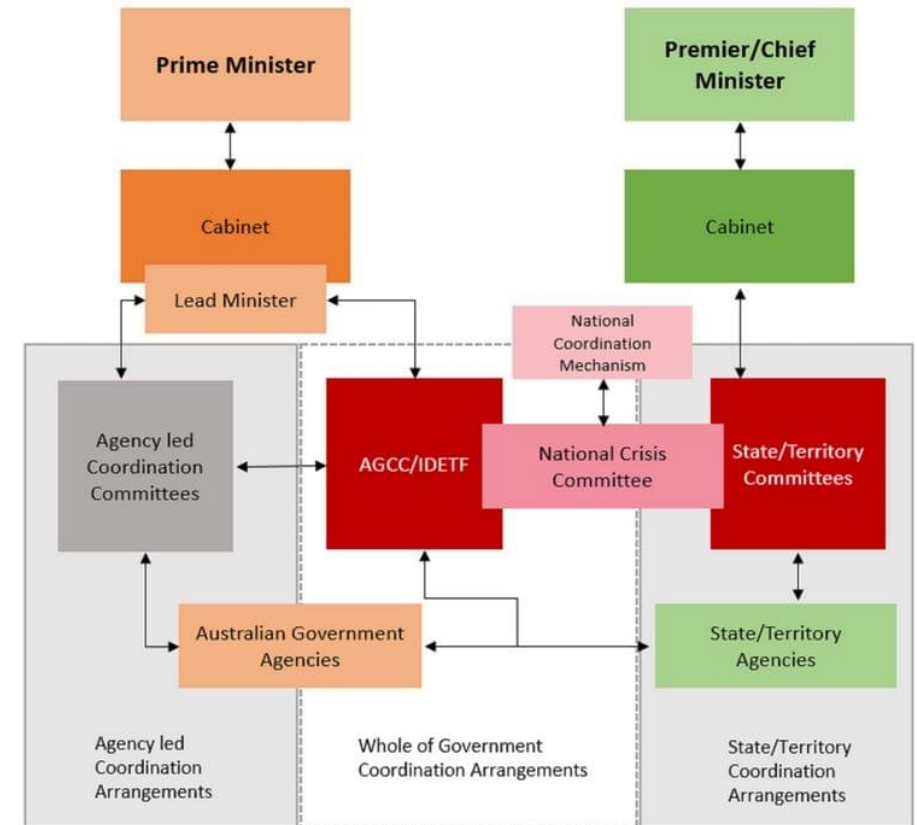


Disaster Management Authority in Australia

-
- In Australia, disaster management is made more complex by the division of Australian and State/Territory government responsibilities and powers.
 - States and territory governments have primary responsibility for disaster response and land management.
 - Increasing risk of significant harm with national scale or consequence has led to calls for the Australian government to utilise its unique capabilities and resources, and undertake a co-ordinating, and potentially leading, role in disaster management.
 - Complex set of governance arrangements are in place to guide resilience, disaster policy and security policy.
 - Responsibilities for disaster risk management & climate adaptation mainly rest within emergency management organisations at federal and state level, as well as at local government level.
 - Outcomes at local level often influenced & driven by investment & operational decisions made by, eg, asset owners & service providers at other government levels & within private companies.
 - Local decision makers may not have the right tools or data to make informed decisions.
 - Strategic, whole-of-system perspective is not defined and embedded through national, state and territory and local levels.
 - Yet natural disasters are expected to become more complex, more unpredictable, and more difficult to manage.

Improving Australia's national disaster governance

- Recognition of *shared* responsibility for disaster risk.
- Need for systemic risk assessment (c.f. a single hazard approach; need to consider multiple hazard events, occurring *concurrently* or *consecutively*).
- Anticipate *complexity* (e.g. hazards and disasters do not respect borders) and *cascading* effects (subsequent hazard increases *scale* of damage caused by previous)
- Collective and co-ordinated decision making and action ('National Cabinet', 'National Co-ordinating Mechanism')
- Informed by better data (e.g. investing in improved climate change models, and developing 'downscaled' climate projections)
- Need for scenario planning and stress testing.



National Crisis Coordination Arrangements 2020
(post bushfires, during pandemic)



The Royal Commission into National Natural Disaster Arrangements Report

Commissioned 20 February 2020

Published 30 October 2020

Report Overview:

A clear role for governments

- States and territories have primary responsibility

Disasters have changed

- Compounding disasters

We need to act on multiple fronts

We need a national approach

- ❖ Shared responsibility
- ❖ More cooperation and coordination
- ❖ Accountability and assurance mechanisms

'calls for strategic imagination'

A greater role for Australian government

- ❖ Declaration of national emergency

We need strategic leadership directed at resilience

- ❖ Senior ministerial leadership across the nation
- ❖ Standing national resilience & recovery entity
- ❖ Standing national emergency management entity

'big country thinking'

Sharing people and resources

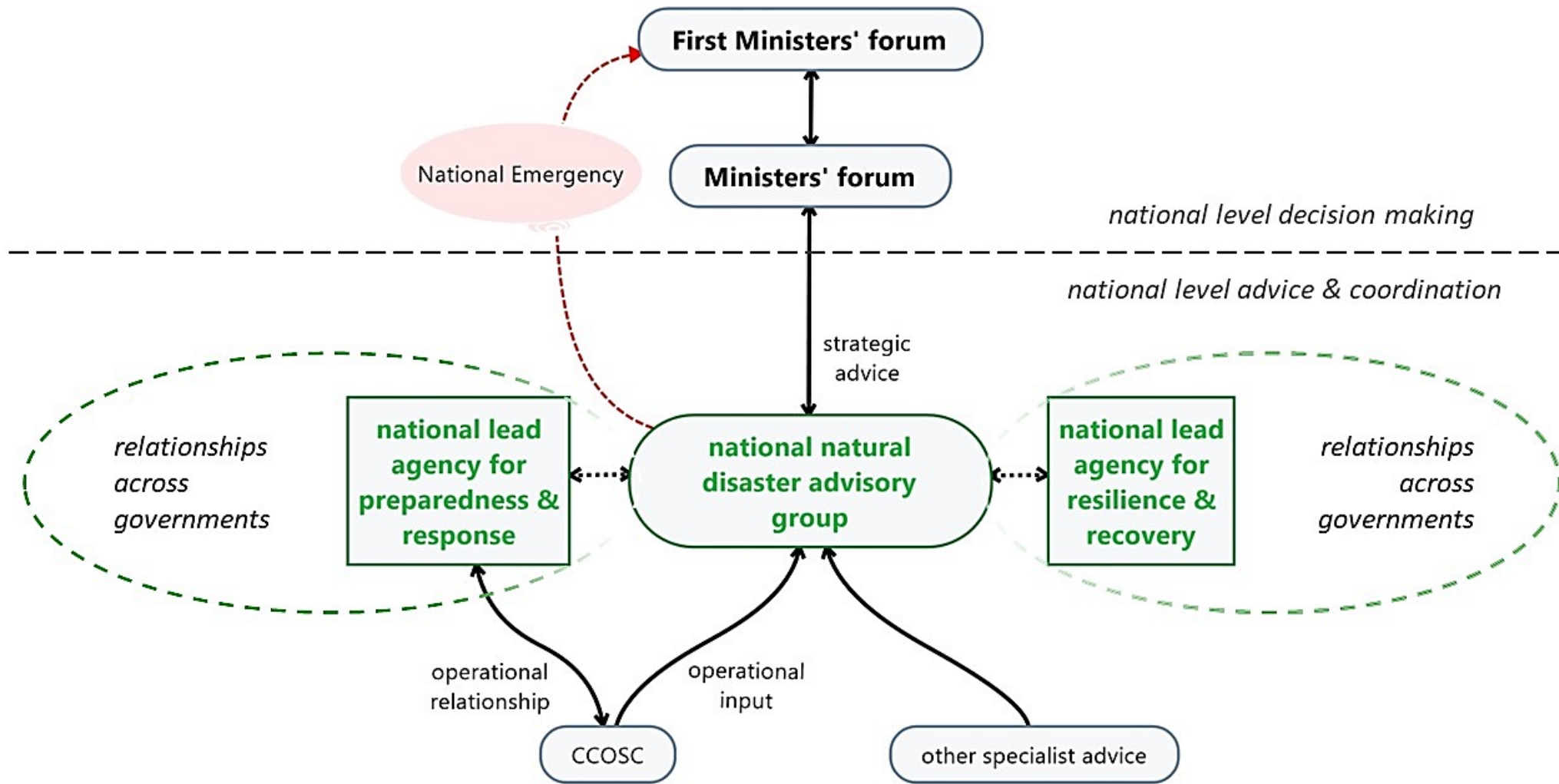
- ❖ Technology that works together
- ❖ Training, accreditation, joint exercises
- ❖ Sharing firefighting aircraft

National picture needs national data Supporting individuals to make good decisions

- ❖ Community education
- ❖ Inconsistencies in warnings, danger ratings, and other information
- ❖ Unclear information about land management
- ❖ In the dark about risk exposure

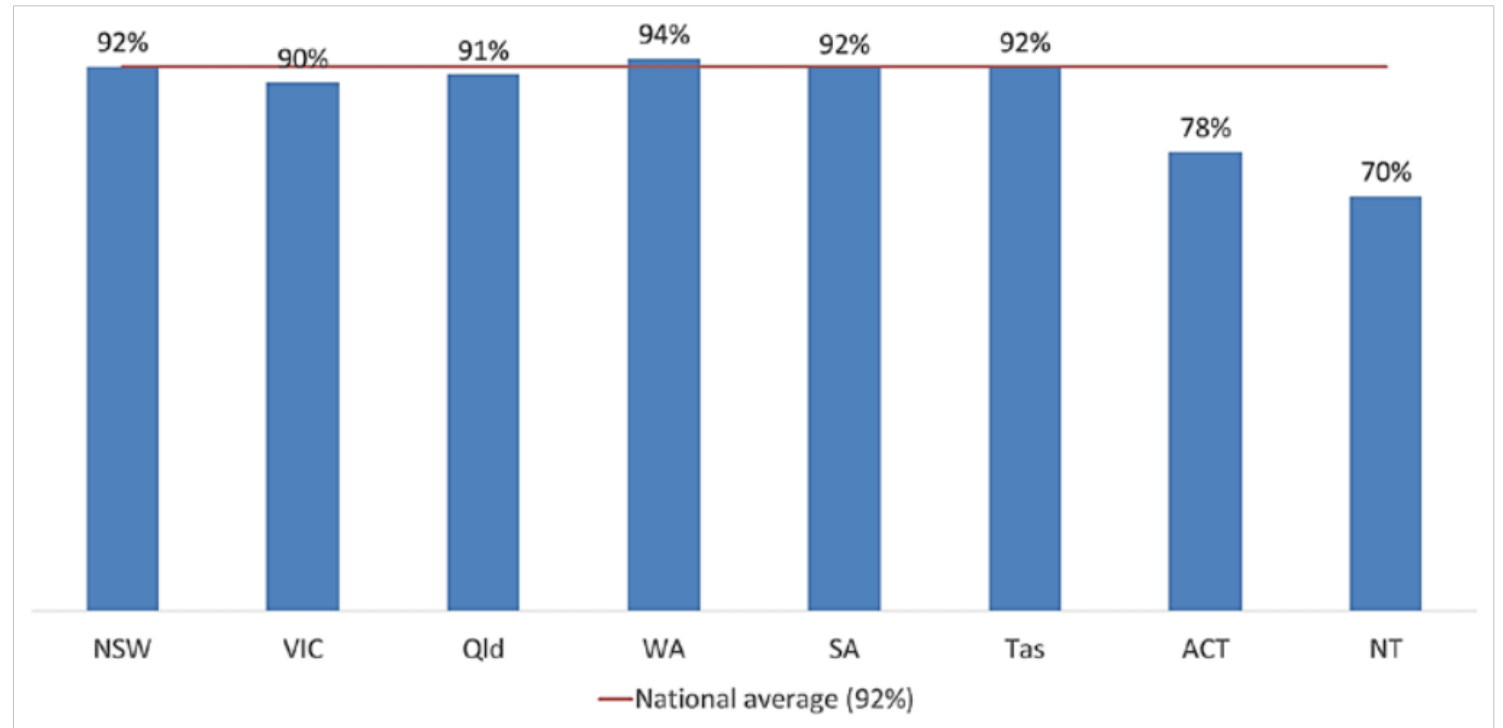
Whole-of-nation effort required

Simplified diagram of indicative high-level arrangements proposed by Royal Commission



CCOSC – Commissioners and Chief Officers Strategy Committee (ie provincial government fire and emergency chiefs)

In Australia, state and territory governments have primary responsibility for disaster management, but volunteers are a large majority of their fire and emergency services workforce



Volunteers as percentage of the fire & emergency services workforce 2018-2019

Total number of fire & emergency services volunteers has remained over 200,000 for the decade from 2009-2019.



Evolving role of military in disaster management

- Primary role of Australian Defence Force ('ADF') is defending and protecting Australia.
- Provincial governments can request assistance for the civil community from ADF or for higher level assistance through COMDISPLAN.
- ADF does provide assistance, to the benefit of the nation, through its capabilities and resources during and after natural disasters.
- ADF does not have the capacity or capability to fight bushfires.
- ADF does have unique capabilities to provide ancillary support, eg evacuation assistance, surveillance of fire fronts, delivery of food and water to communities and farms.
- ADF provides support in accordance with processes outlined in the *Defence Assistance to the Civil Community* ('DACC') manual, COMDISPLAN, or

*Australians evacuated as part of
Operation Bushfire Assist 2019-2020*



Military assistance provided during Operation Bushfire Assist 2019-2020

- 8,236 Australian Defence Force members deployed (including 2,556 Reservists in compulsory call-out)
- 469 international military personnel
- > 4,850kms of road access provided & barriers cleared
- > 240kms of fire breaks cleared
- 10 million litres of drinking water provided
- 77,000 meals provided for civilians
- > 1,280kms fences repaired
- 527 evacuees accommodated
- 67 fixed-wing and rotary wing aircraft
- 3 maritime assets deployed (incl. HMAS *Choules*)
- 65 heavy machinery units deployed
- 3 water purification systems deployed

Evacuees are transported from Mallacoota, Victoria to awaiting ships as part of Operation Bushfire Assist 2019-2020

Information
needs for
strategic and
operational
decision
makers





A national approach to national disasters

The Commonwealth Government response to the Royal Commission into National Natural Disaster Arrangements

November 2020



Highlights of Australian Government Response:

- New National Recovery & Resilience Agency
<https://recovery.gov.au>
- New Australian Climate Service
<https://www.acs.gov.au>
- New National Emergency Declaration laws
- COMDISPLAN & DACC changed to speed up ADF engagement in emergency relief

Air quality and bushfire smoke



Royal Commission Findings:

- 19 weeks of continuous fire activity
- 429 premature deaths
- 3,320 hospital admissions for cardiovascular and respiratory conditions
- 1,523 presentations to emergency departments for asthma
- \$1.95 billion health costs from smoke exposure in the 2019-2020 bushfires in Australia

Response / Air Quality Category	ACT (24HR) Based on AQI	ACT (24HR) *	NSW (24HR) Based on AQI	NT (24HR) Based on AQI	QLD (24HR) Based on AQ
Low / Very Good - Fair	0 - 8.2	0 - 8.9	0 - 8.2	0 - 8.2	0 - 8.2
	8.3 - 16.4		8.3 - 16.4	8.3 - 16.4	8.3 - 16.4
	16.5 - 25	9 - 25.9	16.5 - 25	16.5 - 25	16.5 - 25
Medium / Moderate - Poor	25.1 - 37.4	26 - 39.9	25.1 - 37.4	25.1 - 37.4	25.1 - 37.4
High / Very Poor	37.5 - 50	40 - 106.9	37.5 - 50	37.5 - 50	37.5+
		107 - 177.9			
Very High / Extreme / Hazardous	50+	>177.9	50+	50+	
		>250			
Response / Air Quality Category	SA (24HR) Based on AQI	TAS (1HR)	VIC (24HR)	VIC (1HR)	WA (24HR) Based on AQ
Low / Very Good - Fair	0 - 8.2	0 - 9	<9	<27	0 - 8.2
	8.3 - 16.4				8.3 - 16.4
	16.5 - 25	10 - 24	9 - 25	27 - 62	16.5 - 25
Medium / Moderate - Poor	25.1 - 37.4	25 - 99	>25 - 40	62 - 97	25.1 - 37.4
High / Very Poor	37.5+	100+	>40 - 177	97 - 370	37.5 - 50
Very High / Extreme / Hazardous			>177	370+	50+
			>250		

Example: comparison of air quality action categories for PM2.5 as at February 2020

Differences identified between states and territories in metrics:

- Air Quality Indices (‘AQIs’))
- Concentration levels
- Risk ratings to different air quality levels
- Colour schemes
- Averaging periods

Variability in metrics and how links to health advice resulted in confusion in the community

Promoting national
consistency and
capability:
Air quality
recommendations

14.1 Nationally consistent air quality information, health advice and interventions

Australian, state and territory governments should:

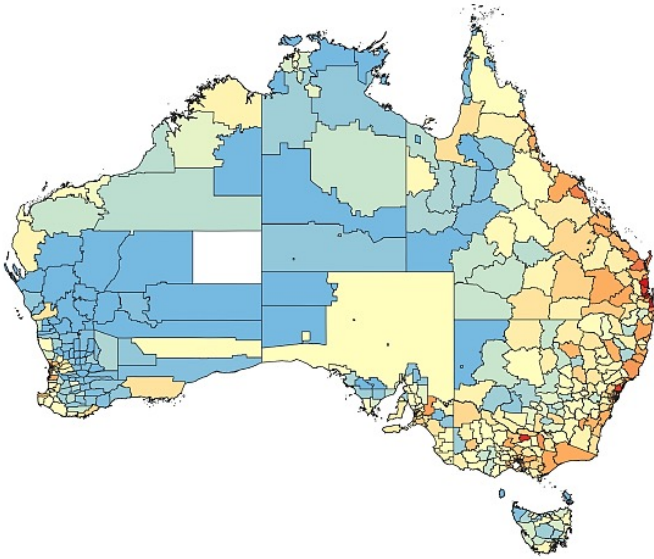
- develop close to real-time, nationally consistent air quality information, including consistent categorisation and public health advice
- greater community education and guidance, and
- targeted health advice to vulnerable groups.

14.2 National Air Quality Forecasting Capability

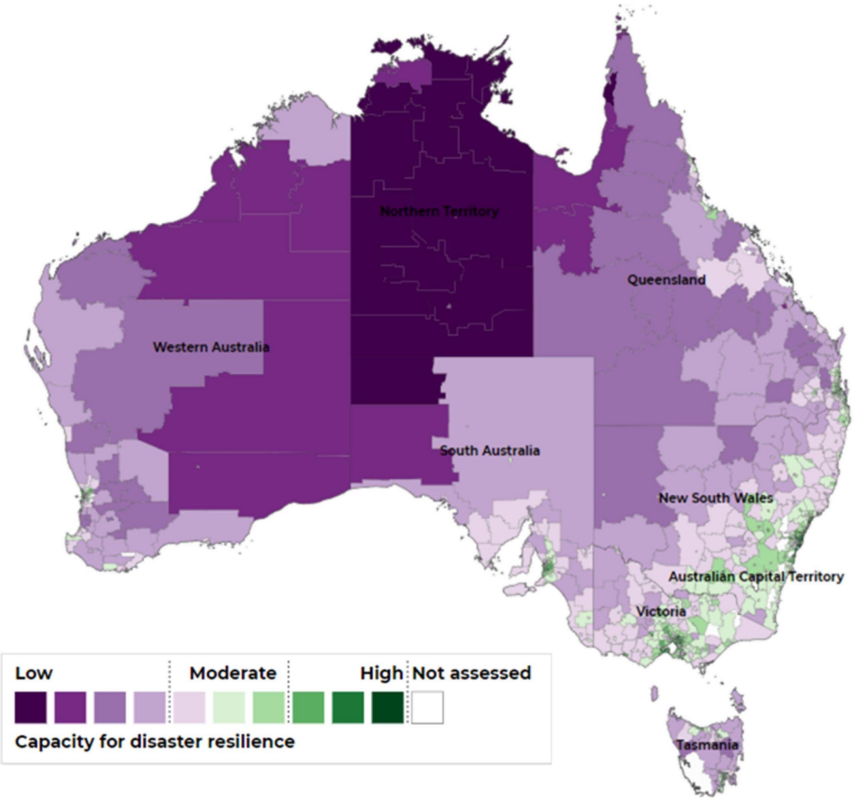
- Australian, state and territory governments should develop national air quality forecasting capabilities, which include broad coverage of population centres and apply to smoke and other airborne pollutants, such as dust and pollen, to predict plume behaviour.

ALL HAZARDS

HIGH RISK PROPERTIES AS PERCENTAGE OF ALL ADDRESSES, (HRP%) IN 2100



0% 50%



Low Moderate High Not assessed
Capacity for disaster resilience

Land use planning laws

Promoting resilience and adaptation to disasters: land use planning

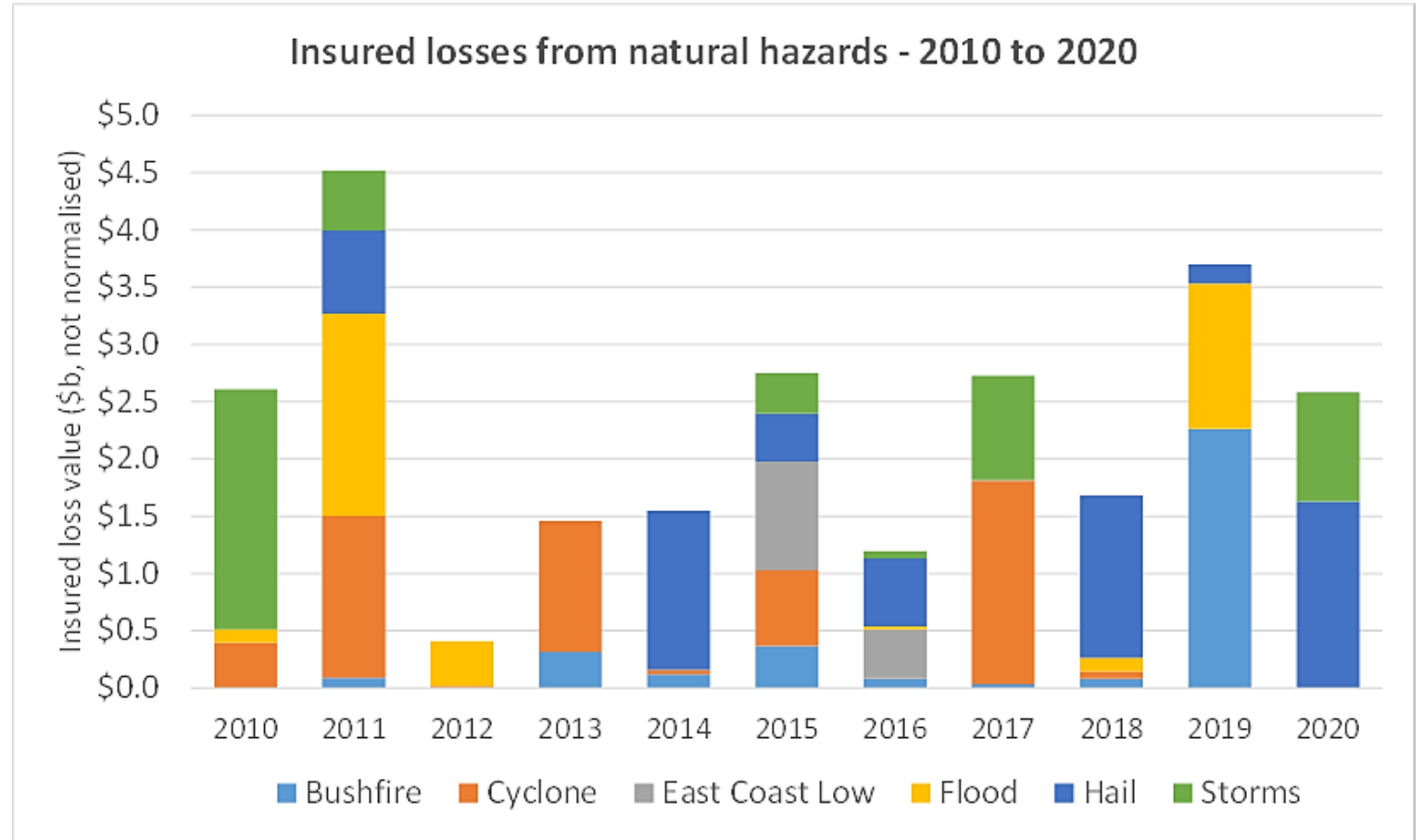
- **Recommendation 19.1 Communication of natural hazard risk information to individuals** - State and territory governments should: each have a process or mechanism in place to communicate natural hazard risk information to households (including prospective purchasers) in 'hazard prone' areas, and work together, and with the Australian Government where appropriate, to explore the development of a national mechanism to do the same
- **Recommendation 19.3 Mandatory consideration of natural disaster risk in land-use planning decisions** - State, territory and local governments should be required to consider present and future natural disaster risk when making land-use planning decisions for new developments.

TFH HIRE
0403 444 401
tfh.com.au
AUSTRALIA WIDE

DANGER
ASBESTOS



Insurance, homeowners and risk



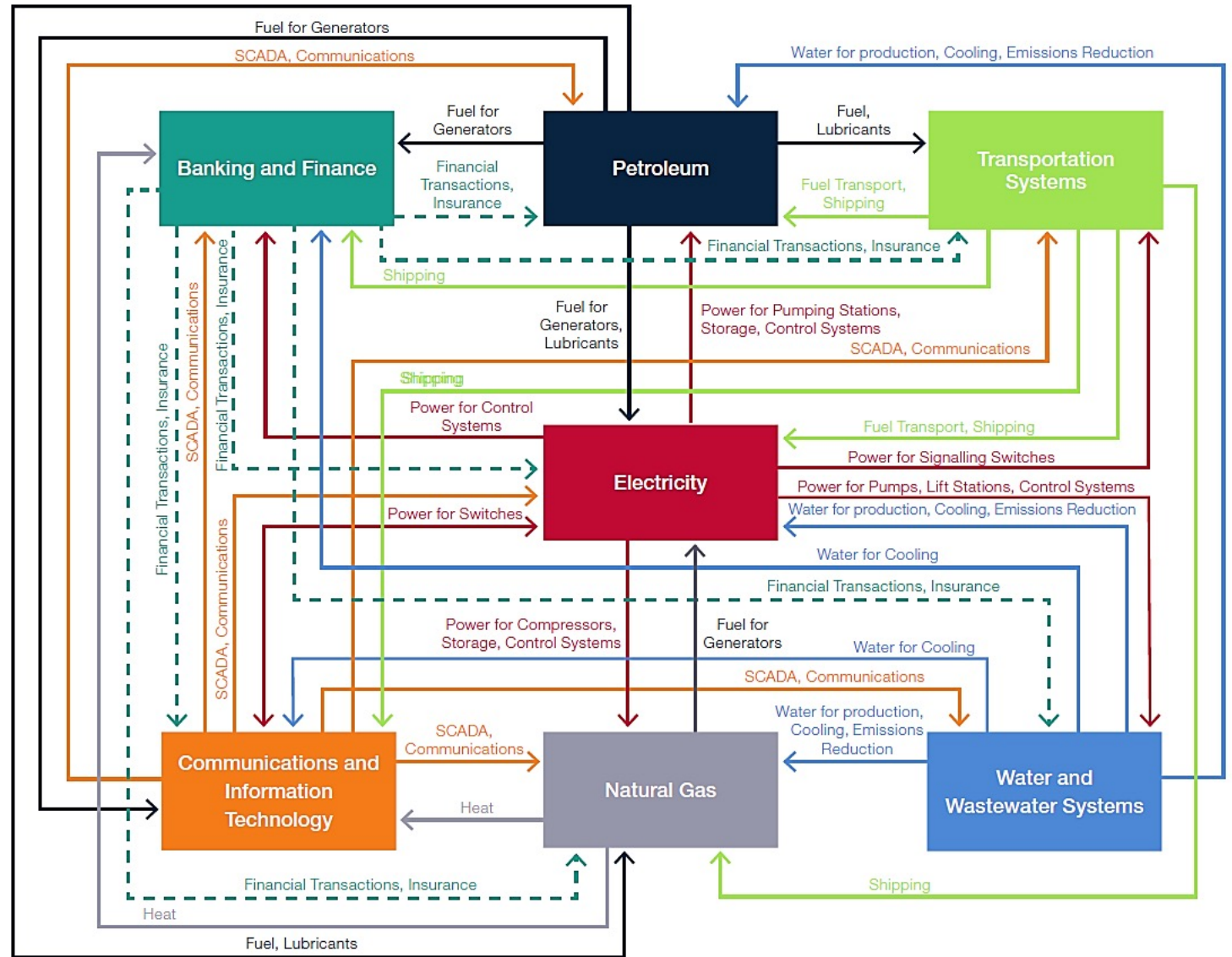
Promoting resilience and adaptation to disasters: built environment

- **Recommendation 19.2 Guidance for insurer-recognised retrofitting and mitigation** = The insurance industry, as represented by the Insurance Council of Australia, working with state and territory governments and other relevant stakeholders, should produce and communicate to consumers clear guidance on individual-level natural hazard risk mitigation actions insurers will recognise in setting insurance premiums.
- **Recommendation 19.4 National Construction Code** - The Australian Building Codes Board, working with other bodies as appropriate, should: assess the extent to which AS 3959:2018 Construction of buildings in bushfire-prone areas, and other relevant building standards, are effective in reducing risk from natural hazards to lives and property, and conduct an evaluation as to whether the National Construction Code should be amended to specifically include, as an objective of the code, making buildings more resilient to natural hazards.

Other insurance inquiries underway during Royal Commission, including by Australian Competition and Consumer Commission.

July 2021: Government announced new reinsurance pool to cover cyclone and related flood damage in northern Australia from 1 July 2022, backed by \$10 billion government guarantee.

Utilities and maintaining essential services



Electricity and Telco Issues

- Australia's electricity transmission network is oblivious to State borders - an interconnected system that runs from northern Australia to Tasmania, including South Australia.
- The Australian Energy Market Operator conducts an annual 'summer readiness program'.
- During the 2019-2020 bushfire season, the interconnectors between Eastern States were threatened with reports that they 'may fail', which would have affected power supplies locally and nationally.
- A transmission grid separation between NSW and Victoria occurred on 4 January 2020, although remedied 'fairly quickly'.
- Australia's electricity distribution network has a large number of very long lines which are expensive to maintain and vulnerable to natural hazards.
- Power outages were a widespread cause of cascading failures during the 2019-2020 bushfires, including telecommunications (88% failures caused by major power outages).
- Given interdependency of critical infrastructure, Royal Commission found awareness of natural disaster risks needed to be understood better and shared across dependent services.



Royal Commission recognized value of risk mitigation measures

Observed risk mitigation undertaken

- Technologies and equipment to restore telco outages for an affected community, such as Cells on Wheels (*COWs*), Mobile Exchanges on Wheels (*MEOWs*), and NBN Road Muster Trucks.
- Equipment to maintain an electricity supply during outages, such as diesel generators or battery backups to provide power to a remote community and critical infrastructure assets during an outage.
- Clearing vegetation and dropping fire retardant around infrastructure assets.
- Replacing timber power poles with concrete poles as they are less-flammable.

Encouraged risk mitigation options

- Strategic hazard modelling to inform infrastructure locations to minimise exposure to hazards, and to establish the optimal time to replace or relocate infrastructure in hazard prone areas.
- Placing infrastructure (eg powerlines and telecommunications cables) underground to reduce exposure to natural disasters.
- Conversion of core telecommunications networks into distributed cloud networks.
- Stand-alone power systems.
- Extending duration of battery backups for telecommunications infrastructure.

Aerial firefighting recommendations

- Develop Australian-based & registered national aerial firefighting capability, to be tasked according to greatest national need.
- Support ongoing research and evaluation.
- Australian, state and territory governments should adopt procurement and contracting strategies that support and develop a broader Australian-based sovereign aerial firefighting industry.



Bushfire mitigation



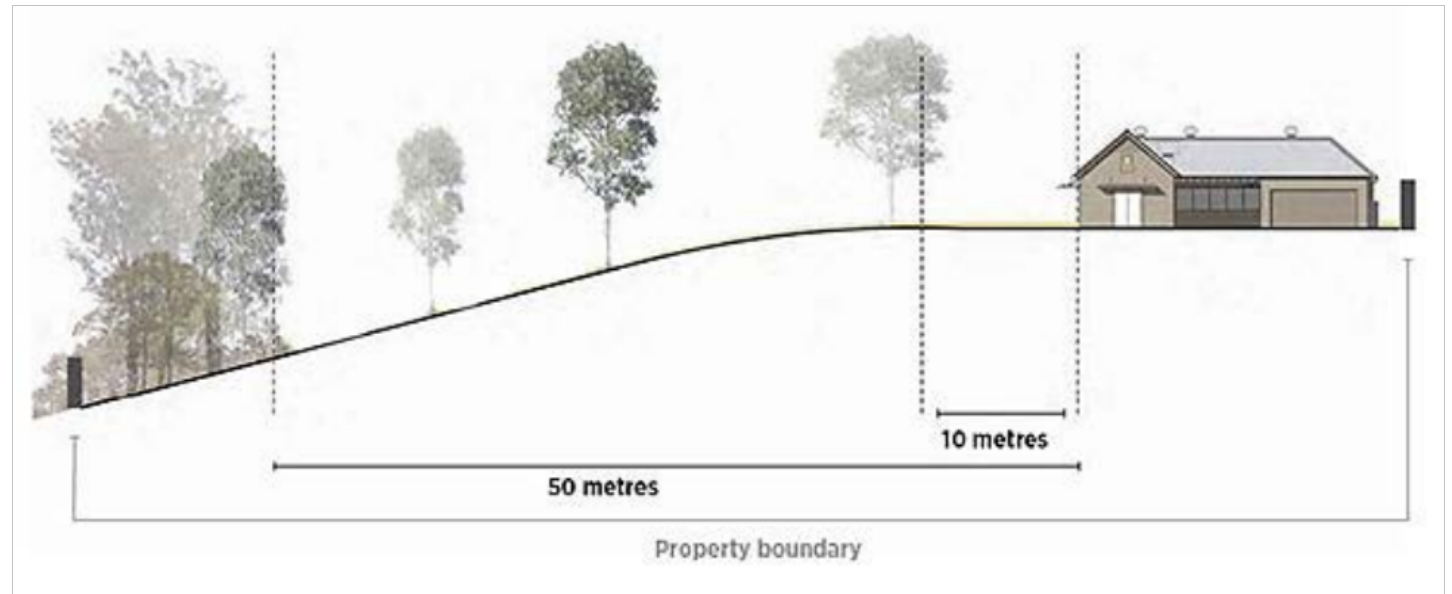
Pumping creek water to moisten
ground fuel surrounding Wollemi Pines



Willinga Park at boundary
with the National Park

NSW 10/50 Vegetation Clearing Scheme

- Homeowner can clear trees on their property within 10 metres of their home, without seeking approval.
- Can clear underlying vegetation such as shrubs (but not trees) on their property within 50 metres of their home, without seeking approval.







Report available:
<https://naturaldisaster.royalcommission.gov.au>



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Dominique Hogan-Doran SC is a First Class Honours graduate of the University of Sydney (*BEC (Soc Sc)*, *LLB (Hons I)*, *LLM*) and the University of Oxford (*BCL (Hons I)*), where she was the Sir Robert Menzies Memorial Scholar in Law. She was admitted to legal practice in 1994, called to the NSW Bar in November 1995, the Victorian Bar in 2007, and appointed Senior Counsel in 2015.

Dominique has been '*lauded as 'pre-eminent' in relation to inquiries, investigations and Royal Commissions, in addition to being a stand-out for her 'incisive' handling of financial services cases*' in the recent *The Legal 500 – Asia Pacific 2021*. She was also recognised in *Best Lawyers - Australia 2021* for Litigation, Alternative Dispute Resolution, Financial Institutions and Superannuation Law, and *Doyle's Guide to the Australian Legal Profession* as a 'Leading Commercial Litigation and Dispute Resolution Senior Counsel' (since 2016). She was 'Barrister of the Year' in the 2016 *Lawyers Weekly* Australian Law Awards.

Dominique has extensive experience acting for government agencies, organisations, and individuals in royal commissions and public inquiries. During 2020 she led the Counsel Assisting team appointed by the Commonwealth and State Attorneys-General to assist the Royal Commission into National Natural Disaster Arrangements.