

28 April 2020

Air Chief Marshal Mark Binskin AC
The Honorable Dr. Annabelle Bennett AC SC
Professor Andrew Macintosh

Royal Commission into National Natural Disaster Arrangements
Locked Bag 2000
Manuka ACT 2603

Lodged online: naturaldisaster.royalcommission.gov.au/submissions

Dear Commissioners

Royal Commission into National Natural Disaster Arrangements

The Property Council appreciates the opportunity to provide a submission to the Royal Commission into National Natural Disaster Arrangements following the 2019-2020 bushfire season. Our thoughts remain with those who have lost loved ones, livelihoods and property in these devastating fires and with those who are still rebuilding and recovering from these events.

The Property Council hopes the Commonwealth and state and territory governments will use the aftermath of these bushfires to reset and engage communities to develop a local, place-based approach to resilience that will help people survive and adapt positively to any chronic shocks and acute stresses they may face. Decisive action on climate change mitigation and adaptation is necessary if we are to avoid the worst projected impacts, which would include more frequent bushfire seasons of the scale and intensity we witnessed during this past fire season.

Our members are the leaders of, and owners and investors in, Australia's property industry and have a long-term stake in helping our capital and regional cities to thrive. As a nation, we need a comprehensive national policy framework to reduce our emissions to net zero by 2050. Our efforts to protect people's health and wellbeing, the natural environment and the economy's potential to prosper into the future will be enhanced by smart adaptation to our changing climate.

We have made several recommendations in the detailed submission that follows this letter and would be pleased to meet with you to discuss in further detail. Please do not hesitate to contact Frankie Muskovic, National Policy Manager - Sustainability and Regulatory Affairs, at fmuskovic@propertycouncil.com.au to arrange a meeting.

Kind Regards,



Mike Zorbas
Group Executive – Policy

Building resilient communities into the future

1. The Current Situation – Australia is a nation experiencing extremes

Australia is already experiencing the impacts of climate change and is increasingly exposed to disasters caused by natural hazards that impact infrastructure, essential services and communities. Over the past 30 years, natural disasters have resulted in billions of dollars in tangible costs, as well as a multitude of intangible costs such as deaths, injuries and significant social impacts including the health and wellbeing of our communities. More than 9 million people have been affected by both immediate and, for some, long-term effects.

When combined, the total economic cost of natural hazard-triggered disasters in the 10 years to 2016 has averaged \$18.2 billion per year, equivalent to 1.2% of average gross domestic product (GDP) over the same period. This is expected reach \$39 billion per year on average by 2050 (in present value terms), even without considering the impact of longer term 'stresses' due to climate change.¹

We are also increasingly connected, with our cities, towns and communities ever more reliant on range of interdependent assets and services that underpin our ability to move, work, play, thrive and maintain relationships. The importance of these connections is often emphasised during times of crisis when critical networks are damaged and disrupted, as we witnessed during the recent 2019-2020 bushfire season.

Across Australia these disruptions are often a result of our harsh and extreme climate – exacerbated by the long-term impacts of climate change – as well as other externalities ranging from cyber-attack and terrorism through to infrastructure failure and pandemics, which we are witnessing to an unprecedented level with the current spread of COVID-19.

These events have an increasing ability to destabilise our communities and place pressure on systems that are struggling to cope or at capacity. These impacts and interconnections are further highlighted in the most recent World Economic Forum Global Risks Report 2020², shown in Figure 1 which presents the top 10 risks in terms of likelihood and impact.

Top 10 risks in terms of Likelihood	Top 10 risks in terms of Impact	Categories
1 Extreme weather	1 Climate action failure	Economic
2 Climate action failure	2 Weapons of mass destruction	
3 Natural disasters	3 Biodiversity loss	Environmental
4 Biodiversity loss	4 Extreme weather	
5 Human-made environmental disasters	5 Water crises	Geopolitical
6 Data fraud or theft	6 Information infrastructure breakdown	
7 Cyberattacks	7 Natural disasters	Societal
8 Water crises	8 Cyberattacks	
9 Global governance failure	9 Human-made environmental disasters	Technological
10 Asset bubbles	10 Infectious diseases	

Figure 1: World Economic Forum Top 10 risks from Global Risks Perception Survey 2019-2020

¹ Deloitte Access Economics for the Australian Business Roundtable for Disaster Resilience and Safer Communities, 2017, '[Building Resilience to natural disasters in our states and territories](#)', p.7

² World Economic Forum, 2020, '[Global Risks Report 2020](#)', p. 3

In the past couple of years, the impacts associated with climate change have escalated to dominate the top three spaces for risk likelihood, with ‘failure of climate-change mitigation and adaptation’ rising from fifth place in 2018, to second place in 2020 followed by ‘natural disasters’. It is also worth noting the increase of impact-related risks linked to systems failures, for example disease pandemics, water crises, biodiversity loss and ecosystem collapse, crucial information infrastructure breakdown and cyber-attacks.

Although there is no ‘quick fix’ response to addressing these challenges, taking a broad view of resilience and embedding a systems approach into national policy frameworks, emergency and disaster planning can help us better prepare and respond during these events.

2. ‘Shocks’ and ‘Stresses’ that impact community resilience

Within Australia, the impacts of climate change are considered to pose the greatest risk to our cities, towns, infrastructure and assets,³ however there is also a growing need to consider the impacts of a broader range of acute shocks and chronic stresses.

As a result of these changes, the focus of resilience has broadened to reference the need for urban, or community resilience that can be defined as *“the capacity of individuals, communities, institutions, businesses and systems to survive, adapt and thrive no matter what kinds of chronic stresses and acute shocks they experience.”*⁴

Understanding and addressing those shocks and stresses likely to impact and shape a city, town or community is a critical part of resilience planning. **Shocks** relate to those sudden, sharp and often catastrophic events that threaten a city, whereas **stresses** highlight those chronic, often long-term, pressures and trends that can weaken the fabric of a community. Examples of shocks and stresses commonly considered in the context of urban resilience are outlined below in Table 1.

Table 1: Common shocks and stresses impacting community resilience

Example shocks and stresses	
Acute Shocks	Chronic Stresses
Extreme weather events (e.g. heatwaves; storm surges, drought)	Lack of social cohesion
Natural catastrophes (e.g. bushfire, flooding, cyclones)	Housing affordability
Geological hazards (e.g. earthquakes, landslides, tsunami)	Rising unemployment
Ecosystem collapse	Rising inequity
Infrastructure failure	Drug and alcohol abuse
Water crisis (e.g. drought and contamination)	Demand on health services and infrastructure
Digital network failure	Chronic illnesses
Cyber attack	Racism and intolerance
Terror attack	Rising utility prices
Financial market crash	Aging population
Disease and pandemics	Migration and immigration
	Increasing digital dependency
	Aging infrastructure
	Political uncertainty or instability
	Prolonged periods of drought
	Increased ocean salinity and coastal inundation

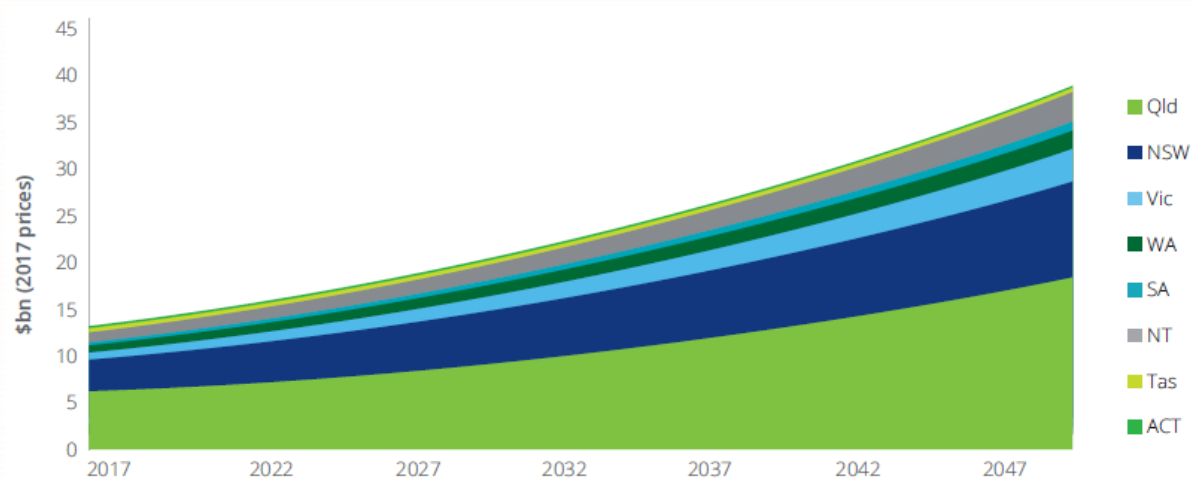
³ Deloitte Access Economics for the Australian Business Roundtable for Disaster Resilience and Safer Communities, 2017, [‘Building Resilience to natural disasters in our states and territories’](#)

⁴ 100 Resilient Cities, [definition for urban resilience](#)

3. The cost of disruption

It will be difficult to estimate the eventual economic cost of Australia's 2019-2020 bushfire season. The fires claimed 34 people's lives, destroyed almost 2,800 homes, burned 18.6 million hectares of bush, and killed an estimated 1 billion animals. While methodologies can be applied to estimate the economic costs of property and life loss (the Victorian Bushfire Royal Commission estimated the cost of the 2009 Black Saturday disaster at \$4.4 billion⁵), these estimates do not include the effect of injuries and shortened lives due to smoke-related stroke and cardiovascular and lung diseases, damage to species and habitats, loss of livestock, grain and feed, crops, and national and local parks. Also excluded are the many devastating intangible costs faced by communities in the aftermath: social costs of mental health, unemployment, increases in suicide, substance abuse, relationship breakdowns and domestic violence.

Australia has incurred significant economic costs from natural disasters and other shocks to communities in recent decades. In work commissioned by the Australian Business Roundtable on Disaster Resilience⁶, Deloitte Access Economics concluded that Queensland has been Australia's most disaster-prone state over the past decade and incurred a total economic cost of \$11 billion per year. This is 60% of the national cost. New South Wales (NSW) and Victoria each incurred more than 15% of the total cost. The remaining 10%, equivalent to \$1.4 billion per year, was borne across other states and territories. There were no major disaster events in the Australian Capital Territory (ACT) over the period.



Source: Deloitte Access Economics analysis

Figure 2: Deloitte 2017-2050 forecast of total economic cost of natural disasters for each state and territory.

Other examples include:

- A 2017 study undertaken on behalf of the Australian Business Roundtable (ABRT) on Disaster Resilience and Safer Communities estimated that on average, natural disasters cost the country \$13.2 billion per year today. By 2050 this figure is expected to rise to \$39.3 billion with Queensland and NSW experiencing the brunt of impacts (refer to Figure 2).⁷

⁵ Victorian Bushfires Royal Commission, 2009, [Volume 1, Appendix A – Estimated Costs of the Fires](#), p.345

⁶ Deloitte Access Economics for the Australian Business Roundtable for Disaster Resilience and Safer Communities, 2017, [‘Building Resilience to natural disasters in our states and territories’](#)

- The estimated cost of South Australia's 2016 energy network failure was \$367 million across the state. A study of Business SA members showed that given 70% of respondents had power restored within 24 hours; the costs were estimated as close to \$120,000 per minute for businesses across the state. Of 200 respondents to the Business SA survey, only 12% had back-up generators to help cope with the loss of power⁸.
- Accenture's 2017 investigation into the cost of cyber-crime assessed the rise of incidents across seven countries including Australia and found a 25.8% increase in cyber-crime from the previous year. The report found that Malware and Web-based attacks are the two most costly attack types, with the average cost of malware attacks for Australia was reported at USD1.57 million per attack, with costs associated with web-based attacks averaging at USD1.52 million per attack.⁹

Investment in resilience yields a double dividend. First, in the avoided impacts of disasters when they occur. And second, in the broader co-benefits that arise even in the absence of a disaster.

4. Resilience in Australia's built environment

4.1. The case for action

Population density within Australia is increasing generally, with concentrations emerging in areas prone to natural hazards, particularly coastal areas. Around 80% of Australia's population lives within 50km of the coast and 25% of Australia's population growth is within 3km of the coastline. These population centres are exposed to some of the most damaging extreme weather events, such as tropical cyclones, storm surges, hailstorms, and coastal river flooding. More property in these areas means a higher cost of damage from natural hazard-triggered disasters as the effects of climate change increase and intensify over time.

The absence of a comprehensive national policy framework and supporting actions to mitigate and adapt to the impacts of climate change has manifested in many ways across the country and within major sectors of the economy. For Australia's built environment and property industry:

- a lack of national, comprehensive data and mapping has undermined understanding of natural hazard risk by governments and the community. This has contributed to poor planning decisions leading to property development in areas of significant risk
- inappropriate building design and construction in the past has been widespread, leading to a built environment susceptible to damage,
- local, state and territory and federal governments have not invested adequately in strategic disaster mitigation initiatives and infrastructure.

Potential changes in climate will likely lead to further increases in the frequency and severity of weather-related losses in Australia. A 2018 study jointly produced by the University of Melbourne, the ANU and the CSIRO¹⁰ estimated the global gains from limiting warming to a 2°C increase are approximately \$US17,489 billion per year out to 2100.

Without appropriate risk assessment, mitigation and adaptation measures to offset the uncertainty of future impacts, the cost of insurance is very likely to rise, with some locations becoming too expensive for consumers to bear the cost or causing some insurers to withdraw. As

⁸ Business SA, 2016, '[Blackout Survey Results: Understanding the effects of South Australia's state-wide blackout on 28 September 2016](#)'

⁹ Ponemon Institute and Accenture, 2017, '[Cost of Cyber Crime Study](#)'

¹⁰ AGU100 report, 2018, '[The Effects of Climate Change on GDP by Country and the Global Economic Gains From Complying With the Paris Climate Accord](#)'

this occurs, governments will be called upon to cover the cost of repair and reconstruction currently met by insurers.

Support for existing communities to adapt and thrive

All communities will experience climate change impacts into the future, however some will experience greater risks or risks for which they are ill prepared. Examples include communities facing significant and increasing bushfire risk, coastal areas subject to storm surge and riverine areas vulnerable to flooding. Responding to these risks will require all levels of government to consider whether, how and when action should be taken to protect communities, implement measures to adapt to climate change impacts, or consider relocation of communities from high-risk areas.

There is currently no framework to manage climate change risks in existing communities that sees coordination of all levels of government and locally appropriate responses informed by the community. Such a framework is necessary and begins with understanding the shocks and stresses experienced within Australian communities from the ground up, using consistent data standards to map different risks and then considering options for managing these risks. This needs to be done by all levels of government in partnership, considering the costs and benefits of each option and building a community consensus on preferred options.

4.2. Existing frameworks for resilience in the built environment

While some may label this emerging resilience agenda as the ‘next new thing’, its origins can be traced back several decades, to its use in the context of supporting and enhancing ecological systems, and the ability for systems to absorb change and disturbance and maintain their supporting states.

International Examples

Over the years the definition and practice has been progressively evolved and refined and has particularly grown from its use in a disaster risk reduction context with organisations like the United Nations Office of Disaster Risk Reduction (UNDRR), International Red Cross and the World Development Bank significantly contributing to the debate and the evolution of practice:

- **UNDRR:** Based on the UN Sendai Framework for Disaster Risk Reduction (2015-2030), the UNDRR have developed ‘The Ten Essentials for Making Cities Resilient’ to provide an operational framework for implementing the Sendai Framework at the local level. With a strong focus on building resilience in the context of disaster risk reduction, the framework recognises the importance of systems interdependencies and the need to work collaboratively to address key challenges across key areas relating to organisation; scenario planning; financial capacity; urban development and design; enhancing ecosystems; institutional capacity; societal capacity; infrastructure; disaster response and recovery
- **International Federation of Red Cross (IFRC):** The IFRC Framework for Community Resilience was launched in 2014. Drawing on work leveraged since the publication of the Framework for Community Safety and Resilience in 2008, the update provided a stronger emphasis the need for a systematic approach to addressing and embedding resilience and provide a framework for international work undertaken by the IFRC to support and strengthen communities and places a strong emphasis on the need to work collaboratively, recognising that “community resilience is about a demand-drive, people-centred approach”¹¹
- **World Development Bank:** The City Resilience Program was established by the World Bank in an effort to build greater resilience to climate and disaster risks by catalysing investments to

¹¹ IFRC, 2014, [IFRC Framework for Community Resilience](#)

enhance urban resilience and facilitating strategic investments that address the vulnerabilities and risks that cities face in a holistic way. The program takes a multi-sectoral approach focussed at enhancing resilience and strengthening urban planning. In support of the program, the *CityStrength* diagnostic tool¹² was developed to help provide cities with a qualitative assessment methodology with support from the Global Facility for Disaster Reduction and Recovery¹³

- **British Standard for City Resilience** - Launched in May 2019, the British Standard for City Resilience is a practical guidance document for helping cities to increase their resilience. BS67000 applies a systems approach to resilience assessment, looking not only at the interdependencies between infrastructure, but also between community stakeholders and the use (demand) of those systems. In addition, the Standard questions how demand may change due to shocks and stresses e.g. extreme heat or demographic changes impacting demand on electricity network,
- **Stockholm Resilience Centre** – The Centre’s initiatives include the Global Resilience Partnership and Guidance for Resilience in the Anthropocene: Investments for Development (GRAID), which seek to develop new mechanisms of investment into resilience, connecting public and private sector organisations to collaborate on financing resilience opportunities and strengthening the business case for resilience. Recent publications focus on the services that natural ecosystems provide to urban environments, including trees planted in cities to improve air quality or reduce urban heat island effects, and parks built in specific neighbourhoods to encourage physical activity. Current research also shows the benefits of natural environments on mental health and wellbeing, therefore contributing to community resilience.

Australian Best Practice

Across Australia the impacts of climate change are driving resilience at the local level. In many instances it is local government at the forefront of this response with changes to planning, zoning and development approvals starting to emerge:

- **QCoast2100¹⁴ program** led by the Local Government Association of Queensland in conjunction with the Queensland Department of Environment and Science. The program focuses on building the capacity of coastal councils across the state to respond to the impacts of climate change related coastal hazards risks over the long-term through the development of Coastal Hazard Adaptation Strategies
- **Turn Down the Heat Initiative in NSW** - Across metropolitan Sydney, local councils are working together to tackle the impacts of extreme heat. Extreme heat was called out as a key risk for Sydney through the Resilient Sydney Strategy¹⁵ and through the Western Sydney Regional Organisation of Councils (WSROC) Turn Down the Heat Initiative¹⁶ which recognises during summer temperatures in Western Sydney can be up to 10°C hotter than the Sydney Central Business District (CBD). Developed with the input of 55 different organisations, the Turn Down the Heat Strategy lays out a five-year plan for a cooler, more liveable and resilient future.
- **Metropolitan Urban Forest Strategy in Melbourne** - Melbourne also is grappling with the impacts of extreme heat with the Resilient Melbourne Strategy¹⁷ outlining key actions for the city to help adapt and reduce exposure to future shocks and stresses that include the creation

¹² World Bank, 2017, [City Strength Diagnostic: Promoting Urban Resilience](#)

¹³ Refer: <https://www.gfdrr.org/>

¹⁴ Refer: <http://www.qcoast2100.com.au/>

¹⁵ Resilient Sydney, 2018, ‘[A strategy for city resilience 2018](#)’

¹⁶ WSROC, 2018, ‘[Turn Down the Heat: Strategy and Action Plan](#)’

¹⁷ Resilient Melbourne, 2016, ‘[Resilient Melbourne strategy](#)’

of a Metropolitan Urban Forest Strategy¹⁸ to help manage Urban Heat Island effects across the city. Led by the City of Melbourne the aim of the metropolitan-wide strategy is to 'extend and link existing urban greening, reforestation and nature initiatives across Melbourne, to improve wellbeing and reduce exposure to hazards such as heatwaves and flooding'.

- **Human Health and Wellbeing Climate Change Adaptation Plan for Queensland¹⁹** – This strategy sets outlines seven areas of policy action for a National Climate Strategy for Health and Wellbeing (see Figure 3) and identifies four key areas of focus for the impacts on climate change on health, including:
 - climate change has a substantial impact on people’s health worldwide, and is affecting the health today
 - delayed response to climate change over the past 25 years has jeopardised life and livelihoods
 - health professions play an essential role in driving forward action and realising the health benefits of climate action
 - there are new opportunities to protect and promote health through climate action if we act now.



Figure 3: Seven areas of policy action for a National Strategy on Climate, Health and Wellbeing for Australia, taken from Human Health and Wellbeing Climate Change Adaptation Plan for Queensland.

¹⁸ City of Melbourne, 'Urban Forest Strategy: Making a Great City Greener 2012-2032'

¹⁹ QLD Government, [Human Health and Wellbeing Climate Change Adaptation Plan for Queensland](#), 2018

5. Recommendations and priorities for reform

The Property Council's recommendations are as follows:

1. Understand resilience through a place-based, people-centred approach

Recognising and reflecting the needs of the community by providing an opportunity to meaningfully engage with and represent the most vulnerable members of a community is at the heart of resilience.

Resilience should be considered a quality of a place and so identifying and understanding the shocks and stresses present within a community is necessary to inform all efforts to build and embed resilience. This forms a baseline from which actions and interventions can be developed.

The most successful examples of resilience we see around Australia are community-led and with initiatives informed through deep community engagement. The framework and tools developed through the 100 Resilient Cities²⁰ program pioneered by the Rockefeller Foundation represents a benchmark for global resilience practice.

Recommendation 1: Identify and understand the shocks and stresses present within Australian communities by applying the 100 Resilient Cities framework to all significant urban centres around Australia, building on the experience gained through the Resilient Sydney and Resilient Melbourne programs. Central to this work is enabling people-centred decision making through inclusive engagement with a diverse selection of representative stakeholders. This helps promote inclusivity, diversity, equity and supports development of resilience actions reflective of a community's key priorities.

2. Coordinated decision-making

By increasing coordination and mainstreaming resilience policy and planning, state governments can mitigate the forecast increase in natural disaster costs. Disaster resilience is built through a broad set of mitigation measures and policies. States should take the opportunity that exists to mainstream resilience across portfolios beyond emergency management and we welcome the establishment of Resilience NSW, an agency that will *"lead the whole-of-government prevention, preparedness and recovery effort. It will oversee and coordinate emergency management policy, service delivery and all aspects of disaster recovery at a state, national and international level"*¹

In the built environment, addressing climate adaptation in planning, land use and building controls presents the biggest opportunity to embed resilience. Greater economic benefits result from considering resilience in development phases, rather than retrofitting after natural disasters have occurred.

Recommendation 2: States and territories should follow the example of Resilience NSW and establish similar agencies to oversee and coordinate emergency management policy, service delivery and disaster recovery. Responsibilities of these state agencies should be clearly outlined with a mandate to ensure resilience is integrated and states use all the levers at their disposal to mitigate disaster impacts, whether they arise from bushfires, floods, drought or other shocks and stresses e.g. disease pandemics.

²⁰ Refer: [100 Resilient Cities Urban Resilience Framework](#)

Recommendation 3: The Commonwealth should facilitate coordination of these state agencies through a National Resilience Council which would:

- develop mechanisms for community engagement on mitigation and adaptation needs and actions
- be comprised of representatives of industry and the three levels of government, including state-based resilience agencies. Business and not-for-profit groups should be engaged more directly for input into decision making and the development of resilience policies
- be supported by a dedicated and properly resourced secretariat that can coordinate cross-jurisdictional action as appropriate
- provide a platform for dialogue on climate change adaptation and mitigation policy and strategies for existing communities to manage the risks face in a considered manner
- facilitate the exchange of information and closer collaboration on adaptation strategies, and
- sponsor research into the impacts of climate change on the built environment and appropriate adaptation measures.

3. National frameworks for long term policy challenges including climate change mitigation and adaptation with government leadership

Chronic stresses on community resilience demand a concerted effort from governments to use a systems approach and develop clear, long term policy frameworks. Climate change is a chronic stress on the global community and will have far-reaching impacts over a long time horizon that impact on the people's health and wellbeing, the natural environment and the economy's potential to prosper into the future.

Examples of successful policy frameworks include the UK's Climate Act and Singapore's Concept Plan. The UK Climate Act was passed in 2008 and provides a bipartisan legislative framework to achieve net zero emissions by 2050. Singapore's Concept Plan uses a systems-based approach to guide strategic land use and transportation development over a 40-50-year time horizon. First formulated in 1971, it laid the foundation for Singapore's growth and city structure and is reviewed regularly to balance land use needs for housing, industry, commerce, parks, transport, defence, and community facilities.

Recommendation 4: The Commonwealth should establish a national climate change mitigation and adaptation framework, following the example of the UK Climate Act, which includes:

- **A long-term national emissions target of net zero emissions by 2050** aligned with scientific advice, state and territory government policies and global commitments. The target should be reviewed every five years
- **five-year national emissions budgets** set in advance with safeguards
- **five-year national plans for emissions reduction in key economic sectors** set in advance outlining actions aligned with delivering the emissions budget. A sectoral plan for the built environment should build on existing work in the *Trajectory for Low Energy Buildings*¹ and *Every Building Counts*¹
- **five-year national adaptation plans** for nominated regional and economic sectors such as the built environment, agriculture, health, energy, transport, education, infrastructure, biodiversity, national parks, marine parks, etc. and
- **principles by which Australia engages in international climate change negotiations**

Recommendation 5: To lead by example all levels of government should:

- commit to undertaking mitigation and adaptation work within their own facilities and set benchmarks to measure their performance in implementing strategies for their own operations
- require the consideration of climate change impacts in tender documents for all relevant contracts
- make all site relevant information, such as mapping, readily available through procurement processes, to support the assessment of climate change risks
- streamline procurement processes to ensure there is minimal cost arising from any additional requirements
- work with private property owners to improve adaptation within properties leased by government, using demonstration projects or 'green' lease clauses, and
- report annually on their performance against mitigation and adaptation benchmarks.

4. Sponsor applied research to inform community resilience and climate action

Recommendation 6: All governments, through the National Resilience Council, should commission applied research using a systems approach to guide community-led efforts on resilience. Research should include:

- **an annual resilience risk assessment** that reviews changes to national and selected regional communities' identified shocks and stresses. This would include changes to climate, water, vegetation cover, air quality, health services, technology and infrastructure, as well as possible changes to international climate and trade policies. The assessment should identify risks across the economy, society and environment and inform resilience plans
- **annual reporting on resilience progress against set plans and targets** – this includes the extent to which climate change mitigation and adaptation plans are being delivered
- **comprehensive inquiries into natural disasters** – natural disasters are predicted to increase in frequency and severity over time. Gaining an understanding of the factors that contributed to them will be essential to mitigation efforts, and
- **development of cost benefit methodologies** with federal, state and territory treasury and finance departments that appropriately value resilience outcomes for use in regulatory impact statements and government procurement contracts.

The National Resilience Council should establish a formal mechanism to consult with, and act upon the advice of, industry, government, and the community on an ongoing basis about their applied research needs and the practical application of existing and future research projects

5. Provide better access to information and tools

Consistent and publicly available data on disaster risks, costs, and impacts on public investment in recovery and resilience would improve awareness and planning. There has been significant improvement in data for some hazard types in recent years, such as state-wide flood maps in Queensland and NSW, and bushfire mapping in Victoria. However, there are still limitations associated with the availability, consistency, and usability of data relevant to natural disaster risks.

Limited comprehensive data is available on disaster events, economic costs, affected people, assets, and essential services – despite the requirement for these data to be included in Sendai Framework reporting from 2019. Government spending on both recovery and resilience is not collated and remains difficult to monitor. Recovery expenditure data at the local, state, or federal level is not comprehensive given that only a small share is claimable under the Natural Disaster Relief and Recovery Arrangements. As the Productivity Commission found in 2014²¹, natural disasters have become a growing unfunded liability for governments.

State resilience investment face similar monitoring problems. While there is some funding explicitly for resilience under cofunding arrangements, states invest in resilience outside of these arrangements, which makes it difficult to demonstrate the value add of these investments and their impact on mitigating future disaster costs.

While the variability and volatility of natural disasters does make fiscal planning difficult, greater visibility around data and expenditure is needed so governments can better manage recovery costs and capitalise on the savings associated with resilience investment.

Recommendation 7: The Commonwealth should establish a ‘one stop shop’ climate change mitigation and adaptation web portal and make it freely available. This should:

- provide information on national climate change data, such as expected temperature changes, flooding risk and other hazards, to facilitate adaptation decision making
- help people keep up to date with the most recent advice and data provided to government
- allow built environment professionals and communities to understand the predicted impacts of climate change for their local areas and to take appropriate action to enhance resilience
- give stakeholders access to information, case studies and tools to help with adaptation
- work with state, territory, and local governments, in consultation with industry, to prepare case studies of planning and building decisions and leading practice approaches to adaptation
- work with organisations such as Green Cross on national programs to encourage residents in high risk areas to assess and manage environmental risks
- establish key performance indicators for measuring adaptation and resilience for all sectors of the community as part of a framework for monitoring and evaluating performance in the built environment, and
- prepare guidance to help local governments consistently manage hazards in high risk areas, including bushfires, flooding, coastal inundation, cyclones, and storm surge.

6. Review building codes and standards

Building regulation in Australia has traditionally been based solely on historical climate information. However, as the climate changes, the location, intensity, and frequency of environmental hazards faced by buildings in Australia is expected to change. This may impact on the ability of building regulation to achieve its objectives — primarily relating to human safety, and the amenity and sustainability of buildings.

In the wake of the 2019-2020 bushfire season, the Australian Building Codes Board (ABCB) is considering broadening the application of the Australian Standard for construction in bushfire

²¹ Productivity Commission, 2014, [‘Natural Disaster Funding Arrangements’](#)

prone areas (AS 3959) to other building classes within the National Construction Code (NCC) with vulnerable occupants, including aged care facilities.

In recent years, the ABCB has also undertaken work that considers the implications of climate change for building regulation.²² In 2010, the ABCB found that the main impacts of climate change with implications for Australian buildings were:

- increased energy consumption due to higher temperatures
- adverse health effects on building occupants caused by over-heating due to higher temperatures
- increased risk of damage from:
 - more intense tropical cyclones, storms and stronger winds
 - increased flooding, inundation, and erosion due to more intense rainfall events, sea-level rise and storm surge
 - increased bushfires
 - increased hailstorms especially in Sydney,
 - increased moisture variation of clay soils resulting in greater ground movement impacting on foundations and services.

Under higher warming scenarios, the need for buildings to be more resilient to the impacts of climate change becomes more critical because climate related events have the potential to be more extreme. For example, heat stress may become a critical factor impacting on public health and wellbeing, which could necessitate significant improvements in building passive design and ventilation.

The NCC currently does not cover hail, storm tide or have specific requirements relating to heat stress. However, for heat stress, the NCC energy efficiency requirements would moderate the impacts of extreme heat within buildings that have been built to current energy efficiency standards, resulting in reduced risk of heat stress for building occupants.

Some of the largest insurance property losses result from hail damage (e.g. the 1999 Sydney hailstorm). However, it is unlikely it would be cost effective to require all external building materials to resist hail impact, taking into account the localised nature of such storms, the cost of upgrading or restricting certain building materials, and the low risk to life safety.

Storm tide is potentially a very high risk in low lying coastal communities, especially those subject to the risk of cyclones. However, it would be very costly and restrictive to design and construct buildings to resist storm surge because of the significant water forces involved. The risk of storm surge may therefore be better managed through the planning system.

It is appropriate that building regulation does not contain requirements to manage natural hazards where these would be better managed by the planning system. However, in these cases it is important to ensure that the risks are appropriately managed by the planning system.

²² Australian Building Codes Board, 2014, [‘Resilience of Buildings to Extreme Weather Events’](#)

Recommendation 8: The Commonwealth should work with the Building Ministers' Forum to amend the Intergovernmental Agreement that governs the ABCB to include an explicit requirement for the Office to consider climate change impacts when reviewing the National Construction Code. This should require the ABCB to:

- incorporate adaptation to climate change in its 3-yearly work program and review the content of the National Construction Code (NCC) and its supporting standards to address climate change adaptation issues. Some examples of potential workstreams could include:
 - a high-level review of the potential impacts of climate change to different building types, specific attributes and systems within buildings, which identifies options to adapt the code to address future hazards
 - consideration of updating relevant Australian Standards to manage increased frequency and intensity of extreme weather events e.g. updating wind standards to manage increased cyclone intensity
 - establishing a nationally consistent risk-based approach to the definition of areas that are prone to various natural hazards (based on common data sets per recommendation 7) and the corresponding requirements for construction in those areas.
- monitor projections of climate change risks to buildings, and for incorporating these projections in the NCC where this would result in a net benefit to the community, and
- work with agencies like CSIRO and the Bureau of Meteorology to incorporate current and fit-for-purpose weather files for building performance simulation, as well as files to simulate a projected worst case physical risk against an agreed Representative Concentration Pathway as defined by the Intergovernmental Panel on Climate Change and endorsed by Australian financial regulators in consultation with industry.

7. Aligning land use planning with building standards

The vulnerability of people and buildings to climate change impacts will depend on how well building standards (which generally control how to build) and land-use planning regulations (which generally control where to build) are aligned in managing environmental hazards.

In some cases, the distinction between building and planning regulation is blurred. For example, where local governments impose building regulation through local planning instruments, this can create duplication and overlap in regulation. In other cases, only one or neither system addresses a particular hazard (such as storm surge).

A further problem can arise where both planning and building frameworks address a common environmental hazard (such as bushfire), but do not use the best available information to determine the location and level of risk. This can lead to gaps in the regulatory framework. For example, the Victorian Bushfires Royal Commission²³ noted that bushfire-hazard maps used in the planning and building systems did not match — meaning that houses could be located in a bushfire hazard area under the planning system without meeting the bushfire standards under the NCC (Victorian Bushfires Royal Commission 2010).

²³ Victorian Bushfires Royal Commission, 2009, '[Final Report Summary](#)'

The importance of the interaction between land-use planning and building regulation is recognised in the National Strategy for Disaster Resilience. Conflating building and planning regulations has the risk of imposing excessive construction costs on all buildings, when planning requirements in specific areas could deter much of the damage at a far less cost. Further, there have been moves towards delineating planning and building frameworks through 'gateway models'. Efforts to better align these regulatory systems would lead to benefits in both the current and future climate.

Where both planning and building frameworks must address a common environmental hazard, they should both use the best available information to determine the extent of the hazard i.e. the use of a national data portal.

Recommendation 9: The three levels of government should work together to conduct a review of all existing regulation to examine how current planning and building frameworks interact to manage environmental hazards, as well as any other initiatives addressing climate mitigation and adaptation. Reforms should be targeted at minimising overlap and duplication and identifying which legislative instruments are best suited to dealing with particular risks. This will minimise unnecessary costs of conflating building and planning regulations and ensure an integrated approach to climate change mitigation and adaptation.

Recommendation 10: State and territory governments should review their bushfire protection regimes using the 2019 NSW Planning for Bushfire Protection (PBP) as a model of good practice. The NSW PBP is more comprehensive than other jurisdictions and applicable to all development in bushfire prone areas. The NSW PBP is called up at every level of the planning process, from state and regional plans, to local environmental plans, development control plans, subdivisions and individual buildings, as well as addressing requirements for special fire protection purpose development (higher risk developments e.g. childcare centres, schools) and 'other developments' (including telecommunication towers, solar and wind farms, mining, commercial and industrial and multi storey residential apartment buildings). Importantly, the PBP regime sees the application of the following:

- Asset Protection Zones
- Building Construction, Design and Siting
- Access Arrangements
- Water Supply and Utilities
- Emergency Management Arrangements
- Landscaping.

8. Provide incentives to increase resilience

Recommendation 11: The Commonwealth should work with industry and its state, territory, and local counterparts to develop a suite of incentives to encourage “Build Back Better” initiatives and drive early action on mitigation and adaptation within the built environment, which might include:

- Financial incentives for retrofitting existing building stock to better energy performance and resilience standards, such as:
 - targeted, interest-free loans
 - grants
 - accelerated depreciation and extension of the instant asset write-off scheme for upgrades work
 - stamp duty and land tax exemptions for buildings in high-risk areas that are being upgraded
 - targeted assistance to reduce vulnerability for residents and businesses in high-risk areas
 - expanding the 10 per cent withholding tax regime by applying the lower rate to buildings that are retrofitted to a certified standard of resilience (through Green Star or the Building Resilience Rating Tool) and
 - Rates and charges relief for buildings that satisfy resilience performance standards.
- Alternative financing mechanisms
- Climate resilience assessments for buildings
- ‘Green door’ development application processes for businesses and households implementing adaptation initiatives and green design elements (an example is the City of Chicago’s Green Permit Program)
- Using the building and construction industry to reinvigorate the economy after COVID-19 by providing \$50,000 grants to new houses being built to a high standard of resilience. This would create jobs and reduce expenses on unemployment benefits.

9. Invest in education

Recommendation 12: The Commonwealth, in consultation with the National Resilience Council, should:

- institute a public education campaign on the likely impacts of climate change and how best to build resilience to encourage people to take action to mitigate impacts and adapt
- support funding programs for education and training for local government staff and other regulatory authorities in climate change adaptation strategies
- support funding programs for education and training run by industry associations that provide formal accreditation and CPD to building industry practitioners.

10. Improve insurance and financial services

Recommendation 13: The Commonwealth, in consultation with the National Resilience Council, should work with the financial services sector to:

- improve its investment and lending strategies and processes to value risk and adaptation activity appropriately
- delegate regulatory regimes for climate change risk disclosure to existing financial regulators including ASIC, APRA and the AASB, creating transparent climate risk reporting inclusive of climate scenario analysis, consistent with the recommendations of the Taskforce on Climate Related Financial Disclosures (TCFD)
- collaborate with the financial services sector (specifically the [Australian Sustainable Finance Initiative](#)) to accelerate investment into climate resilient infrastructure supporting greater social, environmental and economic outcomes for Australia
- incentivise sustainable lending practices for Australian financiers to encourage the issuance of 'green' or 'climate' debt instruments, as presently regulated by international bodies such as the Climate Bonds Initiative and practiced by some of Australia's largest landlords.

Recommendation 14: The Commonwealth, in consultation with the National Resilience Council, should work with the insurance sector to:

- recognise the roles and responsibilities of insurers and government in providing coverage for areas at risk from climate change
- improve insurance funding and risk assessment processes to value risk, mitigation, and adaptation activity appropriately and provide incentives through discounted premiums for achieving higher standards
- increase transparency around insurance funding and risk assessment processes and provide plain English information about risks and the potential to obtain coverage
- ensure that renters and low-income residents have access to appropriate insurance
- examine the appropriateness of a reinsurance pool or other government-backed mechanisms to encourage insurers to insure properties in flood, cyclone, storm surge, or bushfire prone areas.

