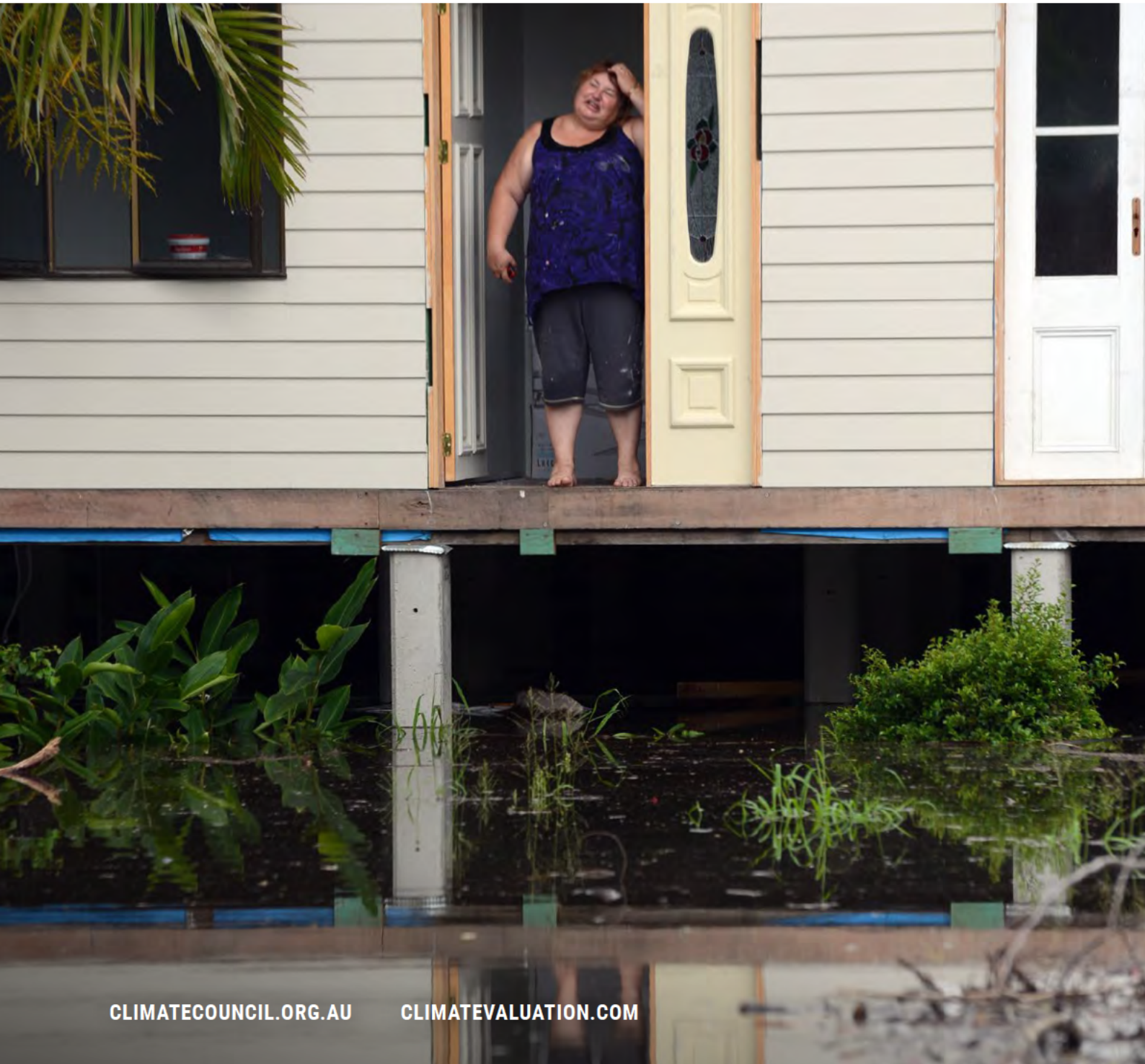
CLIMATE COUNCIL

Climate Valuation

AT OUR FRONT DOOR: ESCALATING CLIMATE RISKS FOR AUSSIE HOMES



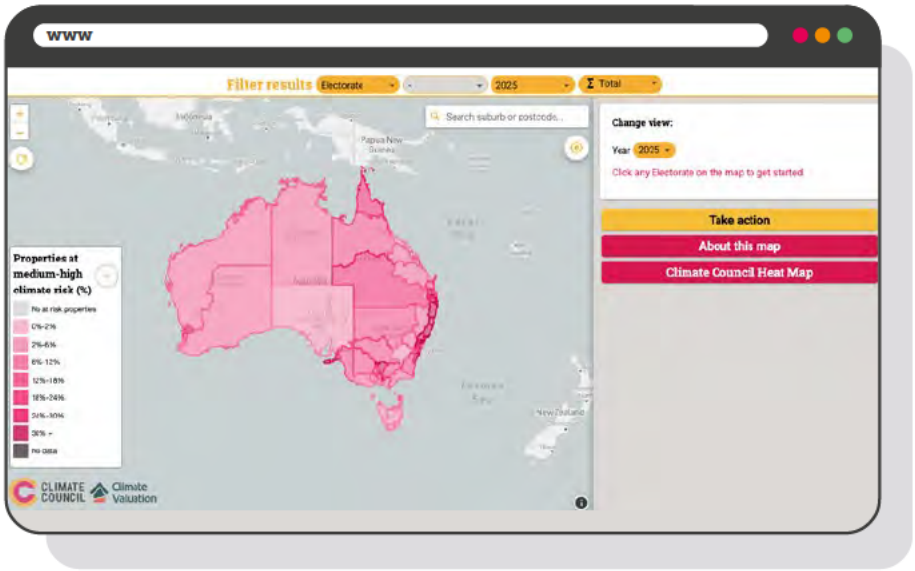
CLIMATECOUNCIL.ORG.AU CLIMATEVALUATION.COM

The Climate Council is 100% independent and community-funded. We rely on word-of-mouth and donations from the general public to provide reliable and quality research, socialise it and then campaign for the solutions we need: climatecouncil.org.au

Climate Valuation is the first, and only, company to provide professional investment-grade physical climate risk analysis to individual property owners on a global scale. We make climate risk accessible, easy to understand and actionable so individuals and communities can "see change coming" and make more informed decisions: climatevaluation.com

Together, we created the **Climate Risk Map of Australia**. This interactive map of climate vulnerable places in Australia allows anyone to find out what risks exist in their electorate and how those risks could increase over time if we fail to keep cutting pollution further and faster.

The information in this report is for general information only. It represents the views of the Climate Council of Australia Ltd based on climate risk analysis undertaken by Climate Valuation and should not be taken as constituting professional advice. It is intended only as a general guide, it may contain generalisations. You should consider seeking independent legal, financial, taxation or other professional advice to check how the information contained in this report relates to your unique circumstances. Climate Council of Australia Ltd is not liable for any loss caused, whether due to negligence or otherwise, arising from the use of, or reliance on, the information provided directly or indirectly in this report.



The map can be found here:
www.climatecouncil.org.au/resources/climate-risk-map

Contents

Key Findings i

1. Introduction 3

Glossary 5

2. Climate risks are endangering Australian properties, and those risks are worsening 7

How is climate change worsening extreme weather events? 9

– Extreme rainfall 10

– Bushfires 12

– Tropical Cyclones 13

– Coastal inundation 16

Worse is on the way 17

3. Our most at-risk places 19

How we identify our most at-risk areas 21

How risk is measured 23

Which Federal Electorates are at highest risk? 27

4. Things will only get worse if we fail to cut climate pollution 49

We need to cut climate pollution, further and faster 50

Australians are already being impacted 51

Climate change is making insurance more expensive 52

Climate proofing our homes and communities can help address rising insurance costs 53

5. Conclusion 57

References 59

Appendix 1 62

About the dataset this report is based on 62

Appendix 2 63

Methodology 63

Image credits 66

Key Findings

1 The climate crisis is at our front door with more than two million properties already at moderate to high risk of worsening extreme weather driven by climate pollution.

- **HIGH RISK:** Our analysis shows 652,424 properties (4.4% or one in 23) across the country are already at High Risk in 2025 from one or more hazards - properties for which insurance is often already unaffordable or unavailable.
- **MODERATE RISK:** Another 1.55 million properties (10.4%) nationally are at Moderate Risk - for which insurance costs will be abnormally high. That's one in 10.
- Extreme weather events have become more frequent and severe due to pollution from coal, oil and gas. This is increasing costs for all home owners in Australia through higher repair and maintenance bills and sky-rocketing insurance.
- When insurance is withdrawn at a regional scale this devalues people's largest financial asset, can undermine the property market and puts our broader economy at risk because mortgages now make up such a large part of the banking sector.

2 Climate impacts are endangering all Australians, but some communities are highly exposed and face far greater risks today.

- More than 72,000 Australian homes and businesses, across 86 suburbs, are situated in "critical climate risk zones" where 80-100% of properties are classified as high risk and the level of expected damage is likely to be widespread.
- When so many properties within a suburb are at high risk all properties in that area become difficult to insure. Responding to such a critical level of risk is beyond any individual, and requires significant and urgent intervention by all levels of government carried out in partnership with impacted communities.
- Outside of these zones, almost 590,000 other properties around the country are also identified as high risk. This means they are already at risk of becoming uninsurable - or soon will be - with projected annual damage costs equivalent to 1% or more of the property replacement cost.
- The most at-risk federal electorates today (based on the number of properties already at high risk) are Dobell, Richmond, Hunter, Page and Robertson in New South Wales, Nicholls in Victoria, Mayo in South Australia, Maranoa and Brisbane in Queensland, and Bullwinkel in Western Australia.
- Communities along the New South Wales coast stretching from the Northern Rivers to the Central Coast are a climate risk epicenter, with a large number of critical climate risk zones and a number of the top 10 most at-risk electorates concentrated here.

3 Past failure to cut climate pollution fast enough has resulted in more Australians and their properties being put in harm's way, and rising insurance costs for us all.

- Since 1990, 80,000 properties across the nation were added to the High Risk category primarily driven by worsening climate risks.
- By 2050, High Risk properties are expected to grow to 746,185 (or 5% of addresses analysed) and more than 1.3 million properties by 2100 (or 8.8%).
- Worsening climate extremes are exacerbating household cost of living pressures. Research shows that as insurance premiums become more unaffordable more people are choosing to "under-insure" by excluding cover for certain hazards, or going without insurance. Many of the households facing the greatest risk from climate change don't have the finances to make their homes more resilient, move to safer areas, or get back on their feet once their homes are damaged.

- As insurance falls out of reach for more people, there is a growing risk of substantial devaluation as High Risk properties (which in 2025 make up 4.4% of addresses analysed) become more costly to own and harder to sell.
- These High Risk properties now require urgent attention to better protect them and those who live there from physical damage caused by worsening extreme weather, and financially from a potential crash in sale value.

4 We can't insure our way out of the climate crisis. We must urgently cut climate pollution as far and fast as we can this decade, and get more people out of harm's way with an immediate, national response to protect those already at critical risk.

- All governments must stop making this problem worse by prolonging the use of coal, oil or gas.
- State and Federal governments must proactively manage remaining options for communities in critical risk zones, like managed retreats or buy backs, given the scale of economic and social costs now facing communities.
- Climate-proofing or re-locating properties outside of these zones, which are already at high risk or soon will be, should be prioritised where it makes economic sense to do so.

5 Up-to-date information must be provided to all Australians so they can assess the risks they face.

- Australians need access to the most up-to-date risk information, guidance on what to do to protect their home, and better access to financial assistance where their house is at high risk.
- When pricing premiums, insurance companies must disclose what they know about climate change risks to their customers and consistently and transparently account for the steps being taken to better protect properties and communities.

KEY STATISTICS



652,424 properties (4.4% or 1 in 23) across the country are already at **high risk** in 2025 from one or more hazards.



1.55 million properties (10.4% or 1 in 10) nationally are at **moderate risk.**



72,000 Australian homes and businesses, across 86 suburbs, are situated in **"critical climate risk zones",** where 80-100% of properties are classified as high risk.



Since 1990, another **80,000 properties** across the nation were **added to the high risk category** primarily driven by **worsening climate risks.**

This is expected to grow to **746,185 High Risk Properties by 2050** (or 5% of addresses analysed) and more than 1.3 million properties by 2100 (or 8.8%). Note: Projections only include existing housing stock, not new housing.



Climate Council analysis shows **Australia can cut climate pollution much further and faster this decade** (75% by 2030 based on 2005 levels) using proven and available technologies.

1. Introduction

The great Australian dream - the belief that home ownership can lead to a better life - has endured in this country since the 1950s.



Today, the great Aussie dream of home ownership is becoming a nightmare as climate-fuelled disasters hit communities over, and over, again.

Today, that dream is becoming out of reach for many as the cost of properties and rents soar. For others, who are still trying to recover from one climate-fuelled disaster as they are being hit by the next, that dream is becoming a nightmare.

Over many decades, scientists have issued clear warnings on how climate pollution, primarily from burning coal, oil and gas, is overheating our planet. This is making climate hazards - like bushfires, flooding rains and heatwaves - more frequent and severe. When such disasters do strike they are sudden and catastrophic disruptions to our lives. In certain parts of our country it is already clear that the window between such disasters is rapidly shrinking.

In short, climate change already threatens many people's greatest asset, their home. This report identifies the suburbs and electorates across Australia where properties (both households and businesses) face the most acute risk from climate-fuelled extreme weather events in 2025, and reveals the types of hazard that are driving this escalating risk.[1]

It also brings into sharp focus how risks in these areas have already increased due to climate change – with 80,000 properties added to the High Risk category since 1990, and how much worse such risks will become if we fail to cut global climate pollution further and faster this decade.

This is a crisis that can no longer be ignored, or treated as a far-off event that can be dealt with later. It is here, on our very doorstep. The statistics are stark and should serve as a home truth to us all. Among those threatened are more than 650,000 properties at High Risk that require immediate attention. These are not just statistics, or assets. These are people's homes.

---

1 Our research analyses the following climate hazards: Riverine flood, surface water flood, bushfires, coastal inundation, tropical cyclone wind, and extreme wind. We do not examine other climate hazards like lightning strikes, hail or grassfires.



Image 1: More homes were lost in Queensland during the 2023-24 fire season than during the state's 2019-20 Black Summer fires.

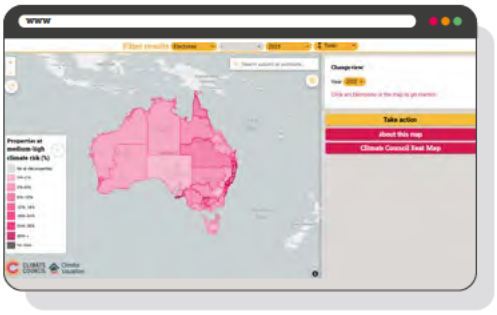
It is imperative that decision makers at all levels look Australians seriously in the eye, and explain what steps they are going to immediately take to protect these communities; as well as how the policies they are proposing are going to make this situation better, or worse, into the future. Unless they act, the number of Australians and properties at high risk will keep rising.

Both this report and the accompanying Climate Risk Map of Australia draws on analysis of almost 15 million (14,932,014) residential and commercial properties, more than 15,000 suburbs, and 150 federal electorates. The impact from six climate hazards is analysed, including riverine flood, surface water flood, bushfires, coastal inundation, tropical cyclone wind, and extreme wind under what is often referred to as a 'business as usual' scenario (RCP 8.5/SSP5-8.5) where climate policies are weak or ineffective. As global warming unlocks 'carbon feedbacks' the impacts projected by this scenario become more likely.

This report reveals the top 10 most at-risk federal electorates to climate change-related extreme weather events, providing a brief profile of each. The metric used for the ranking is the number of 'high risk' properties, which have annual damage costs equating to 1% or more of the replacement cost of the property.

A companion of this report, the Climate Risk Map of Australia, is an interactive online map, which allows users to explore the percentage (and number) of Moderate and High Risk Properties in different federal electorates across Australia over different time periods (2025, 2050 and 2100) and under different emissions scenarios.

See the glossary for the definition of all hazards, and the appendix for methodology and data information.



The map can be found here: www.climatecouncil.org.au/resources/climate-risk-map

GLOSSARY

Bushfire
A destructive fire that spreads via trees and forest. This definition does not include grassfires. Flames and heat from burning vegetation can damage buildings and infrastructure. Australia is experiencing an increased incidence of dangerous bushfire weather due to more days with higher temperatures, high wind speeds and drier conditions.

Buy-Back
Government-led initiative to purchase privately-owned land and assets in areas of high risk of damage due to climate change hazards, where there is a high risk to the life and safety of households.

Coastal Inundation
Sea water flooding due to high tides, wind, low air pressure and storm surge that can damage coastal land, infrastructure and buildings. Rising seas due to climate change means more coastal inundation.

Critical Climate Risk Zone
Australia's Critical Climate Risk Zones are defined as suburbs where at least 100 properties are located, and 80-100% of all those properties (commercial and residential) are classified as High Risk Properties (HRP). When extreme weather events hit Critical Climate Risk Zones the level of damage to infrastructure is likely to be severe; impacting homes, schools, businesses, health facilities and more.

Driving Hazard
The driving hazard is the hazard that causes the most damage across all properties in an area in any given year. There may be other hazards that cause almost equal damage but only the highest is identified as the driving hazard.

Extreme Wind
Extreme wind refers to unusually strong winds that exceed typical wind speeds associated with weather systems. Extreme winds often correlate with rapidly changing pressure gradients, typically associated with intense low-pressure systems or large storm events. Such winds can exceed a region's building codes for wind resistance, causing damage or failure.

Hazard
A potential cause of damage to assets, failure of building elements, or impacts on productivity. This report specifically looks at hazards that are likely to change under accelerating climate change. For example: Floods, bushfires, coastal inundation and extreme wind.

High Risk Property (HRP)
High Risk Properties are defined as properties where there is a significant risk of insurance becoming unaffordable or withdrawn entirely due to the high risk of damage from extreme weather. Properties are considered 'high risk' when the Maximum-to-date Value-At-Risk (MVAR) attributed to it is equal to or more than 1%.

Managed Retreat
A strategy that aims to relocate residents and assets from high risk areas to areas of lower risk, thereby reducing the overall impact of climate-related hazards on the community.

Maximum-to-date Value-At-Risk (MVAR)
MVAR is a measure of the annual risk of damage to an asset. The MVAR captures the costs of expected extreme weather and climate-related damage, relative to the replacement cost of the building. For example, an MVAR of 1% is equivalent to climate-related damage costs of $4,440 per year for a building that costs $444,000 (the average cost to build a home in Australia according to Australian Bureau of Statistics Building Activity Australia 2024 report). Note: that this does not include the value of the land.

Moderate Risk Property (MRP)
Moderate Risk Properties are defined as properties where there is a significant risk of insurance becoming increasingly unaffordable due to risk of damage from extreme weather. Properties are considered 'moderate risk' when the Maximum-to-date Value-At-Risk (MVAR) attributed to it is 0.2-1%.

Physical Climate Risk
Physical climate risk is the potential for damage or disruption to property, infrastructure or operations due to the physical consequences of a warming climate, such as extreme weather events and rising sea levels.

RCP stands for 'Representative Concentration Pathway'. The RCPs make predictions of how concentrations of greenhouse gases in the atmosphere will change in the future as a result of human activities. 'Shared Socioeconomic Pathways' (SSPs) are scenarios that explore how global society, demographics and economics might evolve and affect greenhouse gas emissions and climate change.

Climate Valuation applies RCPs and SSPs in its modelling. The numerical values of the RCPs (2.6, 4.5 and 8.5) refer to the radiative forcing arising from greenhouse gas concentrations in 2100 and correspond to SSPs in the following way:

RCP 8.5/SSP5-8.5
RCP 4.5/SSP2-4.5
RCP 2.6/SSP1-2.6

RCP 8.5/SSP5-8.5 is considered the "high emissions" or "ineffective policy" pathway in which climate policies are weak at halting emissions. RCP 8.5/SSP5-8.5 leads to greater global temperature increases, resulting in greater physical impacts.

Riverine Flood
A riverine (fluvial) flood occurs when a river, stream, or other watercourse exceeds its capacity and overflows onto surrounding land. This type of flooding is typically caused by prolonged or intense rainfall, rapid snowmelt, or overflow of dams and levees. The severity of a riverine flood depends on factors such as the volume of water, terrain, and the capacity of the river channel. Riverine flooding can damage low-lying buildings and infrastructure.

Soil Movement[2]
Soil movement as a result of drought can cause contraction of clay soils that can lead to the foundations of an asset shifting and causing damage to foundations, floors and walls.

Surface Water Flood
A surface water flood (also known as pluvial flood) occurs when rainfall exceeds the capacity of the ground, drainage systems, or infrastructure that exist to absorb or manage the water. This type of flooding can occur on flat or urbanised land where water cannot easily soak into the ground or is unable to flow into drainage systems efficiently. Pluvial flooding typically results from heavy or intense rainfall over a short period, which overwhelms the drainage capacity of an area and causes water to pool.

Tropical Cyclone Wind
Tropical cyclone winds are the strong, rotating winds associated with tropical cyclones. These cyclones are intense low-pressure systems that form over warm ocean waters in tropical and subtropical regions of Australia, and are exacerbated by warming sea surface temperatures. Extreme wind speeds generated by cyclones can cause extensive damage to buildings and infrastructure, particularly those with weak structures, poor construction, or made of lightweight materials.

Uninsurable
When an asset is exposed to high risk and/or situated in a high risk area and subject to risk of withdrawal of insurance cover, or prohibitive price increases to the insurance policy that effectively render the asset as 'uninsurable'.

2 In our analysis soil movement contributes to overall damage (average MVAR) but it is not a major hazard driving uninsurability which our research focuses on.

Climate Risk Assessment
Submission 18 - Attachment 1

2. Climate risks are endangering Australian properties, and those risks are worsening

From flooding to dangerous bushfire weather, and tropical cyclones to coastal inundation, worsening climate extremes are harming an increasing number of people and properties right across the country.

Our climate and weather systems have been supercharged by the burning of coal, oil and gas - leading to 2024 being the hottest year on record globally, the hottest ocean temperatures ever recorded, more frequent heatwaves, a succession of storms, fast-moving bush and grassfires and destructive tropical cyclones that are leaving devastated communities in their wake.

Image 2: Homes in the Northern Beaches, Sydney, were badly damaged after a powerful storm in 2016.



Australians deserve to know the climate risks to their homes, but there's been limited information available on what the risks are, and how they are worsening.

Already, the frequency and intensity of extreme weather events are increasing because of climate pollution. Communities are often lurching from one extreme event to the next, with little time to recover in between. As the climate risks to people and properties increase, so too does the cost of protecting any particular asset - by taking steps to make that property more resilient, or by taking out insurance in case the worst happens.

Australians should brace themselves for more climate impacts in the years to come, because the world continues to burn coal, oil and gas in large amounts. The level of risk will keep rising, until we cut global climate pollution further and faster than we are. The insurance and banking industries are already embedding those climate risks into their business decisions, but to date there has been limited detail available to individual home owners on what the risk to their greatest asset already is, as well as how that might worsen over time.

Every Australian deserves to understand the climate risk that their home is already facing, as well as how those risks could increase. As our analysis clearly shows, for many those risks are already high and - for some communities - that can no longer be addressed at an individual level.

The collective steps that Australia and other nations take to cut global climate pollution further and faster will determine how many more homes, and livelihoods, are put at risk over the coming years.



Image 3: In outback Queensland, an area four times the size of the UK was inundated with torrential rain in March 2025, leaving many cut off or forced to abandon their homes.

HOW IS CLIMATE CHANGE WORSENING EXTREME WEATHER EVENTS?

Digging up and burning coal, oil and gas is blanketing Earth in heat-trapping pollution that supercharges extreme weather. Globally, 2024 was the hottest on record, and the second hottest in Australia – behind only 2023. For the first time, the global temperature in 2024 surged past 1.5°C above preindustrial levels.

This extreme heat, combined with record tropical levels of water vapour in our atmosphere, has fuelled extreme heatwaves, torrential rains, and devastating disasters worldwide. This rise is part of a relentless trend, with 2015-2024 standing as the 10 hottest years ever recorded. From unprecedented winter infernos in Los Angeles to record rainfall in Townsville, climate change is no longer a distant threat—it is here, now, upending lives and economies.

Spring 2024 and Summer 2024-25 were the hottest on record in Australia, driving marine heatwaves that devastated reefs and wildlife in Western Australia, and fuelling bushfires in Victoria and Tasmania. In March, Queensland experienced yet another climate-fuelled flooding event in the south of the state, stoked by Tropical Cyclone Alfred. As our oceans continue heating up, scientists fear cyclones that track further south – like Tropical Cyclone Alfred – will become more common (Studholme et al. 2022). Queensland was badly affected by another extreme weather event in late March/early April when record breaking floods inundated Western Queensland across an area larger than many European countries.

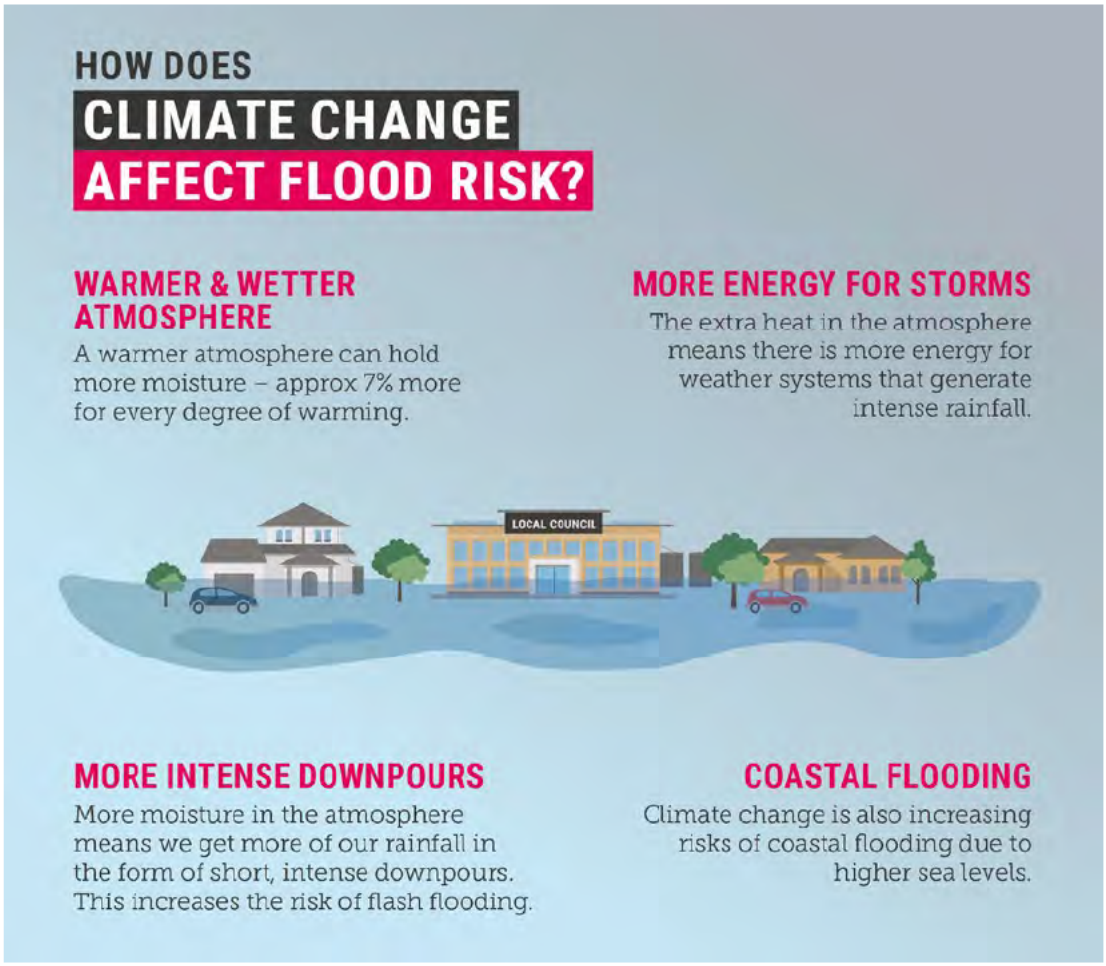
Extreme rainfall

Climate change is affecting our water cycle, which refers to the way water moves about our planet. Generally speaking, wet areas are getting wetter and dry areas are getting drier. Moreover, we are experiencing more of our rain in the form of short, intense downpours leading to a greater risk of floods.

A warmer atmosphere holds more moisture, and more energy to fuel storms. For every 1°C of global warming, rainfall intensity increases by 7% (WMO 2025). Newer research is showing the rate may actually be double this, or even higher (Wasko et al. 2024; Tran et al. 2024) as the process of condensation releases heat that can also trigger more rain (Ritchie-Tyo, Dowdy and Ramsay 2025).

For Australia, the latest research shows for every degree of global warming we will experience about 7–28% more rain for hourly or shorter duration extreme rainfall events, and 2–15% more rain for daily or longer duration extreme rainfall events (Wasko et al. 2024). This range is much higher than the 5% figures that are commonly used in existing flood planning standards that are relied on by policy makers, engineers and urban planners (Dowdy et al. 2024; Wasko et al. 2024).

Figure 1: Main factors affecting flood risk: Warmer and wetter atmosphere, more energy for storms, more intense downpours, and coastal flooding. **Source:** Climate Council 2022.

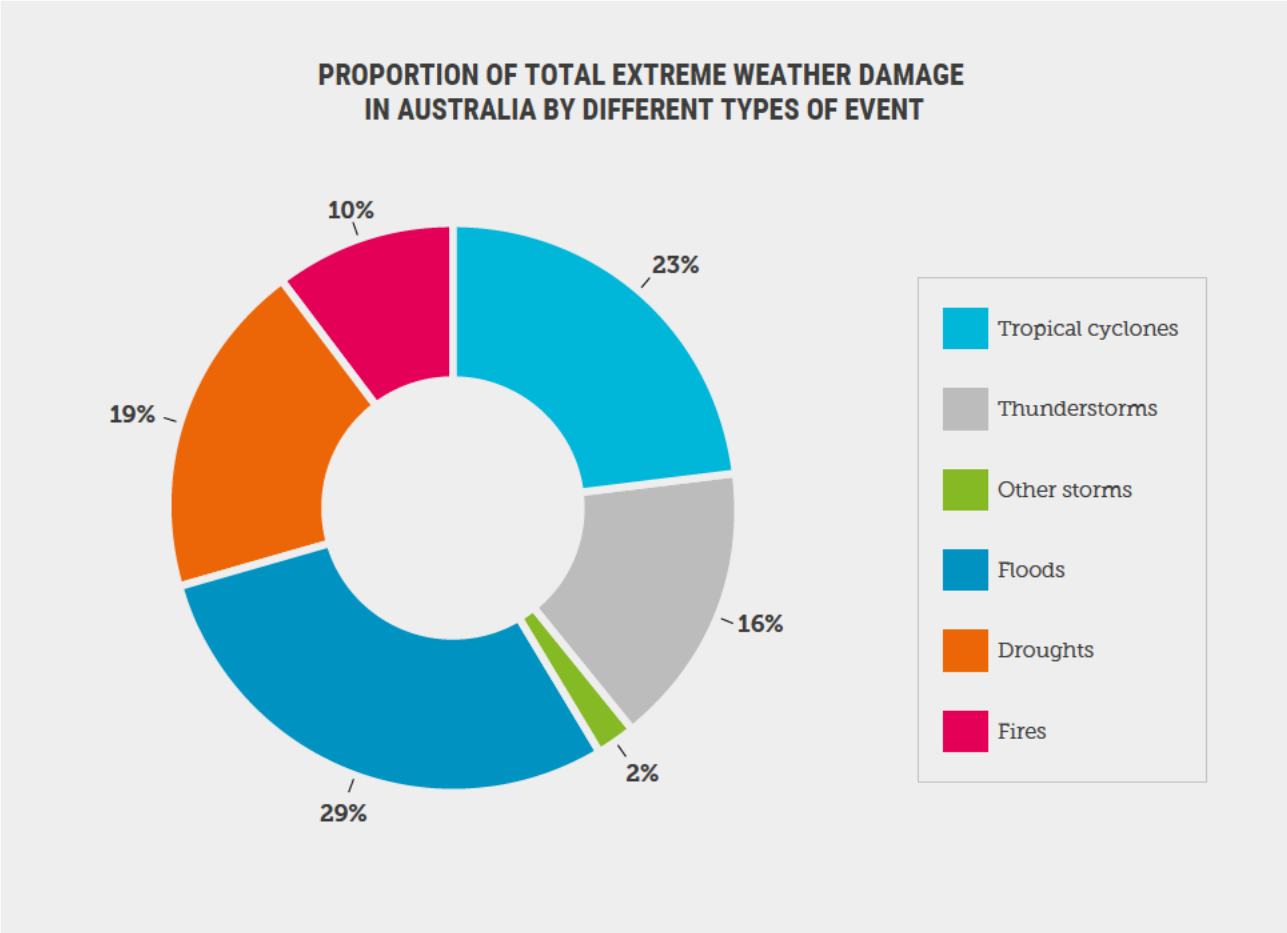


The latest climate research shows flooding risks in Australia are likely to be much higher than what has historically been planned for in this country.

One study found that extreme and potentially dangerous rapid rain bursts (sub-hourly heavy rainfall) over Greater Sydney have intensified by at least 40% over the past two decades (1997 to 2018) (Ayat et al. 2022).

Floods made up the greatest proportion of economic damages from extreme weather in Australia over the past decade, followed by tropical cyclones and droughts (Climate Council 2021). Immediate impacts of floods include property damage, destruction of crops and livestock, clean up costs and emergency response.

Figure 2: Proportion of total economic damage from extreme weather in Australia (2010-2019) by different types of event[3]. Based on data from EM-DAT, the International Disaster Database: www.emdat.be. **Source:** Climate Council 2021.



3 'Floods' includes coastal floods, flash floods and riverine floods.

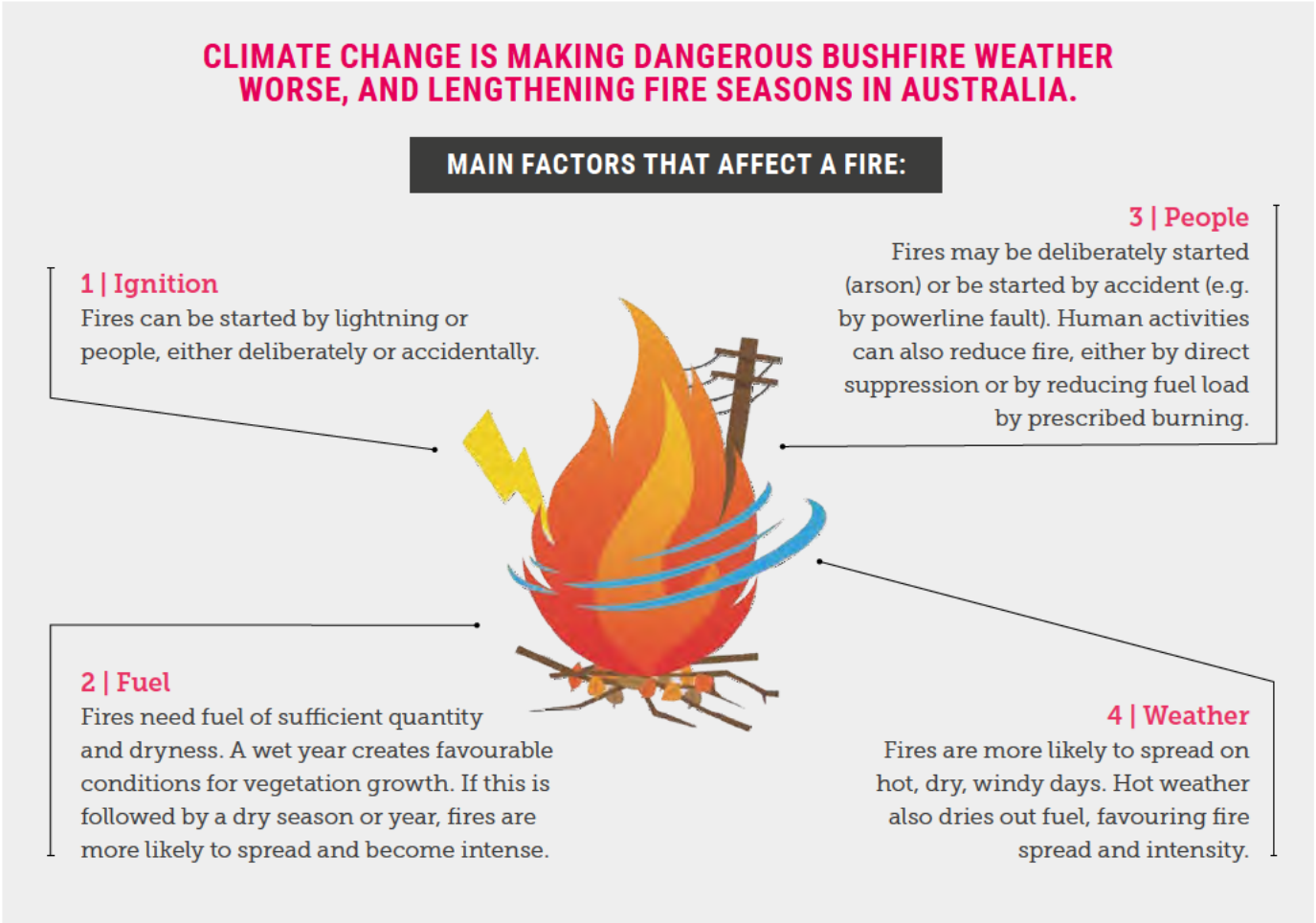
Bushfires

A fire needs to be started (ignition), something to burn (fuel), and conditions that are conducive to its spread (hot-dry-windy weather) (Figure 3). Climate change, primarily driven by the burning of fossil fuels – coal, oil and gas – affects all of these factors in both straightforward and more complex ways.

Climate pollution is fuelling the conditions that make bushfires more frequent and more severe. Warmer temperatures lead to increased evaporation, which in turn dries out vegetation (Climate Council and ELCA 2023). Where warmer temperatures combine with lower than average rainfall, land surface moisture is reduced, leading to flash droughts that develop over weeks to months rather than years - making land far more susceptible to burning when fires occur (Climate Council and ELCA 2023). Higher night time temperatures mean there is less opportunity for firefighters to contain and suppress fires as in the past there were cooler night time air temperatures. With night time air becoming hotter and drier bushfires can now burn throughout the night with greater intensity than they have in the past (Cunningham et al. 2023; ELCA and Climate Council 2024).

Since the 1950s large parts of Australia have seen increases in extreme fire weather and longer fire seasons (CSIRO and BoM 2024). Bushfires are becoming more frequent than would occur naturally, giving native vegetation, wildlife and communities little time to recover in between events (Lidenmayer and Taylor 2020).

Figure 3: Main factors affecting bushfires: ignition, fuel, people and weather. **Source:** Climate Council 2019.



Tropical Cyclones

Tropical cyclones are among the most destructive of extreme weather events.

Tropical cyclones have long been part of life for many people in Australia and the Pacific, but climate change is affecting the conditions under which all tropical cyclones now form and develop. Tropical cyclones need high ocean temperatures to form (typically 26.5°C or more), and Australia's oceans are warming up, including subtropical waters. That means the energy available to power tropical cyclones in subtropical regions has increased – largely due to rising ocean temperatures from the burning of fossil fuels.

In our changing and volatile climate, when tropical cyclones now form they do so in a world that is warmer, wetter, and more energetic than before. This means tropical cyclones can be more intense on average when they occur and may dump more rain resulting in worse flood impacts (CSIRO 2025). Some studies also suggest they could retain their strength for longer, and move more slowly – meaning they linger longer over a given area and cause more damage (Kossin 2018; Zhang et al. 2020; CSIRO 2025). Riding upon higher sea levels, they can drive even more dangerous storm surges and coastal flooding (Ritchie-Tyo, Dowdy and Ramsay 2025).

Image 4: Tropical Cyclone Yasi in 2011 was the biggest storm in Queensland's history, with more than 10,000 people moved from their homes and 1,000 homes were significantly damaged AIDR 2025).



A cyclone can form when warm humid ocean air rises creating a low-pressure area below it. More warm, moist air rushes in to replace the rising air and that warm, moist air then rises too, fuelling the system like an engine. At higher altitudes the air cools, forming clouds and releasing energy. The Earth's rotation makes the storm spin, creating the familiar cyclone shape. In the right conditions the cyclone strengthens. But once it moves over land or cooler water, it starts to lose energy and weakens, with other factors such as strong wind shear (large differences in winds at different heights) are also able to weaken a tropical cyclone. In Australia, tropical cyclones are an ongoing threat during our cyclone season, which generally runs from November to April (the wet season in the tropical north). On average, Australia experiences 11 cyclones a year, although only four to five of these typically make landfall (BoM 2025; CSIRO 2025).

The best available climate science expects there to be fewer tropical cyclones overall in Australia, but a higher proportion of those that do form to be more intense and destructive (CSIRO and BoM 2024; Ritchie-Tyo, Dowdy and Ramsay 2025).

BOX 1: TROPICAL CYCLONE ALFRED

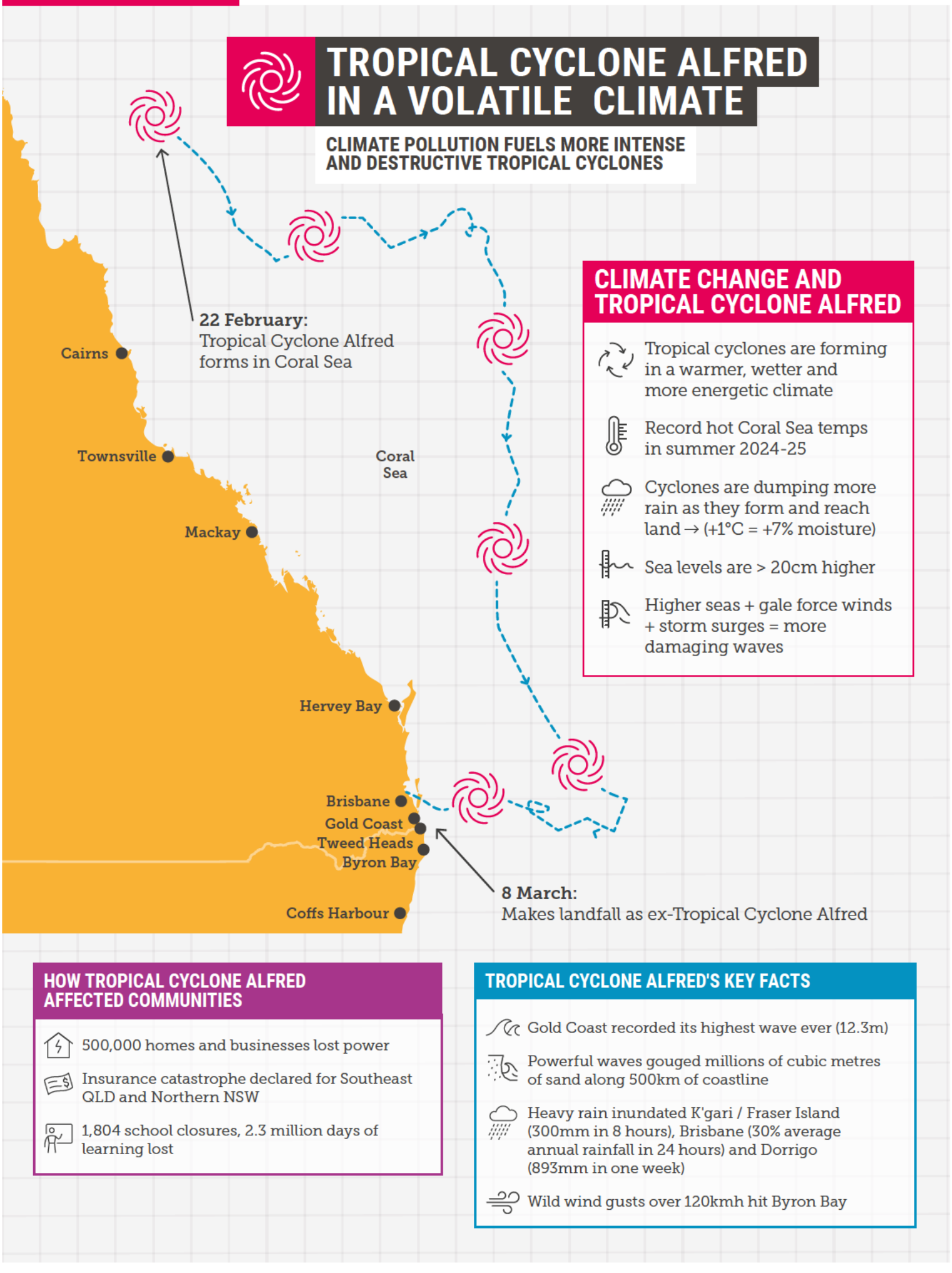
Powered by climate pollution from the burning of fossil fuels, Tropical Cyclone Alfred was an unusually southern storm for Australia's east coast. Moving erratically, it drew up energy from a hot and moist atmosphere and record temperatures in the ocean as it tracked towards Brisbane, Australia's third largest city, and other heavily populated areas across Southeast Queensland and Northern New South Wales.

Tropical Cyclone Alfred delivered gale force winds along coastal Southeast Queensland and Northern New South Wales. Peak gusts up to 120 kilometres an hour (kph) were recorded at Byron Bay, while Coolangatta reached gusts of up to 100kph (its highest in 21 years), and on the Gold Coast, a wind gust of 107kph was recorded in the suburb of Labrador (ABC 2025).

The southward drift of storms like Tropical Cyclone Alfred is completely consistent with the modelling undertaken in this analysis and should be treated as a preview of what to expect if we keep extracting and burning fossil fuels, like coal, oil and gas. The future safety and prosperity of Australians depends on how rapidly we cut global climate pollution this decade.

Figure 4: Tropical Cyclone Alfred was more intense and damaging due to climate pollution, as storm surges rode in on higher seas and washed away iconic beaches along 500 kilometres of coastline. Wild winds and extreme rainfall prompted the highest number of emergency call outs recorded in Queensland's history. **Source:** Climate Council 2025a.

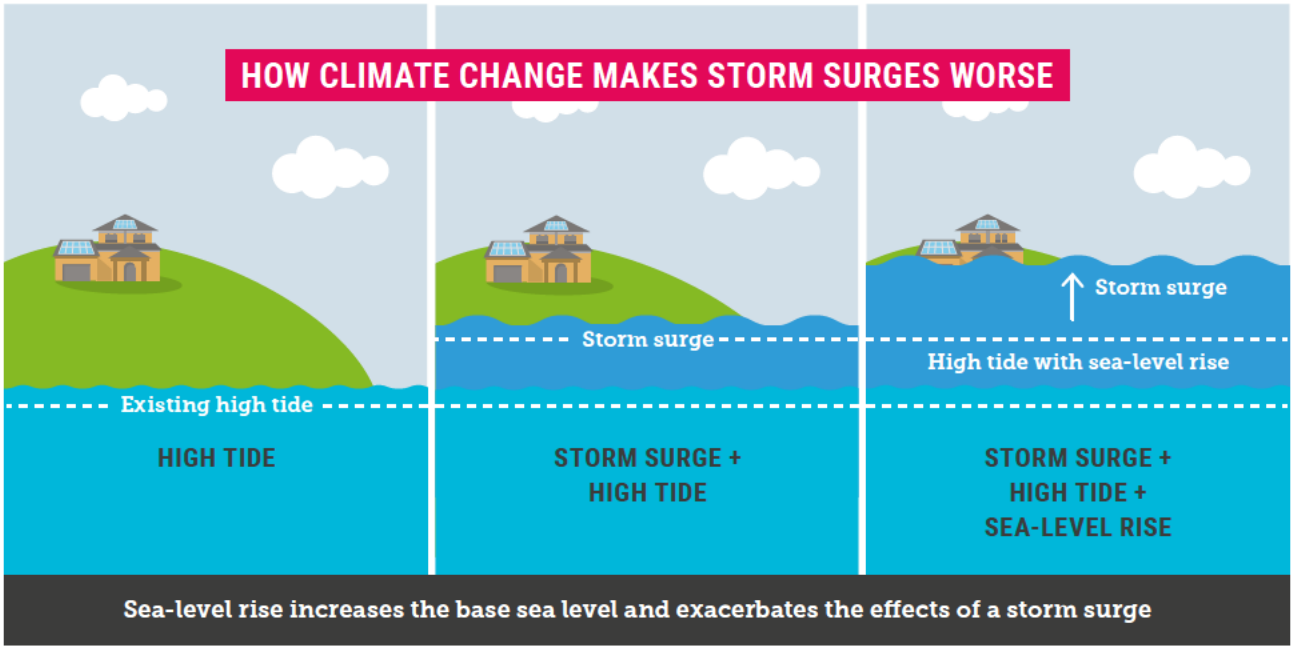
BOX 1: CONTINUED



Coastal inundation

Sea levels are on average about 20 centimetres higher than they were before 1880 (NOAA 2023). When a powerful storm like a tropical cyclone or East Coast Low is about to make landfall, its intense winds and low atmospheric pressure push up a body of seawater ahead of it – known as the storm surge. Because baseline sea levels have already risen due to climate change, storm surges can now reach further inland (Ritchie-Tyo, Dowdy and Ramsey 2025). The area of sea water flooding may extend along the coast for hundreds of kilometres, with water pushing several kilometres inland if the land is low-lying. The worst impacts of a storm surge occur when it coincides with a particularly high tide.

Figure 5: Climate Change increases the base sea level, while other factors, such as wave setup and atmospheric pressure, exacerbate the effects of a storm surge on coastal flooding. **Source:** Climate Council 2025.



WORSE IS ON THE WAY

Due to the burning of fossil fuels like coal and gas, many of the symptoms of a warming planet will continue to worsen over the coming decades. In Australia, worsening risks are projected to include:

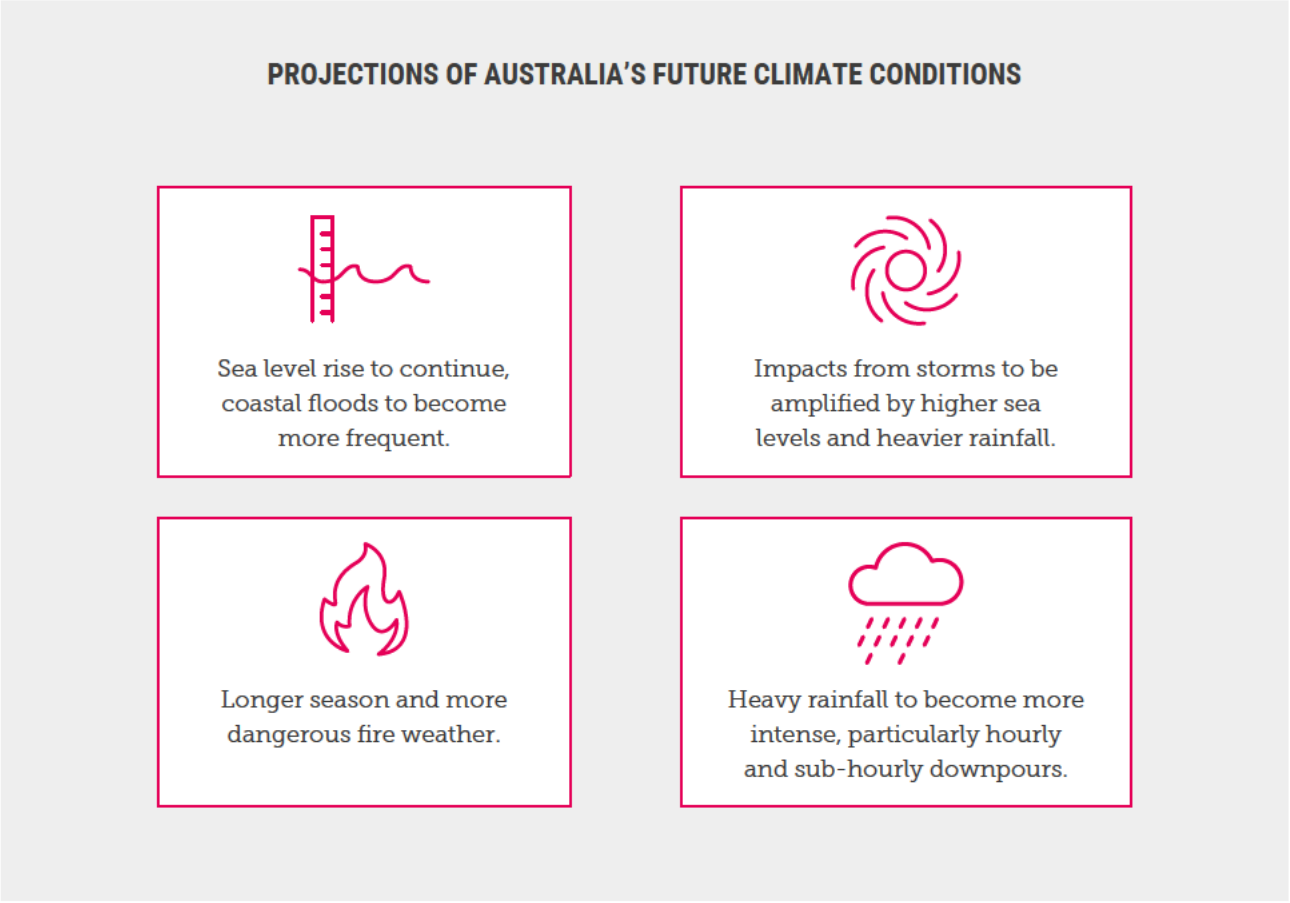
- A longer fire season for much of the south and east, and an increase in the number of dangerous fire weather days for many regions.
- More short-duration, heavy rainfall events, even in regions where the average rainfall decreases or stays the same.
- Tropical cyclones extending further south, and while fewer in number, a greater proportion that are more intense, with ongoing large variations from year to year. The intensity of rainfall associated with tropical cyclones is also expected to increase and, combined with higher sea levels, is likely to amplify the impacts when tropical cyclones do occur.
- Ongoing sea level rise through this century and beyond, and recent research on potential ice loss from the Antarctic ice sheet suggests that a scenario of larger and more rapid sea level rise this century or beyond can't be ruled out.
- More frequent extreme sea levels linked to coastal inundation and coastal erosion. For most of Australia, coastal floods that occur occasionally today will become chronic later this century. Extreme sea levels that had a probability of occurring once in 100 years are projected to become an annual event by the end of this century with lower levels of climate pollution, and by the mid-21st century for higher levels of climate pollution.

Because of the world's collective failure to drastically and deeply reduce climate pollution earlier, we are already locked into increasingly severe climate impacts. Exactly how severe these events become depends largely on the collective steps we take this decade.

Image 5: Flash floods in Sydney. In a warming world rainfall is increasing in intensity and will become much worse unless we phase out fossil fuels.



Figure 6: Australia's future climate. **Source:** Adapted from CSIRO and BoM 2025.



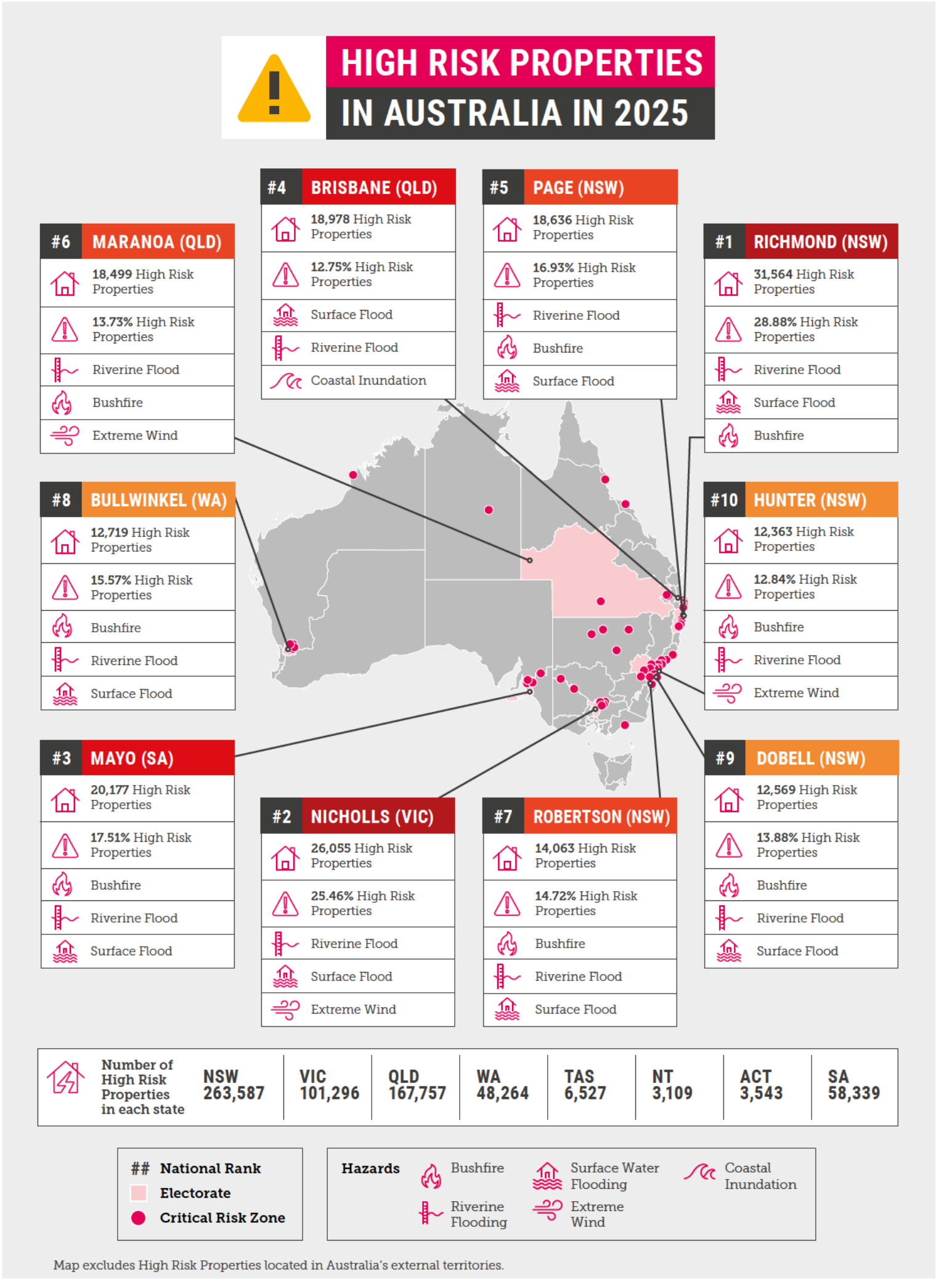
We are wearing the consequences of the world's collective failure to drastically and deeply cut climate pollution earlier. How much more severe these disasters become is in our hands.

3. Our most at-risk places

The map below identifies Australia's 10 riskiest electorates in 2025, and outlines the number and percentage of High Risk Properties within each electorate along with the climate change hazards driving this risk. It also plots all the 'Critical Climate Risk Zones' that exist around the country, where 80-100% of all properties within that suburb are at high risk. As the map shows, there are clusters of these zones in New South Wales, South Australia, Victoria, Queensland and Western Australia.

As a result of worsening extreme weather events critical climate risk zones exist around Australia.

Figure 7: Map of Australia's 10 riskiest electorates in 2025, all the 'Critical Climate Risk Zones' where 80-100% of all properties are at high risk, and the total number of High Risk Properties in every state and territory.



Map excludes High Risk Properties located in Australia's external territories.

HOW WE IDENTIFY OUR MOST AT-RISK AREAS

Our research identifies critical climate risk zones and the top ten electorates, where properties are at high risk of catastrophic damage because of our failure to drive down climate pollution which is supercharging more destructive extreme weather events.

We identify critical risk zones and the top ten electorates at risk based on the percentage of properties that are classified as 'high-risk'. High Risk Properties (HRP) are defined as properties where there is a significant risk of insurance becoming unaffordable or withdrawn entirely due to the high risk of damage from extreme weather. Properties are considered 'high risk' when the Maximum-to-date Value-At-Risk (MVAR) attributed to it is equal to or over 1% MVAR.

For this report, Climate Valuation forecasted an MVAR for each address in Australia based on a standard property design of moderate vulnerability. All properties with an MVAR of 1% or more (i.e. all High Risk Properties) were then aggregated by federal electorates, providing a standardised metric for comparing climate risk. The number of High Risk Properties in each electorate was used for the ranking in this analysis.

We used a timeframe of 2025 for comparing climate risks today, and a high emissions scenario for risks into the future. Unfortunately, the impacts of climate change are already being experienced here in Australia due to greenhouse gas emissions that were released in the past.

The total risk from hazards that significantly impact properties which are used in this report includes:

- Riverine Flooding
- Surface Water Flooding
- Coastal Inundation
- Bushfire
- Extreme Wind
- Tropical Cyclone Wind

Climate change endangers us all, but our analysis shows that some areas are more exposed than others based on physical risks to property.



Image 6: In future, we can expect more intense and destructive tropical cyclones.

This first-ever, forward-looking physical climate risk analysis of tropical cyclone wind on all Australian properties shows if cyclones continue to move southward over time, then the risks will substantially grow.

The definitions for each of these hazards can be found in the glossary and methodology can be found in Appendix 2.

It should be emphasised that our analysis is based on climate risks to buildings. In some ways, this provides a proxy for areas that are more at risk than others, but it does not fully reflect the risks of climate change to our own health and wellbeing, ecosystems, and other parts of our society and economy, nor does it account for people with existing vulnerabilities. For example, whilst extreme heat has killed more Australians than all other hazards combined (Coates et al. 2014; Coates et al. 2022), extreme heat does not significantly affect the structural integrity of buildings.[4] Likewise, although declining rainfall in some parts of Australia will significantly affect agricultural yields and ecosystems, this is expected to have a marginal impact on the structural integrity of buildings.

4 Extreme heat can result in operational failure but in this report and associated dataset we focus on structural damage to property only.

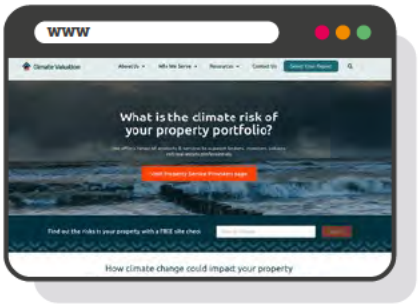
HOW RISK IS MEASURED

This analysis combines long-term data from local meteorological stations with information about the specific location, such as flood mapping and depths, elevation above sea level, tides and waves, soil type, and forest cover; and data on the assumed building at that address, such as age, construction materials and design.

For this dataset on Australian addresses, it is assumed that a standard modern dwelling is located at each address, i.e. a single story detached house which uses design specifications and materials typical of a recent building (specifications in Appendix 2).

The influence of future climate change is derived by extracting the changes in the statistical distribution of key parameters such as heat, precipitation, wind and humidity from global climate models from agencies such as CSIRO, University of New South Wales, the US National Oceanic and Atmospheric Administration (NOAA), and NASA.

Models that predict a wetter future are used to assess flood risks, models that predict a drier future are used to assess drought risks to ensure that impacts are not hidden. In this way, the models are structured to provide a 'stress test' and alert property owners to the upper range of possible risks, rather than average projections.



For more on the methodology see Appendix 2 and visit the Climate Valuation website.

Climate information is used to help property owners understand the upper range of risks they are exposed to.

BOX 2: CRITICAL CLIMATE RISK ZONES

Australia's critical climate risk zones are suburbs where at least 100 properties are located, and 80-100% of all those properties (commercial and residential) are considered to be High Risk Properties (HRP). When extreme weather events hit critical climate risk zones the level of damage to infrastructure is likely to be severe and extensive; impacting homes, schools, businesses, health facilities and more.

We have not listed locations with fewer than 100 properties, but these additional high risk areas are notable as places that are not suitable to build more properties. Further, some of these areas are tourist hot-spots, so while few people may permanently live there many people do visit. The Grampians region in Victoria, for example, is an area that attracts tourists from all over Australia because of its outstanding natural beauty. It was badly affected by major bushfires in summer 2024-25.



Image 7: Members of the Country Fire Authority responding to fires in the Grampians National Park in December 2024.

Table 1: List of 86 suburbs (listed alphabetically) with at least 100 properties which are classified as being located in 'critical climate risk zones' in 2025.

Suburb (in alphabetical order)	State	Total properties	High Risk Properties	Percentage of High Risk Properties
Aldgate	SA	1,567	1,567	100.00%
Ali Curung	NT	156	128	82.05%
Ashton	SA	254	242	95.28%
Awaba	NSW	290	253	87.24%
Ballina	NSW	8,910	8,824	99.03%
Bar Point	NSW	247	202	81.78%
Basket Range	SA	210	184	87.62%
Belair	SA	2,016	1,984	98.41%
Bourke	NSW	1,527	1,473	96.46%
Bowen Mountain	NSW	696	559	80.32%
Bradbury	SA	127	119	93.70%
Brenda Park	SA	115	115	100.00%
Bridgewater	SA	1,695	1,675	98.82%
Broadwater	NSW	516	429	83.14%
Brookstead	QLD	201	180	89.55%
Brushgrove	NSW	131	130	99.24%
Bucketty	NSW	121	121	100.00%
Bundabah	NSW	214	176	82.24%
Canoelands	NSW	109	98	89.91%
Carey Gully	SA	237	229	96.62%
Charlotte Bay	NSW	317	288	90.85%
Chatsworth	NSW	123	103	83.74%
Chinderah	NSW	1,773	1,713	96.62%
Colo Heights	NSW	171	163	95.32%
Coromandel East	SA	145	138	95.17%
Crafers	SA	939	936	99.68%
Crafers West	SA	606	606	100.00%
Crangan Bay	NSW	211	211	100.00%
Cunnamulla	QLD	1,123	1,037	92.34%
Dampier Peninsula	WA	120	103	85.83%
Eagleton	NSW	140	113	80.71%
East Wardell	NSW	199	199	100.00%
Empire Vale	NSW	118	117	99.15%
Fairy Bower	QLD	153	127	83.01%
Ferodale	NSW	152	127	83.55%
Forest Range	SA	148	147	99.32%
Glenalta	SA	852	846	99.30%
Greenhill	SA	208	208	100.00%
Groper Creek	QLD	107	105	98.13%
Harwood	NSW	240	239	99.58%
Hawthorndene	SA	1,394	1,244	89.24%
Heathfield	SA	445	445	100.00%

Suburb (in alphabetical order)	State	Total properties	High Risk Properties	Percentage of High Risk Properties
Holgate	NSW	372	371	99.73%
Hollands Landing	VIC	343	322	93.88%
Hovea	WA	309	307	99.35%
Ironbank	SA	217	216	99.54%
Keith Hall	NSW	103	99	96.12%
Kialla West	VIC	185	156	84.32%
Lenswood	SA	303	267	88.12%
Longwood	SA	116	115	99.14%
Louth	NSW	174	149	85.63%
Mahogany Creek	WA	371	302	81.40%
Manangatang	Victoria	261	233	89.27%
Martinsville	NSW	237	218	91.98%
Matcham	NSW	448	425	94.87%
Montacute	SA	207	203	98.07%
Mount George	SA	145	135	93.10%
Mylor	SA	559	486	86.94%
North Arm Cove	NSW	971	798	82.18%
North Shore	NSW	228	185	81.14%
Norton Summit	SA	310	307	99.03%
Nyngan	NSW	1,642	1,358	82.70%
Otford	NSW	179	178	99.44%
Palmers Island	NSW	261	261	100.00%
Pampas	QLD	122	106	86.89%
Paynes Crossing	NSW	113	97	85.84%
Pomona	NSW	114	103	90.35%
Ryhope	NSW	101	101	100.00%
Salt Ash	NSW	729	596	81.76%
Scott Creek	SA	131	129	98.47%
Seahampton	NSW	134	134	100.00%
Shepparton	VIC	18,988	16,775	88.35%
Shepparton North	VIC	1,055	845	80.09%
Skye	SA	158	150	94.94%
Spencer	NSW	339	331	97.64%
Stirling	SA	1,769	1,769	100.00%
Stonyfell	SA	528	487	92.23%
Tacoma South	NSW	115	113	98.26%
Tumbulgum	NSW	204	191	93.63%
Tummaville	QLD	109	94	86.24%
Tweed Heads South	NSW	6,400	5,280	82.50%
Upper Sturt	SA	448	443	98.88%
Walgett	NSW	1,413	1,146	81.10%
Webb	QLD	249	219	87.95%
West Ballina	NSW	2,086	1,953	93.62%
Woodford Island	NSW	163	145	88.96%

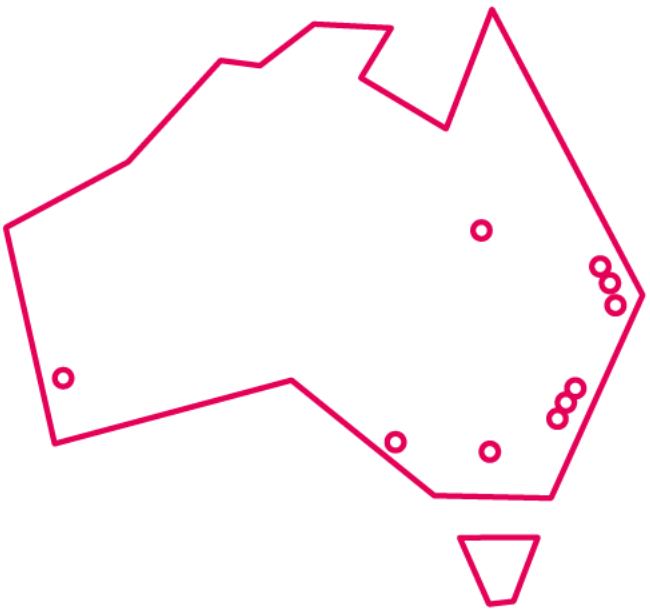
WHICH FEDERAL ELECTORATES ARE AT HIGHEST RISK?

The top 10 most at-risk federal electorates in 2025 are profiled below. They have been identified in rank order based on the number of High Risk Properties within their boundaries. Riverine flooding drives most of the risk to properties in the top 10 riskiest electorates in 2025. Around 57% of the High Risk Properties in the top 10 riskiest electorates are classified as such due to the probability and impact of riverine flooding. This is followed by surface water flooding, bushfires, extreme wind, coastal inundation and tropical cyclone winds. From mid-century onwards, coastal inundation risks to property are expected to dramatically increase due to rising sea-levels resulting in water damage to property or due to rising sea-levels crossing property thresholds.

The top 10 most at-risk federal electorates in 2025 are:

1. Richmond (NSW)
2. Nicholls (VIC)
3. Mayo (SA)
4. Brisbane (QLD)
5. Page (NSW)
6. Maranoa (QLD)
7. Robertson (NSW)
8. Bullwinkel (WA)
9. Dobell (NSW)
10. Hunter (NSW)

In these 10 electorates alone, 17% of properties (185,623) are already at risk of becoming or are likely to become uninsurable in the short term, compared to 15% (162,321 properties) in 1990, and this will rise to 19% of properties (204,766) or around one in five properties in the next 25 years.



Riverine flooding is the biggest risk to the highest number of properties today, with coastal inundation risks likely to dramatically increase from mid-century onwards.

Table 2: Top 10 most at-risk federal electorates to climate extremes, 2025.

Rank	Electorate	State	LGAs and parts of	Total properties	High Risk Properties	Moderate Risk Properties	Low Risk Properties	Percentage of High Risk Properties
1	Richmond	NSW	Tweed, Byron, Ballina	109,299	31,564	19,798	57,937	28.88%
2	Nicholls	VIC	Greater Shepparton, Moira, Campaspe, Mitchell, parts of Strathbogie	102,342	26,055	10,580	65,707	25.46%
3	Mayo	SA	Alexandrina, Victor Harbor, Yankalilla, Kangaroo Island, Mount Barker, parts of Adelaide Hills, Mitcham and Onkaparinga	115,262	20,177	28,692	66,393	17.51%
4	Brisbane	QLD	Parts of Brisbane	148,892	18,978	40,917	88,997	12.75%
5	Page	NSW	Parts of Ballina, Lismore, Richmond Valley, Clarence Valley	110,087	18,636	38,342	53,109	16.93%
6	Maranoa	QLD	17 LGAs including Diamantina, Longreach, Maranoa, Western Downs, Winton, and parts of South Burnett, Southern Downs and Toowoomba	134,714	18,499	11,993	104,222	13.73%
7	Robertson	NSW	Parts of the Central Coast	95,517	14,063	39,568	41,886	14.72%
8	Bullwinkel	WA	Beverley, Northam, Toodyay, York, and parts of Armadale, Gosnells, Kalamunda, Swan, and Mundaring	81,703	12,719	20,668	48,316	15.57%
9	Dobell	NSW	Part of the Central Coast	90,535	12,569	33,744	44,222	13.88%
10	Hunter	NSW	Singleton, and parts of Cessnock, Lake Macquarie and Maitland	96,303	12,363	36,078	47,862	12.84%

Profiles of the top 10 electorates, including a breakdown of the main hazards driving risk, are in the following section. Projections are based on high levels of climate pollution (RCP 8.5/SSP5-8.5).

#1 RICHMOND, NEW SOUTH WALES



Covering 2,133 square kilometers in the north-east tip of NSW, the seat of Richmond includes famous coastal tourism destinations like Byron Bay and Brunswick Heads, as well as Tweed Heads and Murwillumbah (AEC 2025a). Compared to the rest of New South Wales, people residing in the electorate of Richmond are likely to be older, work part time hours and own their home outright (ABS 2021a).

However, many of the communities across the electorate are facing extreme weather events made worse by climate pollution. Tweed, Byron and Ballina are at risk of tropical cyclones, while Tweed and Ballina have a higher risk of flood to their built environments than any other local government areas in New South Wales, except for Clarence Valley (NSW Reconstruction Authority 2024).

Our analysis shows: 31,564 or 28.9% of properties are already at high risk. Across all properties it is estimated there has been a 4% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Richmond electorate are riverine flood, surface flood and bushfire. On high levels of climate pollution (RCP 8.5/ SSP5-8.5), the average risk of damage from climate extremes is projected to increase by 158% (or a 2- 3-fold increase) by the end of the century. The risk of coastal inundation increases significantly by 2100 due to sea level rise.

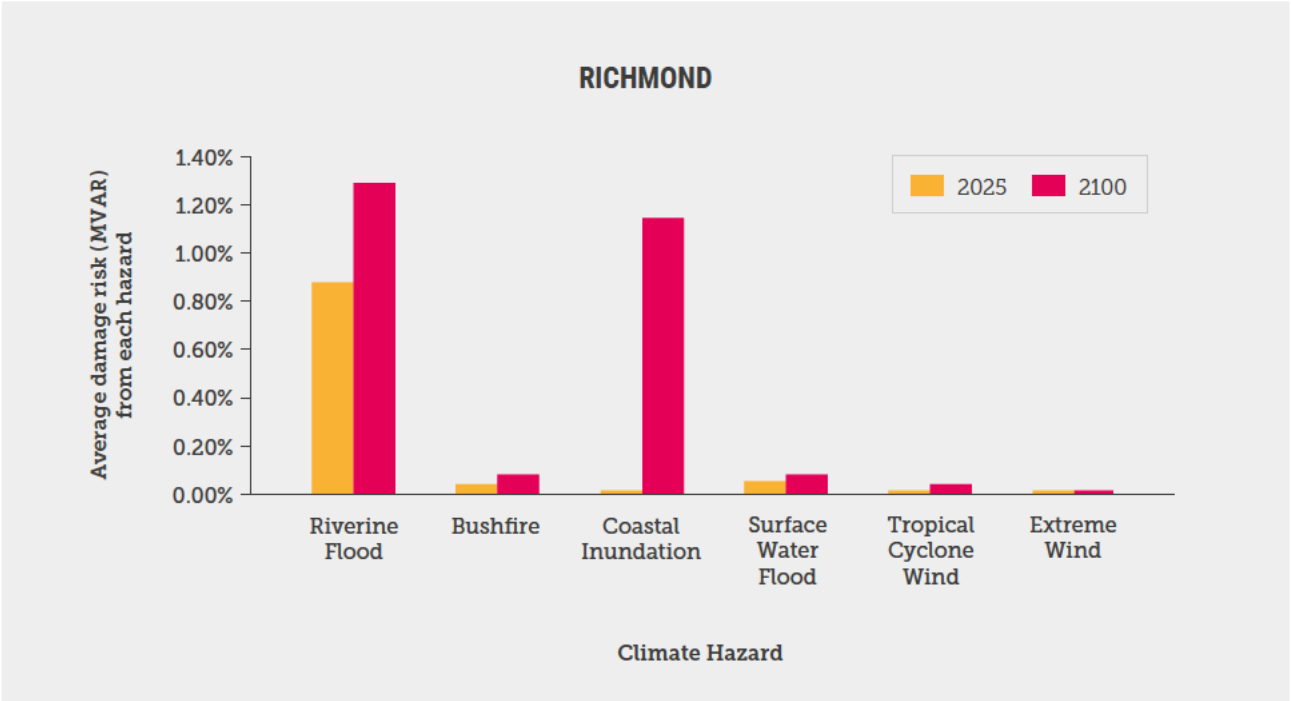


Figure 8: The main climate risks for the Richmond electorate in 2025 are riverine flood, surface flood and bushfire.

#2 NICHOLLS, VICTORIA



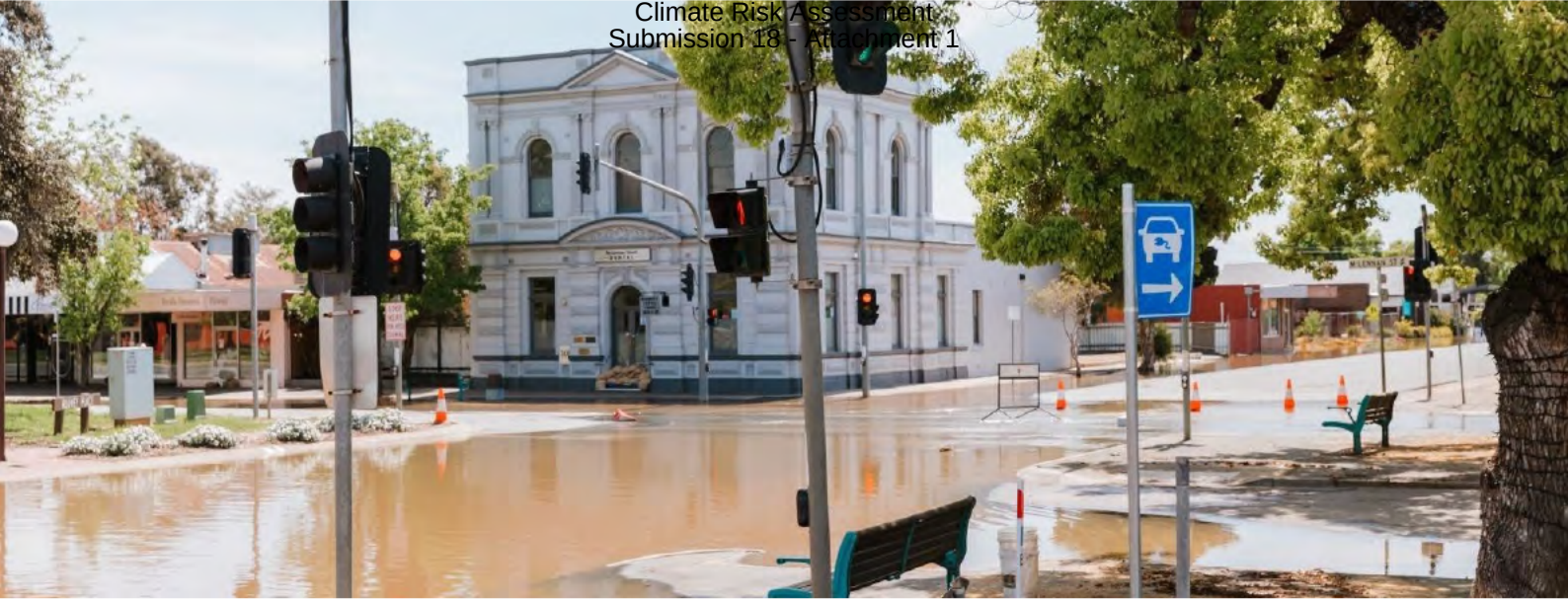


Image 8: Floods in Mooroopna, Northern Victoria. The Nicholls electorate was badly affected by the 2022 floods.

Known as a gateway to the waters of the Murray River via Echuca and Yarrawonga in the north and for wineries to the south in towns like Nagambie, Nicholls takes in many picturesque towns across northern and central Victoria. Residents in Nicholls are typically older than the state average and more likely to own their homes outright, but report lower weekly household incomes (ABS 2021b).

Many of the people living here have experienced the impacts of climate-fuelled disaster firsthand, with the towns of Echuca, Shepparton, Mooroopna and Seymour hit by devastating floods in 2022 (Parliament of Victoria 2024).

Our analysis shows: 26,055 or 25.5% of properties are already at high risk. Across all properties it is estimated there has been a 20.5% increase in average risk of damage from climate extremes (1990-2025).
The main climate risks for the Nicholls electorate are riverine flood, surface water flood and extreme wind. Risk of damage from climate extremes in Nicholls is modelled to increase 8.4% between now and the end of the century.

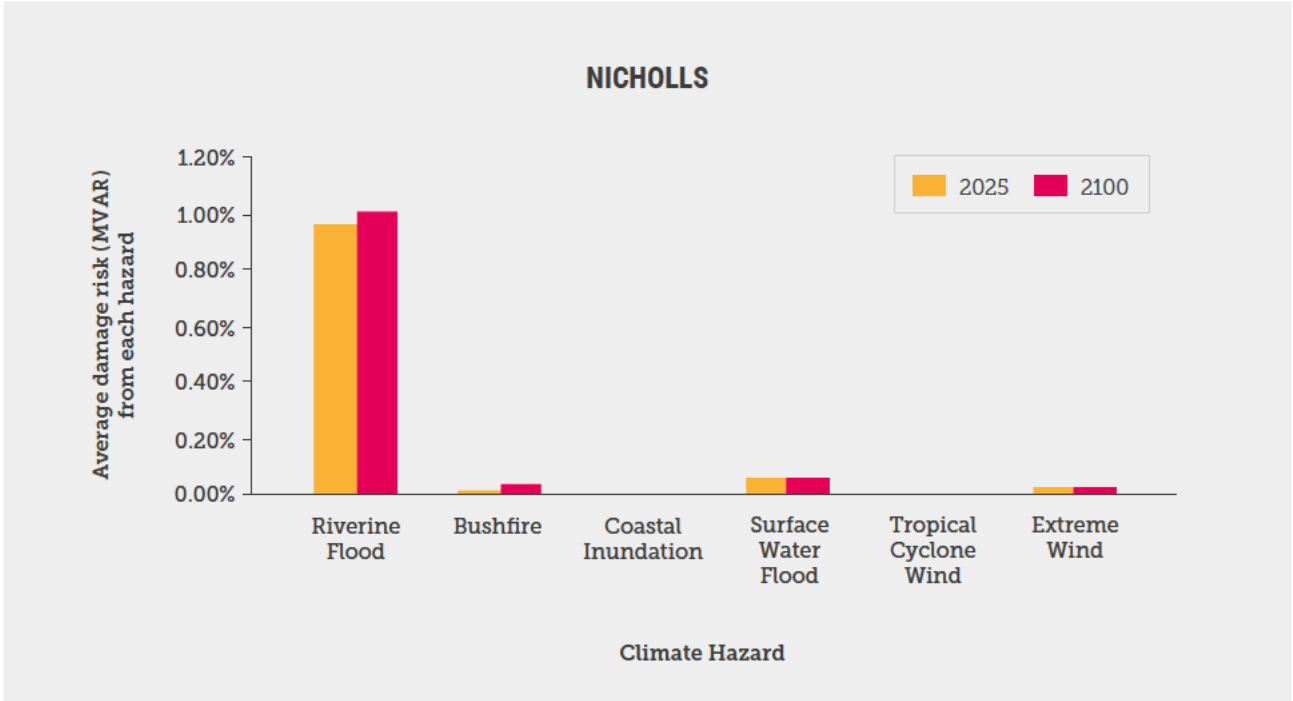


Figure 9: The main climate risks for the Nicholls electorate in 2025 are riverine flood, surface water flood and extreme wind.

#3 MAYO, SOUTH AUSTRALIA

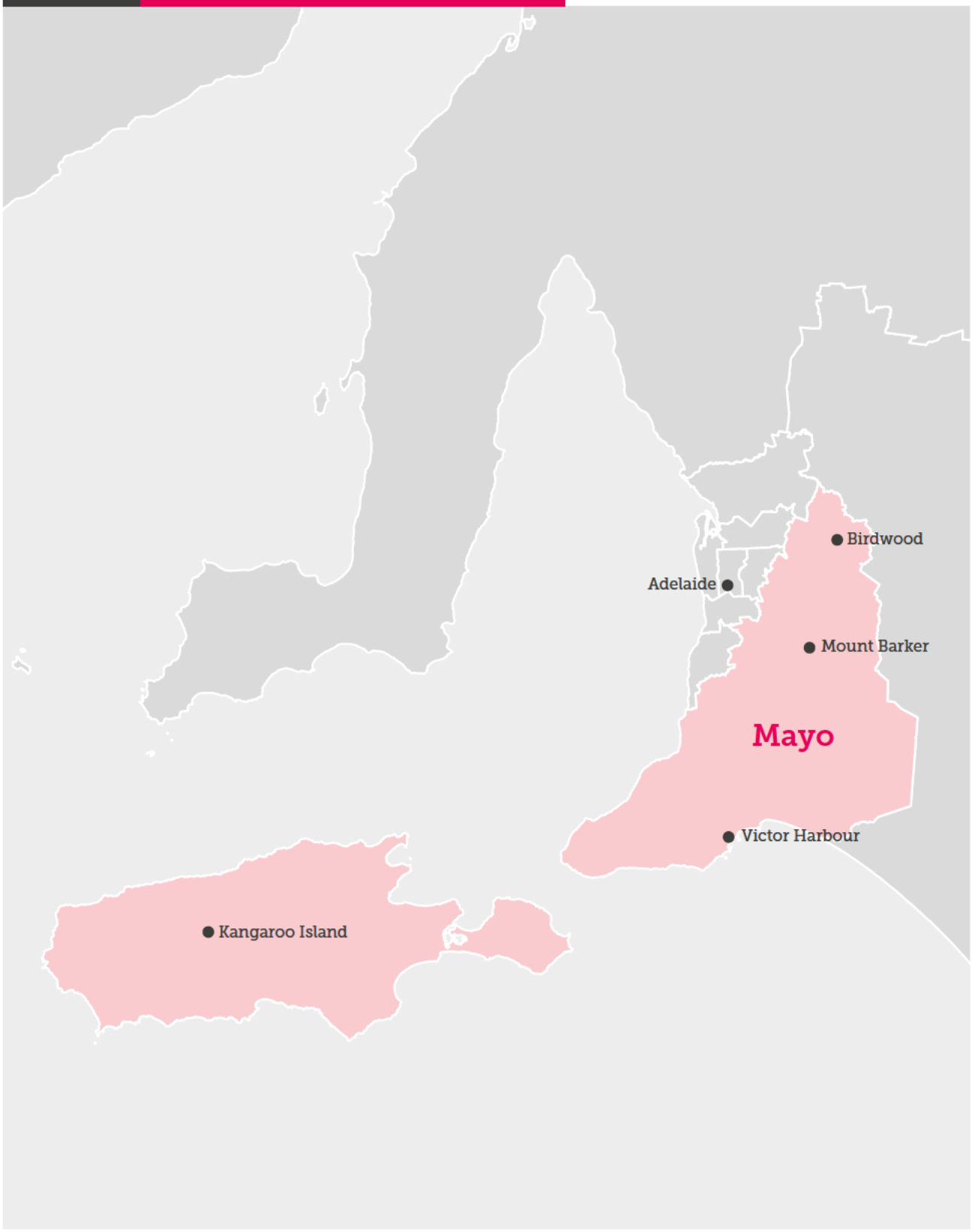




Image 9: Kangaroo Island in South Australia was badly affected by the 2019-20 Black Summer fires with loss of property and tourism revenue.

The rural electorate of Mayo takes in the Fleurieu Peninsula and Kangaroo Island, areas famed for their wineries, beaches and native vegetation. People living in this electorate are likely to be older and more likely to own their homes outright compared to the rest of South Australia. There are also proportionately more unoccupied private dwellings in the electorate than the state at large (ABS 2021c).

Mayo was heavily impacted by the Black Summer bushfires in 2019-20, with Kangaroo Island bearing the brunt of catastrophic fires (ELCA and Climate Council 2024). More recently, communities across the Fleurieu Peninsula have been on tenterhooks as many towns have gone more than 100 days without sufficient rainfall. With locals relying on rain tanks and dams for water and the region still at a high risk of fire this autumn, many fear that they won't have enough water to fight fires if they strike (Dillon 2025).

Our analysis shows: 20,177 or 17.5% of properties are already at high risk. Across all properties it is estimated there has been a 20.8% increase in average risk of damage from climate extremes (1990-2025). Bushfire is the main climate risk for the region, followed by riverine flood and surface flood. Risk of damage from climate extremes in Mayo is modelled to almost double (up 83%) between now and the end of the century.

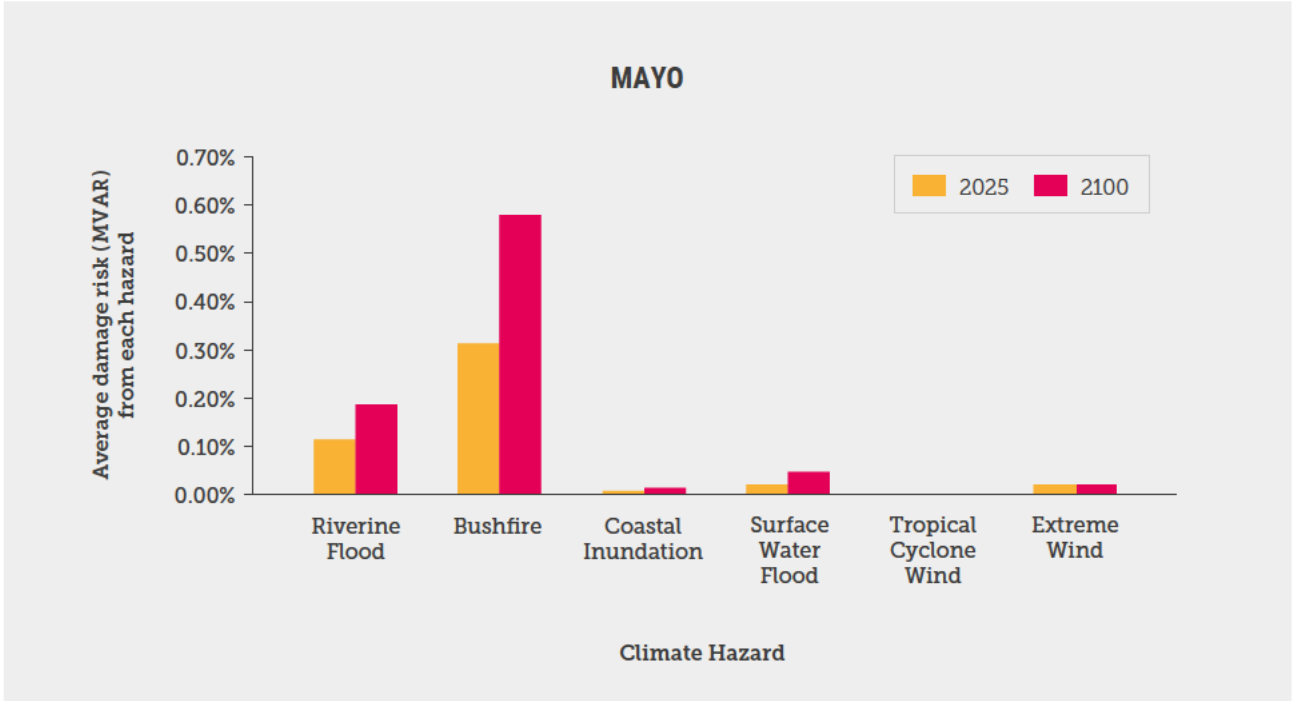


Figure 10: The main climate risks for the Mayo electorate in 2025, are bushfire, riverine flood and surface water flood, and on a high emissions pathway this risk will dramatically increase by 2100.

#4 BRISBANE, QUEENSLAND



Covering the Central Business District and inner-city areas such as Fortitude Valley, New Farm and Newstead, the electorate of Brisbane is at the centre of Australia's third largest city. Home to Australian rock legends the Go-Betweens, the electorate also hosts a bridge crossing the Brisbane River named in honour of the band.

Compared to the rest of Queensland, residents in Brisbane are more likely to be aged 20-39, have a Bachelor degree and above, been born overseas, work in professional industries, earn higher weekly incomes, live in apartments and are much more likely to rent than to own a home with a mortgage or outright (ABS 2021d).

Being built on a flood plain around the Brisbane River places the electorate and city at great risk of flooding when heavy rainfall and or storm surge strikes (Brisbane City Council 2023; Cook 2025). During the 2022 floods, at least 179 suburbs were impacted across the Greater Brisbane City (Brisbane City Council 2022).

Our analysis shows: 18,978 or 12.7% of properties are already at high risk. Across all properties it is estimated there has been a 36.3% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Brisbane electorate are surface water flood, riverine flood and coastal inundation. Risk of damage from climate extremes in Brisbane is modelled to increase by 64.8% between now and the end of the century.

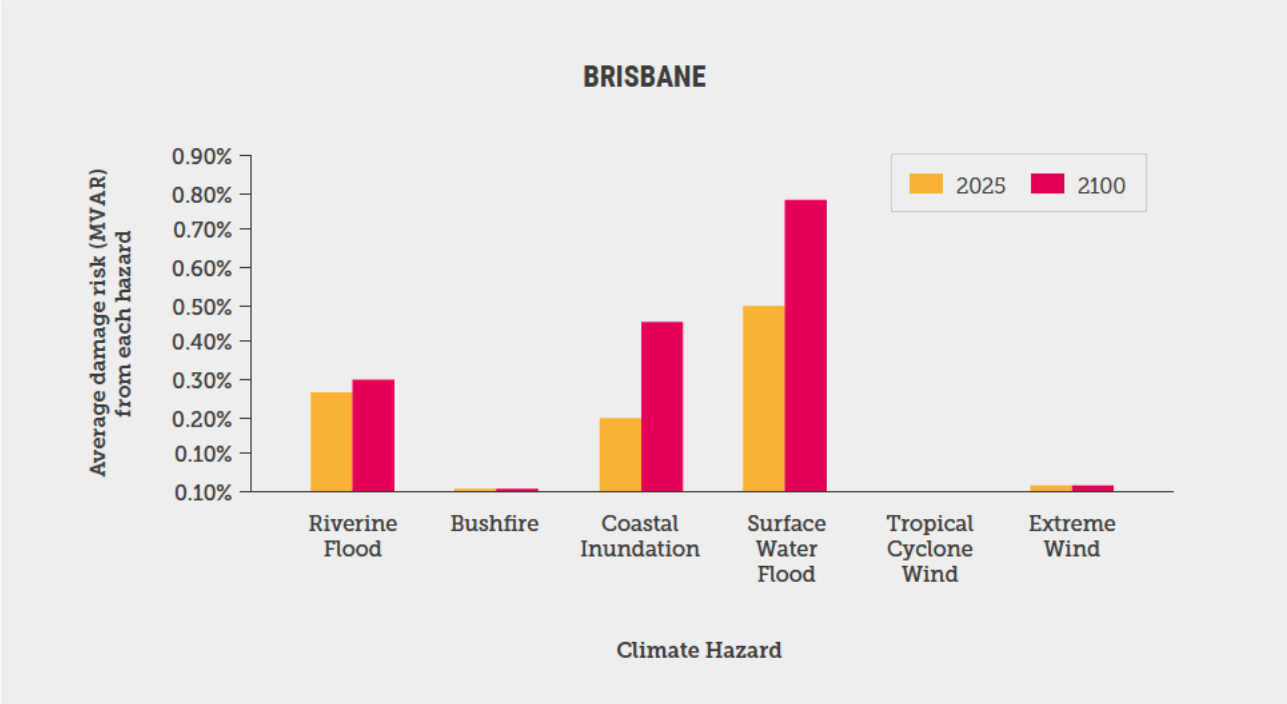
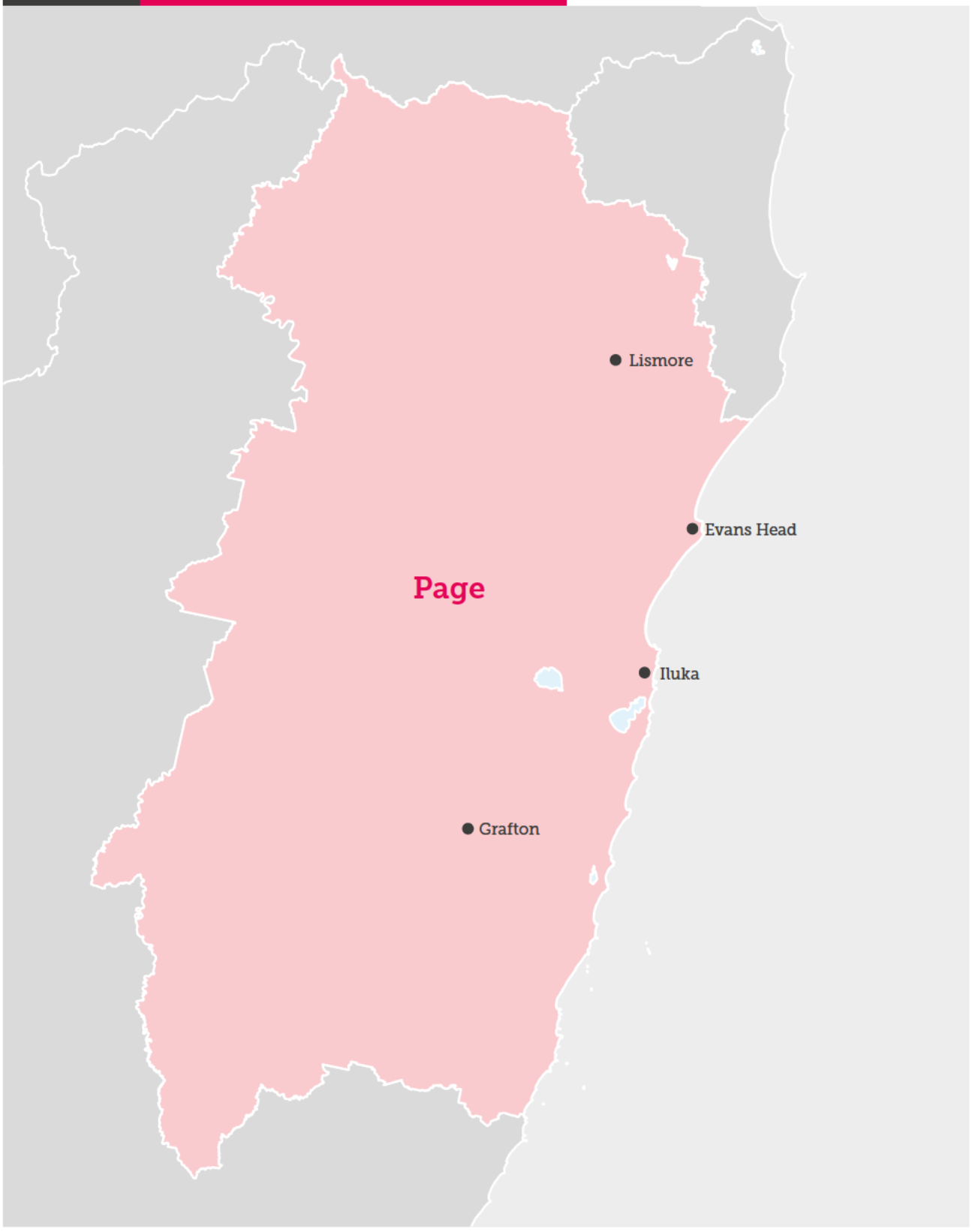


Figure 11: The main climate risks for the Brisbane electorate in 2025 are surface water flood, riverine flood and coastal inundation.

#5 PAGE, NEW SOUTH WALES



Taking in beautiful coastlines and scenic hinterland, the electorate of Page is also home to some of the most disaster-prone communities in New South Wales (ELCA and Climate Council 2024; NSW Reconstruction Authority 2024). The local government area of Clarence Valley is one of the most disaster impacted in the state, based on historical disaster recovery funding arrangement activations, while Lismore was severely impacted by successive floods in 2022 (ELCA and Climate Council 2024).

People living in Page are older on average than the rest of New South Wales, are more likely to own their own homes outright and are less likely to work full-time (ABS 2021e).

Our analysis shows: 18,636 or 16.9% of properties are already at high risk. Across all properties it is estimated there has been a 7.3% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Page electorate are riverine flood, bushfire and surface water flood. Risk of damage from extreme weather in Page is projected to increase by 69.6% between 2025 and 2100.



Image 10: Many homes in Lismore, Northern New South Wales were badly damaged in the '2022 Great Deluge'.

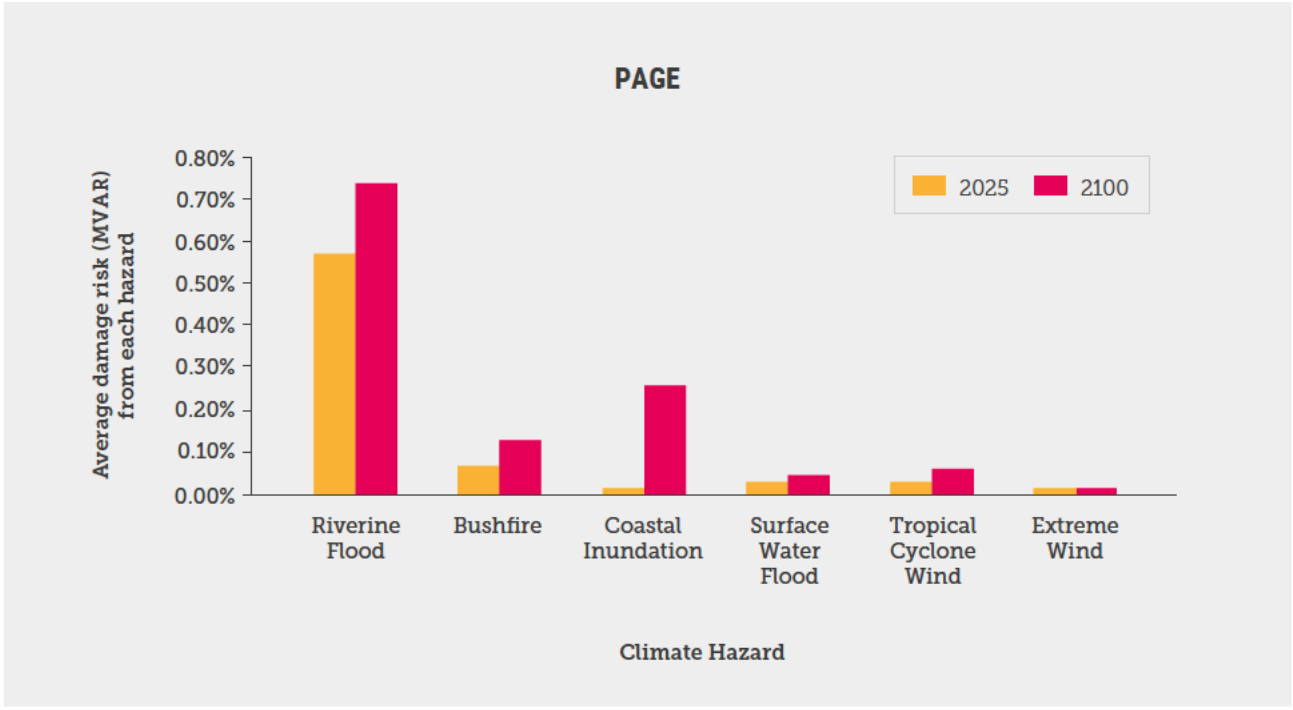


Figure 12: The main climate risks for the Page electorate in 2025 are riverine flood, bushfire and surface water flood, with coastal inundation to dramatically increase by 2100 on a high emissions pathway.

#6 MARANOA, QUEENSLAND





Image 11: Livestock in flooded paddocks. Farming communities are deeply affected by intensive rainfall and floods with property damage, loss of livestock and crops.

Stretching from the outer suburbs of Brisbane and the Gold Coast to the Northern Territory and South Australian borders, Maranoa is almost three times the size of the United Kingdom but is home to less than .002% of Australia's population.[5] Parts of the electorate were devastated by bushfire in 2023-24, when Queensland experienced a fire season where more houses were lost in that state than during all of Black Summer (ELCA and Climate Council 2024). The town of Tara, Western Downs was at the centre of the devastation, where 20,500 hectares were burnt, and more than 300 people had to evacuate (Response 2023; Queensland Reconstruction Authority 2024). In March 2025, communities in the Maranoa electorate were badly impacted by flooding - the largest recorded in the state's history (The Guardian 2025).

Similar to other at-risk electorates, Maranoa residents are typically older than the rest of the state and more likely to own their homes outright. Income levels are generally lower than the average for Queensland. More than a quarter (29%) of Queensland's beef cattle farmers live in Maranoa (ABS 2021f).

Our analysis shows: 18,499 or 13.7% of properties are already at high risk. Across all properties it is estimated there has been a 10.4% increase in average risk of damage from climate extremes (1990-2025). The greatest climate risks for residents are riverine floods, bushfire and extreme wind. Risk of damage from climate extremes in Maranoa is modelled to increase 42.3% by the end of the century.

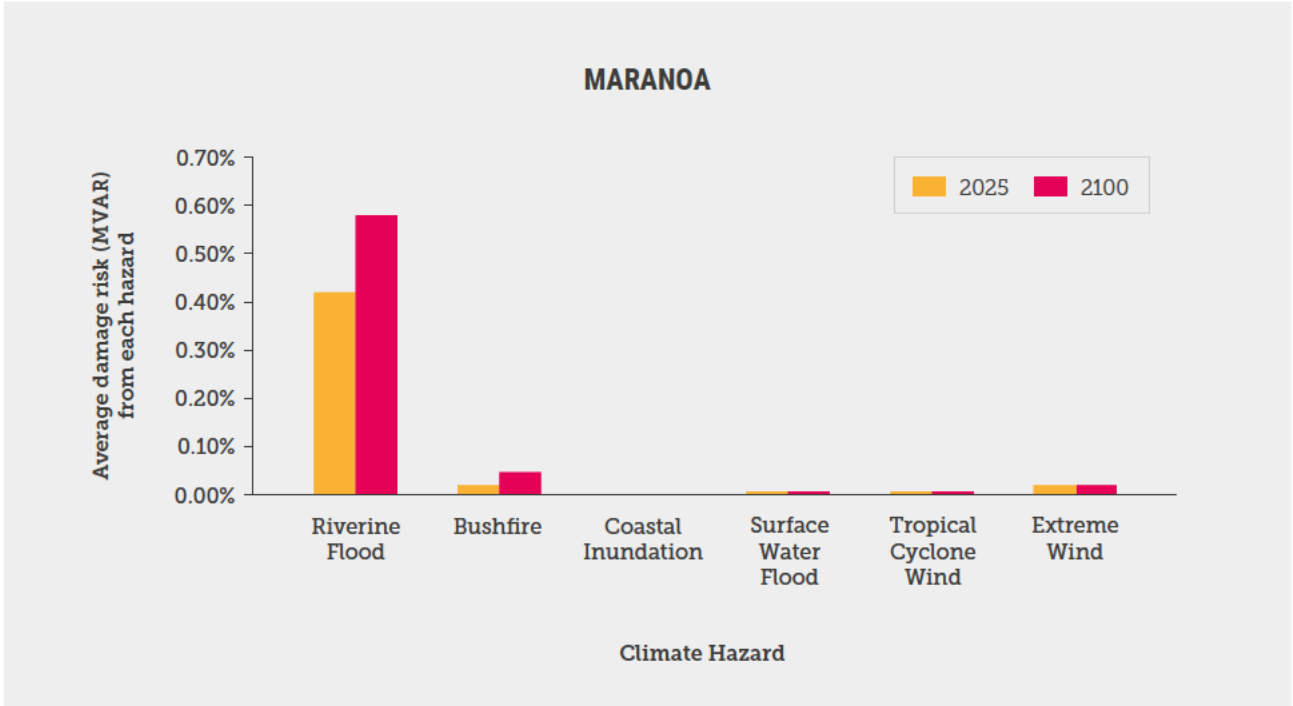


Figure 13: The greatest climate risks in 2025 for residents in the Maranoa electorate are riverine floods, bushfire and extreme wind.

5 The electorate of Maranoa covers 729,897 sq km, and has 151,422 residents (AEC 2024a, ABS 2021e). According to the World Bank, the United Kingdom has a surface area of 243,610 sq km and a population of 68,350,000 people (WBG 2025a, WBG 2025b).

#7 ROBERTSON, NEW SOUTH WALES



Taking in parts of NSW's Central Coast, Robertson includes the waterways of Broken Bay and Brisbane Waters, and famous beaches such as Umina, Avoca Beach and Terrigal. The region was in the news recently when Prime Minister Anthony Albanese and partner Jodie Hayden purchased a cliffside home in the coastal community of Cococabana (Touma 2024). The electorate is also ringed by state forests and national parks that attract visitors from across the country.

However, households and businesses in Robertson are already facing a number of climate risks. Large parts of the area are forested, with many households backing on to bushfire prone areas. At the same time, others are located close to beaches and estuarine areas that may experience coastal erosion and inundation (NSW Government 2024).

Our analysis shows: 14,063 or 14.72% of properties are already at high risk. Across all properties it is estimated there has been a 26.9% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Robertson electorate are bushfires, riverine flood and surface water flood. Risk of damage from climate extremes in Robertson is modelled to more than double (132.6%) by the end of the century. The risk of coastal inundation increases significantly by 2100 due to sea level rise.

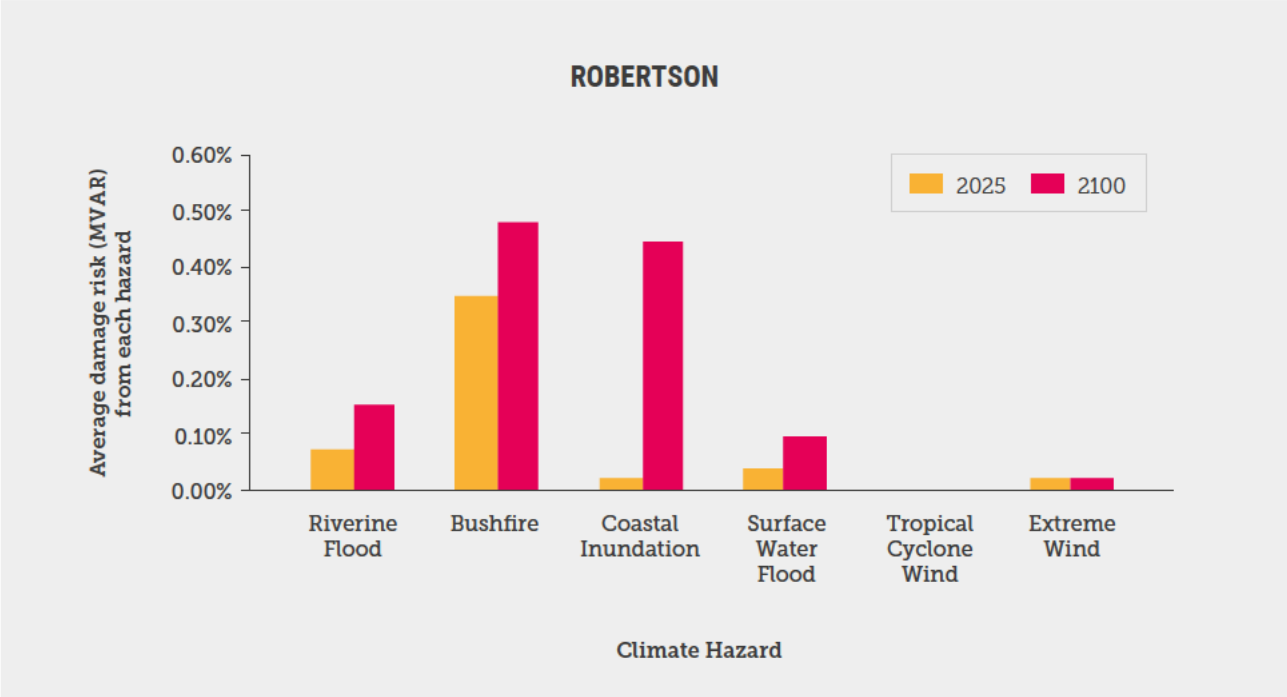


Figure 14: The main climate risks for the Robertson electorate in 2025 are bushfires, riverine flood and surface water flood.

#8 BULLWINKEL, WESTERN AUSTRALIA





Image 12: A firefighter at work in the wake of bushfires in the Bullwinkel electorate.

Home to Kalamunda's Big Bobtail Blue tongue lizard monument, the newly created electorate of Bullwinkel sits on the outer boundary of Perth's metropolitan area. Just like at the fringes of other Australian cities, there has been a large suburban expansion here in recent years (AEC 2024c). Large parts of the electorate are in bushfire prone areas (DFES 2025).

More dangerous bushfire weather in a warming climate and more Australians living on the urban interface next to bushland across the country means that more people are exposed to this growing risk.

Our analysis shows: 12,719 (15.6%) of properties are already at high risk. Across all properties it is estimated there has been a 36.8% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Bullwinkel electorate are bushfire, riverine flood and surface water flood. Risk of damage from climate extremes in Bullwinkel is modelled to increase more than four-fold (313.7%) by the end of the century.

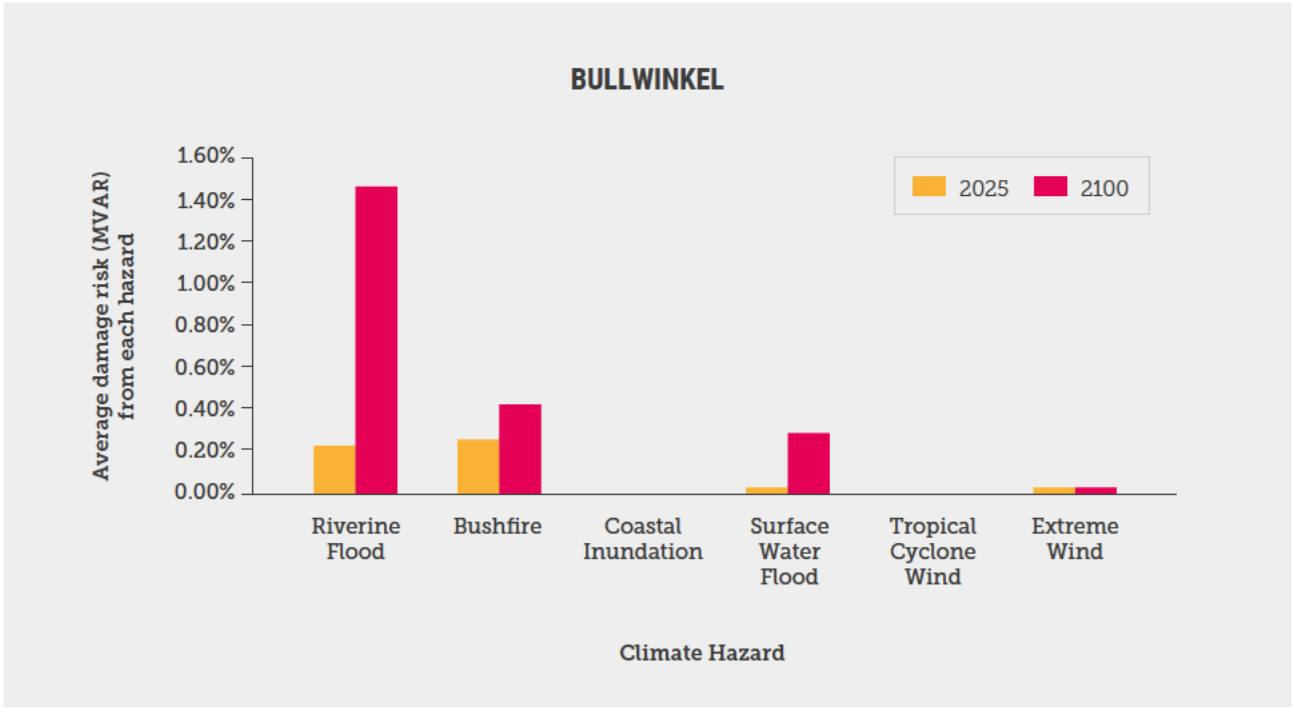


Figure 15: The main climate risks for the Bullwinkel electorate in 2025 are bushfire, riverine flood and surface water flood with dramatic increases in the risk of riverine flooding by 2100 on a high emissions pathway.

#9 DOBELL, NEW SOUTH WALES



With trendy Long Jetty and the popular family holiday hot spot The Entrance, the Dobell electorate takes in the northern parts of the Central Coast in New South Wales. While many locals and visitors enjoy the numerous beaches, Tuggerah Lake is also a popular spot for fishing and water sports.

Much like the neighbouring electorate of Robertson, residents of this part of the Central Coast are exposed to a number of risks, including bushfire in the hinterland, and coastal erosion and inundation around inlets and coastal beaches (NSW Government 2024).

Our analysis shows: 12,569 or 13.88% of properties are already at high risk. Across all properties it is estimated there has been a 22.2% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Dobell electorate are bushfire, riverine flood and surface flood. Risk of damage from climate extremes in Dobell is modelled to more than double (up 144.5%) by the end of the century. The risk of coastal inundation increases significantly by 2100 due to sea level rise.

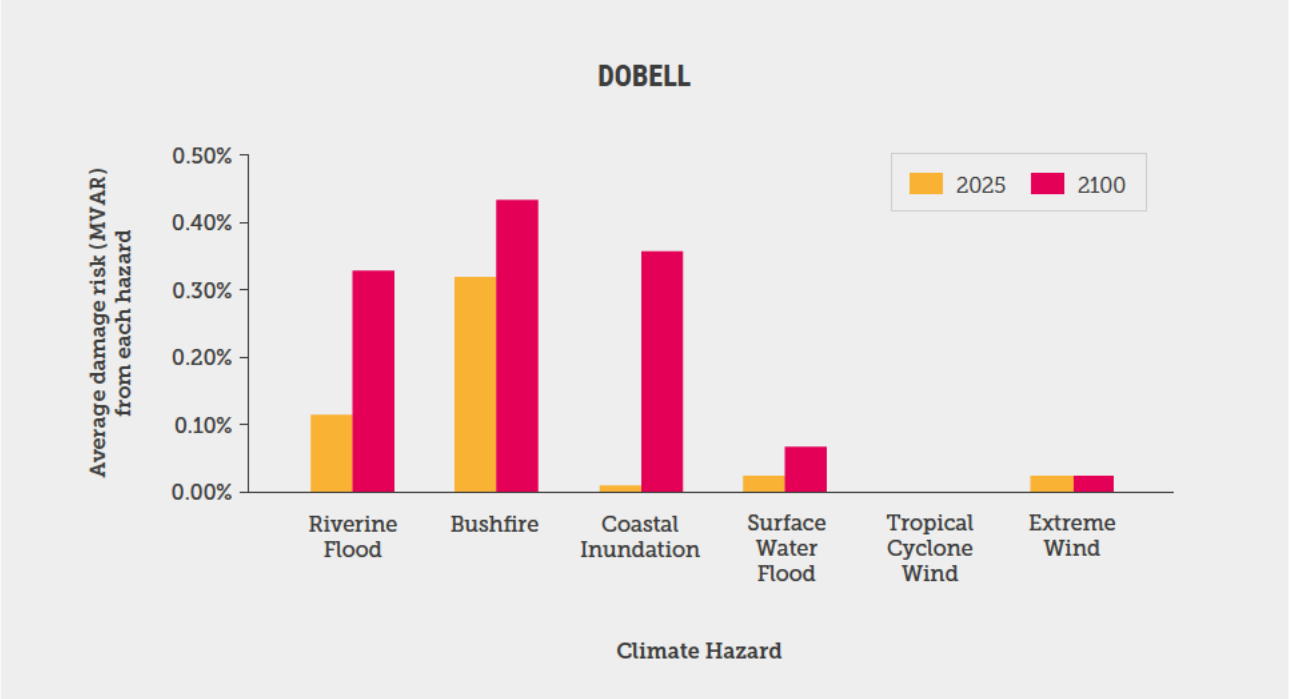


Figure 16: The main climate risks for the Dobell electorate in 2025 are bushfire, riverine flood and surface water flood. Coastal inundation is shown to dramatically increase here by 2100 on a high emissions pathway.

#10 HUNTER, NEW SOUTH WALES



Taking in the western shore of Australia's largest salt water lake at Lake Macquarie, the Hunter electorate is largely rural, with the majority of the population living outside of major or regional cities (AEC 2024d). Locals are much more likely to have been born in Australia compared to other people in New South Wales. One in six residents in the Hunter are employed as technicians and trades workers, and one in 10 are machinery operators and drivers - much higher than for the rest of the state. Almost a third (30%) of New South Wales' coal mining workforce lives in the Hunter (ABS 2021g).

Situated on the banks of the Hunter River, the regional centre of Singleton has experienced a number of floods over the decades. The town just marked the 70th anniversary of the devastating 1955 flooding that led to 14 people losing their lives (Singleton Council 2025; Wakatama and Lewis 2025). The town was also inundated by flood waters in July 2022 (SMH 2022).

Our analysis shows: 12,363 or 12.84% of properties are already at high risk. Across all properties it is estimated there has been a 32.52% increase in average risk of damage from climate extremes (1990-2025). The main climate risks for the Hunter electorate are bushfire, riverine flood and extreme wind, with coastal inundation expected to rise dramatically by 2100. Risk of damage from climate extremes in Hunter is modelled to almost double (89.2%) by the end of the century.

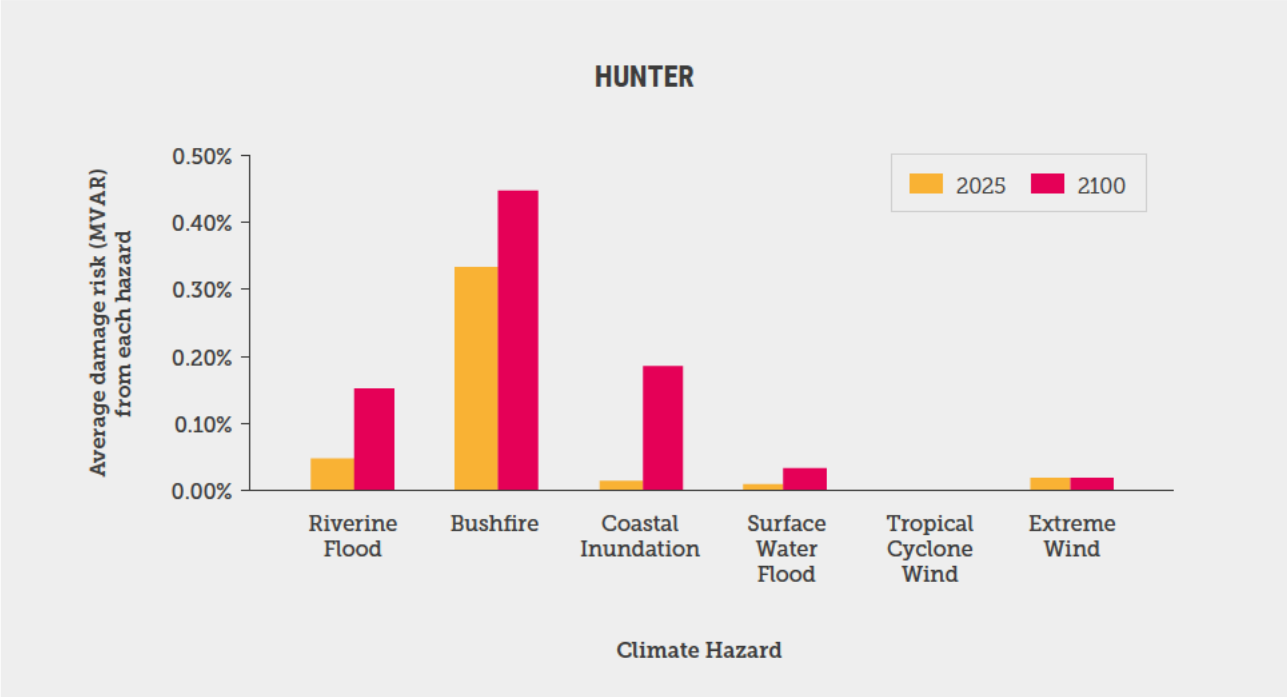


Figure 17: The main climate risks for the Hunter electorate in 2025 are bushfire, riverine flood and extreme wind, with coastal inundation expected to rise dramatically by 2100 on a high emissions pathway.

Climate Risk Assessment
Submission 18 - Attachment 1

4. Things will only get worse if we fail to cut climate pollution

Climate change is accelerating and that's re-writing extreme weather record books and playing havoc with our properties, lives and livelihoods. Slashing global climate pollution this decade is critical to safeguard our biggest asset: our homes. This is a key challenge for our political leaders.

Since the federal 2022 "climate election", we have made clear progress nationally on cutting climate pollution. Our main grid is now powered by about 40% renewable energy and storage, our grid is being upgraded to accommodate higher electricity use, new vehicle efficiency standards are making cleaner and cheaper-to-run new cars more affordable, and we've just had a bumper year for big clean energy and storage projects. Stricter limits on Australia's biggest industrial polluters have been set via reforms to the Safeguard Mechanism, and the Climate Change Bill sets legally binding climate pollution targets across government, with clear reporting requirements. However, it is clear that we need to cut climate pollution much further, and much faster if we are to avoid far worse climate extremes.

Image 13: A tradesman installs solar power on an Australian home. Renewables like rooftop solar, gridscale wind and solar, and advanced storage now provide around 40% of the electricity in our main grid.



There are also impacts we can no longer avoid, due to past inaction. Our analysis shows one in 23 (652,424) properties are already at high extreme weather and climate risk, compared to 572,138 properties in 1990.

Under high levels of climate pollution (RCP 8.5/SSP5-8.5), this is expected to grow to 746,185 (5%) properties by 2050, and 1,316,845 (8.8%) properties by 2100. This only accounts for existing properties, and does not include all the new properties that are likely to be built over the coming decades. The United Nations estimates that Australia's population will be around 43.1 million people by 2100 (UN 2024). There are currently on average 2.5 people per household (Agarwal, Bishop and Day 2023). If this continues, but the population increases, Australia will need around 17.2 million homes by 2100, up from 9.27 million in the last Census. Note: this figure does not include the number of business properties.



Image 14: Accelerating our move to shared, active and electric transport is a key step to cut climate pollution.

WE NEED TO CUT CLIMATE POLLUTION, FURTHER AND FASTER

The reality is simple: there is no safe level of climate pollution. This is already a crisis that is here at our very doorstep. But let's be clear: worse is on the way if we fail to build on our progress to date. Science tells us that the only way to avoid the worst consequences of climate-fuelled fires, floods and storms is to cut global pollution much further, and much faster this decade.

Climate Council has analysed what Australia should be doing and concluded that we can reduce our own climate pollution by 75% below 2005 levels by 2030 (Climate Council 2024). This is difficult, but doable. It will be an all-in effort, across our society and economy, but the economics are in our favour and this relies on proven and readily-available technologies.

We know what we need to do, and how we can do it. The real question is: will our political and industry leaders make choices that help solve this issue - or add to our problem. The next term of Federal Parliament takes us most of the way to 2030 – the end of this critical decade for climate action - so everything we do now matters in our race to secure a safer future.

The key steps involve:

- Legislating science-backed targets to cut climate pollution.
- Ending new fossil fuel development.
- Electrifying industry and switching to zero-emission fuels.
- Powering our country with renewable power backed by storage.
- Accelerating our move to shared, active and electric transport.
- Better protecting Australians from the impacts of climate change.

In doing so, we can build a stronger, fairer and more prosperous country that sets our kids up for success. By seizing the decade and rapidly cutting climate pollution, many benefits will flow to families, workers, and businesses.

AUSTRALIANS ARE ALREADY BEING IMPACTED

More and more Australians have been hit by the impacts of climate-fuelled disasters and successive insurance premium increases. Often, people with the greatest exposure to climate risks, such as bushfires and floods, have experienced the greatest hikes in premiums, but all Australians are exposed to rising insurance costs. As a result, the number of Australians under-insuring or foregoing insurance coverage at all is growing. Insurer Allianz reported 90% of its customers in high-risk areas such as northern New South Wales did not have flood insurance (Settle 2025).

This is a symptom of a much larger problem. The continued burning of coal, oil and gas is overheating our planet and making disasters more frequent and severe. As more households and businesses are impacted by these disasters in Australia and across the globe, insurance premiums will continue to increase and insurance corporations may choose to exit the riskiest places or withdraw insurance options related to the riskiest hazards (something already occurring in the United States). In short, unaffordable or withdrawn insurance premiums will become common if we don't take sufficient action to cut climate pollution and prepare property and communities for worsening extreme weather.

Climate change is wreaking havoc with our lives and properties. If we want to safeguard our homes (and greatest assets) then we need to do more to cut climate pollution.

CLIMATE CHANGE IS MAKING INSURANCE MORE EXPENSIVE

The primary driver of recent insurance premium increases in Australia has been strong ongoing demand in the construction sector in the face of supply constraints. The costs of construction increased dramatically following the coronavirus pandemic, and have remained high since (Commonwealth of Australia 2024; Hall 2024). This is made worse by labour market disruptions and supply chain shortages (Commonwealth of Australia 2024). Some state based taxes, such as stamp duty, the GST and the emergency services levy on general insurance (NSW) are also said to be a contributing factor in recent insurance premium rises (Commonwealth of Australia 2024; Hall 2024; ICA 2025).

Another key driver is worsening climate-fuelled disasters which are increasingly contributing to this problem. Climate change is adding to rising insurance costs for Australian households in four main ways:

1. **More households in the firing line** - Climate-fuelled disasters are becoming more frequent and intense and more Australians live in locations that are exposed to climate risks than in previous decades. Making matters worse, new housing is still being built in disaster prone areas. Overall, more households are in the firing line when disaster strikes.

2. **More risk and uncertainty** - Because the scale of future disasters and consequent losses are hard to predict, insurance companies and reinsurers are reserving a larger percentage of premiums for potential future losses (Jarzabkowski et al. 2025).

3. **Rising costs of global reinsurance** Australian insurance companies essentially take out their own insurance policies through the global reinsurance market to help pay out claims (Actuaries Institute 2024; Hall 2024; Jarzabkowski et al. 2025). Due to increasingly severe climate events around the world, global reinsurers have failed to recoup their costs, and are hiking prices which are passed onto our insurance companies and onto policy holders (Actuaries Institute 2024).

4. **Building costs** - When climate-fuelled disasters hit, homes, commercial buildings and critical infrastructure all require urgent repair and rebuilding that adds demand for trades and building supplies.

Climate Risk Assessment
Submission 18 - Attachment 1

CLIMATE PROOFING OUR HOMES AND COMMUNITIES CAN HELP ADDRESS RISING INSURANCE COSTS

Alongside taking urgent action to cut climate pollution, governments must also support communities, businesses and households to adapt to the climate impacts that are already here, and build resilience into our properties and infrastructure. Doing so will pay a double dividend, by also putting downward pressure on insurance premiums.

1. **We need to start with clear information on the climate risks that people face now, and into the future.**

   While climate-fuelled disasters continue to worsen, there remains very little publicly available and accessible sources of information on the climate risks that communities face now and into the future (Choice et al. 2023). It is estimated that less than a third of Australian home buyers understand the disaster risks their homes may be exposed to (Perugia et al. 2025).

   By having clear and comprehensive information on the climate risks that communities and households face now and into the future, we can target where climate resilience funding is spent, assist households to take measures that would better protect their homes, and help inform property purchase decisions.

   The Australian Government has committed to developing and releasing a National Climate Risk Assessment that would provide the information governments, communities, the private sector and households need. This must be urgently released as a priority by whomever forms government after the coming election.

2. **We need to take measures that reduce climate risks to property and infrastructure.**

Reducing the impact of climate risks, and protecting households from future risks requires that governments take action to help make existing households more climate resilient through retrofitting, and in extreme instances provide buybacks and support relocation. They should also prevent further development in areas at high risk of climate impacts, and ensure all new construction is designed to withstand future floods, bushfires and severe storms. Making sure that climate proofing is built into our National Construction Code, requiring that new homes are more resilient to the impacts of bushfires, cyclones and floods, and expanding the Bushfire Resilience Rating app are examples of practical measures that can be done today (ICA 2025).

Both the Queensland and New South Wales governments have developed household resilience programs that support households to do this, and these are co-funded by the federal government. Expanding these state-based programs to a national one that covers all hazards would better protect Australians into the future, and put downward pressure on insurance premiums (ELCA and Climate Council 2024).

The fact many Australians are already living in risky locations is an historical issue - many communities, buildings and infrastructure were developed before climate impacts were well known or understood. There is no longer any excuse for actively putting more people in harm's way by building new housing, or communities in areas of high risk disaster, or by failing to build climate resilient buildings or infrastructure. The Commonwealth Government, working through the National Cabinet, must finalise the development of a national standard for considering climate risk in land use planning (ICA 2025).

Image 15: An example of a bushfire resilient home.



Climate Risk Assessment
Submission 18 - Attachment 1

3. **We must start spending more on preparing for disasters, versus cleaning up the mess.**

Greater investment in disaster preparedness and resilience measures can help to reduce the costs of disaster recovery. For every $1 invested in disaster preparedness, there is a $9.60 return on investment (Moon 2024).

In 2022, the Federal Government introduced the Disaster Ready Fund (DRF) - a five year $1 billion investment, with funding matched by states and territories (NEMA 2025). The Disaster Ready Fund has supported disaster preparedness initiatives across states and territories. The most recent round of the DRF included a focus on large scale physical infrastructure, with a delivery frame of three years (McAllister 2025).

These existing commitments are insufficient in the face of escalating impacts and costs of climate-fuelled disasters. Much of Australia's infrastructure has been built to standards that have not had to account for the climate impacts we're now experiencing. This is particularly the case for flood events, with many flood levees built decades ago for flood heights that are now being breached. The Insurance Council of Australia has recommended that the federal government create a $30 billion flood infrastructure fund as a priority (ICA 2025). There is a clear need to boost funding for climate resilient infrastructure.

When building back, after recovery, we should build back better and smarter. All tiers of government - alongside other partners in recovery such as insurance companies - should be making sure we no longer repair damaged homes and infrastructure to their pre-disaster state, but to a quality that can withstand worsening and more frequent disasters.

Alongside cutting climate pollution, governments must also do more to help get more Australians out of harm's way.

4. **We should prioritise highest risk areas, and those most vulnerable to climate risks.**

While a majority of Australians have experienced climate-fuelled disasters spanning floods, bushfires, heatwaves and severe storms, some communities are being pummelled by such events repeatedly (ELCA and Climate Council 2024). Further, those experiencing greater hardships are more likely to be hit by disasters. For example the ICA (2025) estimated that 70% of households exposed to the highest flood risks are in areas where the median income is below the national average. One third (35%) of these households are in areas where median income is below the national poverty line.

It is vital that in preparing for, and responding to, climate-fuelled disasters we consider who is already experiencing hardship, and who needs the greatest level of protection. Some of this work could be guided by the National Adaptation Plan, which has yet to be released, despite the consultation on the adaptation plan issues paper having closed in April 2024.

In Australia, 70% of households exposed to the highest flood risks are in areas where the median income is below the national average, and one third of these households are in areas where median income is below the national poverty line.

5. Conclusion

Every Australian deserves to live in a safe and healthy home. This is the bedrock for a decent life as it gives us the security we need to go out and work, get an education, and participate in our community and society.

Yet for more and more people, climate change is putting all of this at risk. You only need to turn on the television to witness the latest climate-fuelled extreme weather event, and the devastation this wreaks in its wake.

No matter where we live, the climate risks to our homes are increasing, and the cost of insurance is on the rise. Already, more than 650,000 properties in Australia are at high risk. Of those, 72,432 properties are located within critical climate risk zones - places where the risks are now so extreme that the problem has become too big for individual homeowners or their region to tackle alone - they require state or federal government support. And it is clear that disadvantaged Australians face greater climate risks and impacts. The Insurance Council of Australia has found that approximately 70% of households exposed to the highest flood risk are in areas where the median income is below the national median ($92,000) (ICA 2025).

How did this situation get so bad? Under the previous Coalition Government we lost a decade on climate action but the current ALP Government has made clear progress but has further to go (Climate Council 2025b). Collectively, politicians have made too many decisions that actively add to our climate pollution problems, and failed to take enough steps to replace the use of coal, oil and gas with non-polluting alternatives. While polluters are profiting, vulnerable people, families, farmers and small businesses are all paying the price. Fossil fuel production is one of the only industries in Australia where companies are not held financially liable for the harm they cause.

No matter where we live, the climate risks to our homes are increasing and insurance costs are rising. Politicians can and should be doing more to protect us by cutting climate pollution everywhere possible.

Unnatural disasters currently cost the Australian economy $38 billion per year. By 2060, under a high climate pollution scenario, the costs of extreme weather events to Australian households is set to rise to $94 billion per year. At low climate pollution levels, the cost is $73 billion (29% less). These cost estimates account for residential and commercial property losses and their flow on financial and social impacts on affected communities, such as mental health impacts and exacerbated chronic illness, emergency response costs and clean up costs (see Deloitte Access Economics 2021 for a more detailed breakdown). Further, Commonwealth expenditure on disaster recovery is projected to triple within 40 years (Australian Government 2023).

It is clear Australian governments need to do more to prepare communities for future disasters and make them more resilient to their impacts. This means providing information on the climate risks people face, building household resilience, investing in disaster preparedness and resilient infrastructure and prioritising support to Australians who need it most. To do all of that, we need to have the latest climate risk data and assessment. This should be publicly accessible to all.

Both the Queensland and New South Wales governments have developed household resilience programs to support households exposed to cyclone and flooding risks specifically. Both are co-funded by the Federal Government. The 'Resilient Homes Program' in New South Wales was developed in response to the devastating 2022 floods. It is targeted to the Northern Rivers and Central West regions and offers householders a range of options, including home retrofitting, raising, rebuilding, relocation and buy-backs (NSW Reconstruction Authority 2025). The NSW Government has estimated that the expansion of the Northern Rivers Resilient Homes program criteria to all other floodplains across the state would mean more than 12,000 existing properties would be eligible for managed relocation at a current value of around $10 billion. It is estimated that the average buy-back offer in Northern Rivers is roughly $583,567. The 'Household Resilience Program' in Queensland targets coastal parts of Central and Northern Queensland to improve the resilience of homes against tropical cyclones (Queensland Government 2024).

While Australia is now cutting climate pollution, it is not fast or far enough to do our fair share in limiting global heating. When it's our own homes and communities at stake there is no alternative. We must urgently cut global climate pollution further and faster, so we reduce the risks over time, as well as prepare communities and our infrastructure for the disasters we cannot avoid.

We can choose to speed up Australia's switch to renewable energy and storage, to electrify more of our homes and get off polluting gas, to electrify more of our transport and phase out polluting vehicles, and help industry cut their emissions further and faster.

If we don't, we're gambling something we can't afford to lose.

References

ABC (2025) Ex-Tropical Cyclone Alfred brings highest rainfall in decades to south-east Queensland. By Tyne Logan and Tom Saunders, accessed from https://www.abc.net.au/news/2025-03-10/brings-highest-rainfall-in-decadesto-south-east-queensland/105031782.

Actuaries Institute (2024) Home insurance affordability and home loans at risk, accessed from https://actuaries.asn.au/docs/thought-leadership-reports/home-insurance-affordability-and-home-loans-at-risk.pdf

Agarwal N, Bishop J and Day I (2023) Bulletin – March 2023 Australian Economy A New Measure of Average Household Size. *Reserve Bank of Australia,* accessed from https://www.rba.gov.au/publications/bulletin/2023/mar/a-new-measure-of-average-household-size.html.

AIDR (Australian Institute for Disaster Resilience) (2025) Tropical Cyclone Yasi, 2011, accessed from https://knowledge.aidr.org.au/resources/cyclone-cyclone-yasi-queensland-2011/.

Australian Electoral Commission (2025a) Profile of the electoral division of Richmond (NSW), accessed from https://aec.gov.au/profiles/nsw/richmond.htm

Australian Electoral Commission (2025b) Profile of the electoral division of Maranoa (Qld), accessed from https://www.aec.gov.au/profiles/qld/maranoa.htm

Australian Electoral Commission (2025c) Profile of the electoral division of Bullwinkel (WA), accessed from https://www.aec.gov.au/profiles/wa/bullwinkel.htm

Australian Electoral Commission (2025d) Profile of the electoral division of Hunter (NSW), accessed from https://www.aec.gov.au/profiles/nsw/hunter.htm

Australian Bureau of Statistics (2021a) Richmond 2021 Census All persons QuickStats, accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED138

Australian Bureau of Statistics (2021b) Nicholls 2021 Census All persons QuickStats accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED236

Australian Bureau of Statistics (2021c) Mayo 2021 Census All persons QuickStats, accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED408

Australian Bureau of Statistics (2021d) Brisbane 2021 Census All persons QuickStats, accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED304

Australian Bureau of Statistics (2021e) Page 2021 Census All persons QuickStats, accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED133

Australian Bureau of Statistics (2021f) Maranoa 2021 Census All persons QuickStats, accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED321

Australian Bureau of Statistics (2021g) Hunter - 2021 Census All persons QuickStats, accessed from https://abs.gov.au/census/find-census-data/quickstats/2021/CED121

Australian Bureau of Statistics (2024) Building Activity Australia 2024 report.

Australian Government (2023) Intergenerational Report accessed from https://treasury.gov.au/sites/default/files/2023-08/p2023-435150.pdf

Ayat H, Evans J, Sherwood S & Soderholm J (2022) Intensification of subhourly heavy rainfall *Science* Vol. 378, No. 6620, accessed from https://www.science.org/doi/10.1126/science.abn8657

Brisbane City Council (2022) Rebuild and recover: Flood resilience action plan - October 2022 update, accessed from https://www.brisbane.qld.gov.au/content/dam/brisbanecitycouncil/corpwebsite/about-council/documents/rebuild-recover-flood-resilience-action-plan.pdf.coredownload.pdf

Brisbane City Council (2023) Local disaster management plan, accessed from https://www.brisbane.qld.gov.au/content/dam/brisbanecitycouncil/corpwebsite/about-council/documents/brisbane-city-council-local-disaster-management-plan.pdf.coredownload.pdf

Bureau of Meteorology (BoM) (2025) Tropical cyclone knowledge centre, aAccessed from http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/.

CHOICE, Climate Council, Financial Counselling Australia, Financial Rights Legal Centre and Tenants Union (2023) Weathering the Storm: Insurance in a changing climate, accessed from https://www.climatecouncil.org.au/wp-content/uploads/2023/08/Weathering-the-Storm-Insurance-in-a-changing-climate-.pdf

Climate Council (2019) The facts about bushfires and climate change, accessed from https://www.climatecouncil.org.au/not-normal-climate-change-bushfire-web/.

Climate Council (2021) Hitting home: The compounding costs of climate inaction by Will Steffen and Simon Bradshaw, accessed from https://www.climatecouncil.org.au/resources/hitting-home-compounding-costs-climate-inaction/.

Climate Council (2022) Everything you need to know about floods and climate change, accessed from https://www.climatecouncil.org.au/resources/climate-change-floods/.

Climate Council (2024) Seize the Decade. How we empower Australian communities and cut climate pollution 75% by 2030 by Annika Dean, Ben McLeod, Jennifer Rayner, Annette Zou, Dinah Arndt, and Martin Rice, accessed from https://www.climatecouncil.org.au/resources/seize-the-decade/.

Climate Council (2025a) Eye of the Storm: How climate pollution fuels more intense and destructive cyclones by Martin Rice, David Karoly, Dinah Arndt, Josh Comer, and Sean O'Rourke, accessed from https://www.climatecouncil.org.au/resources/climate-pollution-and-destructive-cyclones/.

Climate Council (2025b) Climate Crossroads: Progress, Politics and a Pivotal Election, accessed from https://www.climatecouncil.org.au/resources/climate-crossroads-progress-politics-pivotal-election/

Climate Council and Emergency Leaders for Climate Action (2023) Powder Keg: Australia primed to burn, accessed from https://emergencyleadersforclimateaction.org.au/wp-content/uploads/2023/02/CC_MVSA0347-CC-Report-Powder-keg-Australia-primed-to-burn_V4-FA-Screen-Single.pdf

Coates L, Haynes K, O'Brien J, McAneney J and de Oliveira F (2014) Exploring 167 years of vulnerability: An examination of extreme heat events in Australia 1844–2010, *Environmental Science & Policy*, Volume 42, Pages 33-44, ISSN 1462-9011, https://doi.org/10.1016/j.envsci.2014.05.003.

Coates L, van Leeuwen J, Browning S, Gissing A, Bratchell J, Avci A (2022) Heatwave fatalities in Australia, 2001–2018: An analysis of coronial records, *International Journal of Disaster Risk Reduction*, Volume 67, 102671, ISSN 2212-4209, https://doi.org/10.1016/j.ijdrr.2021.102671.

Commonwealth of Australia (2024) Select Committee on the Impact of Climate Risk on Insurance Premiums and Availability accessed from https://parlinfo.aph.gov.au/parlInfo/download/committees/reportsen/RB000441/toc_pdf/ImpactofClimateRiskonInsurancePremiumsandAvailability.pdf

Cook M (2025) Brisbane is bracing for floods yet again. History shows residents should remain on very high alert, The Conversation, accessed from https://theconversation.com/brisbane-is-bracing-for-floods-yet-again-history-shows-residents-should-remain-on-very-high-alert-251719

CSIRO (2025) Here are seven things to know about tropical cyclones, accessed from https://www.csiro.au/en/news/All/ Articles/2025/March/things-to-know-about-tropicalcyclones.

CSIRO and BoM (2024) State of the Climate 2024, accessed from http://www.bom.gov.au/state-of-the-climate/.

Cunningham C, Bowman D and Williamson G (2023) Queensland's fires are not easing at night. That's a bad sign for the summer ahead, The Conversation, accessed from https://theconversation.com/queenslands-fires-are-not-easing-at-night-thats-a-bad-sign-for-the-summer-ahead-216732

Deloitte Access Economics (2021) Special report: Update to the economic costs of natural disasters in Australia, Australian Business Roundtable for Disaster Resilience & Safer Communities.

Department of Fire and Emergency Services (2025) Bushfire prone areas accessed from: https://www.dfes.wa.gov.au/hazard-information/bushfire/bushfire-prone-areas

Dillon M (2025) Dozens of South Australian townships fear a recurring disaster without future-proofing water supply *ABC News*, accessed from https://www.abc.net.au/news/2025-03-12/drought-like-conditions-in-south-australia/105035540?utm_source=abc_news_web&utm_medium=content_shared&utm_campaign=abc_news_web

Dowdy A, Wasko C, Catto J, Westra S (2024) Supercharged thunderstorms: have we underestimated how climate change drives extreme rain and floods? The Conversation, May 9, 2024, accessed from https://theconversation.com/supercharged-thunderstorms-have-we-underestimatedhow-climate-change-drives-extreme-rain-andfloods-228896.

Emergency Leaders for Climate Action (ELCA) and Climate Council) (2024) Too close to home: How we keep communities safer from escalating climate impacts by Sean O'Rourke, Greg Mullins, Simon Bradshaw and Dinah Arndt, accessed from https://www.climatecouncil.org.au/wp-content/uploads/2024/06/Too-Close-to-Home_ELCA-and-Climate-Council-report.pdf

Hall A (2024) The Insurance Protection Gap: A Global Crisis - ANU Disaster Solutions Update 2024, accessed from https://iceds.anu.edu.au/files/ICA%20Slides_ANU%20Disaster%20Solutions%20Update%202024.pdf#overlay-context=news-events/events/anu-disaster-solutions-update-2024

Insurance Council of Australia (2025) Advancing Australia's Resilience: Policy recommendations for the next Australian Government, accessed from https://insurancecouncil.com.au/wp-content/uploads/2025/02/21226_ICA_Federal-Election-Platform-Report_2025_Final.pdf

Jarzabkowski P, Meissner K, Gallagher R and Riordan T (2025) The LA fires have prompted a reckoning for the insurance industry – Australian premiums could soar as a result, The Conversation, accessed from https://theconversation.com/the-la-fires-have-prompted-a-reckoning-for-the-insurance-industry-australian-premiums-could-soar-as-a-result-247207

Kossin JP (2018) A global slowdown of tropical-cyclone translation speed. Nature 558, accessed from https://doi.org/10.1038/s41586-018-0158-3.

Lindenmayer D and Taylor C (2020) New spatial analyses of Australian wildfires highlight the need for new fire, resource, and conservation policies, *Proc. Natl. Acad. Sci. U.S.A.* 117 (22) 12481-12485, https://doi.org/10.1073/pnas.2002269117

McAllister J (2025) Project proposals open for $200 million disaster risk reduction and resilience funding to keep Australians safe, accessed from https://minister.homeaffairs.gov.au/JennyMcAllister/Pages/project-proposals-open-for-200-million-disaster-risk-reduction.aspx

Moon B (2024) Challenges, changes, choices, presentation to the ANU Disaster Solutions Update 2024, accessed from https://iceds.anu.edu.au/files/ANU%20Disaster%20Solutions%20Update%202024%20-%206%20August%202024.pdf#overlay-context=news-events/events/anu-disaster-solutions-update-2024

National Emergency Management Agency (NEMA) (2025) Disaster Ready Fund Round Three 2025-26 Guidelines, accessed from https://www.nema.gov.au/sites/default/files/2025-01/Disaster%20Ready%20Fund%20Round%20Three%202025-26%20Guidelines.pdf

NOAA (National Atmospheric and Oceanic Administration) (2023) Climate Change: Global Sea Level. By Rebecca Lindsey, accessed from https://www.climate.gov/newsfeatures/understanding-climate/climate-change-globalsea-level.

New South Wales Government (2025) About the Resilient Homes Program, accessed from https://www.nsw.gov.au/departments-and-agencies/nsw-reconstruction-authority/our-work/resilient-homes-program/about-program

New South Wales Government (2024) Central Coast Climate Change Snapshot, accessed from https://www.climatechange.environment.nsw.gov.au/sites/default/files/2024-08/NARCliM2-Snapshot-CentralCoast.pdf

New South Wales Reconstruction Authority (2024) State Disaster Mitigation plan 2024-2026, accessed from https://www.nsw.gov.au/sites/default/files/noindex/2024-02/State_Disaster_Mitigation_Plan_Full_Version_0.pdf

Parliament of Victoria (2024) The 2022 flood event in Victoria, accessed from https://www.parliament.vic.gov.au/495fa6/contentassets/a1a3e3c7d84c4a059b7f8ad12089af06/lcepc-60-02_2022-flood-event-in-vic_final-report.pdf

Perugia F, Babb C and Rowley S (2025) Yes, Australia needs new homes – but they must be built to withstand disasters in a warmer world, The Conversation, accessed from https://theconversation.com/yes-australia-needs-new-homes-but-they-must-be-built-to-withstand-disasters-in-a-warmer-world-249702

Queensland Fire and Emergency Services (2023) Response: Resilient and ready for the people of Queensland - December 2023, accessed from https://www.fire.qld.gov.au/sites/default/files/2023-12/Response-Magazine-52-December-2023.pdf

Queensland Government (2024) About the Household Resilience Program, accessed from https://www.qld.gov.au/housing/buying-owning-home/financial-help-concessions/household-resilience-program/about-household-resilience-program

Queensland Reconstruction Authority (2024) Emergency housing solutions wheeled out for bushfire victims, accessed from https://www.qra.qld.gov.au/news-case-studies/case-studies/emergency-housing-solutions-wheeled-out-bushfire-victims

Richie-Tyo, Dowdy and Ramsay (2025) Cyclone Alfred is slowing – and that could make it more destructive. Here's how climate change might have influenced it. The Conversation, March 6, 2025, accessed from https://theconversation.com/cyclone-alfred-is-slowing-andthat-could-make-it-more-destructive-heres-how-climatechange-might-have-influenced-it-251594.

Settle A (2025) More households than ever are under-insured. Here's what needs to be done, The Conversation, accessed from https://theconversation.com/more-households-than-ever-are-under-insured-heres-what-needs-to-be-done-251708

Singleton Council (2025) Remembering the 1955 flood + commemorating 70 years, accessed from https://www.singleton.nsw.gov.au/Council/Media-Centre/News/Remembering-the-1955-flood-commemorating-70-years

Studholme J, Fedorov AV, Gulev SK et al. (2022) Poleward expansion of tropical cyclone latitudes in warming climates. Nat. Geosci. 15, 14–28, accessed from https://doi.org/10.1038/s41561-021-00859-1

Sydney Morning Herald (SMH) (2022) Major flooding in Singleton as water levels continue to rise, accessed from https://www.smh.com.au/environment/weather/major-flooding-in-singleton-as-water-levels-continue-to-rise-20220707-p5azxq.html

The Guardian (2025) How historic is what we're seeing in the Queensland floods? It's hard to grasp the full magnitude by Petra Stock, accessed from https://www.theguardian.com/environment/2025/apr/06/how-historic-is-what-were-seeing-in-the-queensland-floods-its-hard-to-grasp-the-full-magnitude

Touma R (2024) Anthony Albanese and Jodie Haydon buy $4.3m clifftop home in Copacabana on NSW Central Coast, *The Guardian*, accessed from https://www.theguardian.com/australia-news/2024/oct/15/anthony-albanese-and-jodie-haydon-buy-43m-clifftop-home-in-copacabana-on-nsw-central-coast

Tran TL, Ritchie EA, Perkins-Kirkpatrick SE, Bui H, and Luong TM (2024) Variations in rainfall structure of western North Pacific landfalling tropical cyclones in the warming climates. *Earth's Future*, 12, e2024EF004808. https://doi.org/10.1029/2024EF004808.

Wakatama, G and Lewis M (2025) Hunter Valley remembers 1955 flood that killed 14 and left hundreds homeless, ABC Newcastle, accessed from https://www.abc.net.au/news/2025-02-23/maitland-1955-hunter-valley-flood-70th-anniversary-ses/104966284

Wasko C, Westra S, Nathan R, Pepler A, Raupach TH, Dowdy A, Johnson F, Ho M, McInnes KL, Jakob D, Evans J, Villarini G, Fowler HJ (2024) A systematic review of climate change science relevant to Australian design flood estimation. Hydrology and Earth System Science, https://doi.org/10.5194/hess-28-1251-2024.

United Nations (2024) Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2024 Revision. (Medium variant).

World Meteorological Organization (WMO) (2025) Extreme weather, accessed from https://wmo.int/topics/extremeweather.

World Bank Group (WBG) (2025a) Population, total - United Kingdom, accessed from: https://data.worldbank.org/indicator/SP.POP.TOTL?locations=GB

World Bank Group (WBG) (2025b) Surface area (sq. km) - United Kingdom, accessed from https://data.worldbank.org/indicator/AG.SRF.TOTL.K2?locations=GB

Zhang G, Murakami H, Knutson TR, Mizuta R, Yoshida K (2020) Tropical cyclone motion in a changing climate. Science Advances 6, accessed from https://doi.org/10.1126/sciadv.aaz7610

Appendix 1

ABOUT THE DATASET THIS REPORT IS BASED ON

The findings shared in the report are extracted from a dataset from Climate Valuation that looks at:

The impact from 6 climate hazards under a 'business as usual' scenario (RCP 8.5/SSP5-8.5):

(i) Riverine Flood
(ii) Surface Water Flood
(iii) Bushfire
(iv) Coastal Inundation
(v) Tropical Cyclone Wind
(vi) Extreme Wind

- 15 million (14,932,014) commercial and residential properties
- over 15,000 (15,021) suburbs
- 150 federal electorates

Appendix 2

METHODOLOGY

The data used in this report is provided by Climate Valuation, which is part of The Climate Risk Group - a group of companies specialising in quantifying the risk of damage from climate change extreme weather to the built environment, now and into the future.

Climate Valuation analyses climate risk in terms of the probability of property damage using the purpose-built 'Climate Risk Engines', which compute the threshold at which the various key components of a building would fail if exposed to various hazards (such as riverine flooding, coastal inundation and bushfires).

How is risk measured?

This analysis combines long-term data from local meteorological stations with information about the specific location, such as flood mapping and depths, elevation above sea level, tides and waves, soil type, and forest cover; and data on the assumed building at that address, such as age, construction materials and design.

For this dataset on Australian addresses, it is assumed that a standard modern dwelling is located at each address, i.e. a single story detached house which uses design specifications and materials typical of a recent building.

The influence of future climate change is derived by extracting the changes in the statistical distribution of key parameters such as heat, precipitation, wind and humidity from global climate change models from agencies such as CSIRO, University of New South Wales, the US National Oceanic and Atmospheric Administration (NOAA), and NASA.

Models that predict a wetter future are used to assess flood risks, models that predict a drier future are used to assess drought risks etc. In this way, the models are structured to provide a 'stress test' and alert property owners to the upper range of possible risks, rather than average projections.

The following design and construction settings materially impact the vulnerability of a property to the hazards to which it is likely to be exposed.

Assumed design specifications and materials of the standard modern dwelling used for this analysis are below:

Design Specification (Threshold)	Value
Wind Threshold (Probability)	1 in 500 year
Flood - Floor Height (from ground level)	0.5 metre
Fire - Protection	Standard
Tropical Cyclone wind speed threshold (metres per second):	Tropical cyclone wind speeds (metres per second) assigned to each property reflect the speed of a 1 in 500 year event. Aligning with National Aus/NZ building codes and standards.
Heat Threshold (degrees celsius)	42

Element (Infrastructure Component)	Material
Air conditioning	Electrical Components
Bathrooms	Bathroom composite
Battery Storage	Waterproof Electrical
Ceiling	Plaster
Deck And Patio	Timber
Downpipe And Guttering	Steel
Electrical	Electrical Components
External Door	Timber
External Rafters and Beams or Soffit Openings	Timber
External Wall Cladding	Weatherboard
Flooring Covering	Carpet
Floor Structure	Concrete
Hot Water	Copper
Internal Wall Lining	Plaster
Kitchen	Kitchen Composite
Piers And Foundation	Concrete
Plumbing	Polyvinyl chloride (PVC)
Roof Cladding	Steel
Roof Fastening	Steel
Roof Insulation	Glass Wool
Roof Structure	Timber
Solar Panel	Electrical Components
Storm Water Plumbing And Drainage	Polyvinyl chloride (PVC)
Telecommunication	Electrical Components
Wall Insulation	Glass Wool
Wall Structure	Timber
Window Frame	Aluminium
Window Glazing	Glass

How is risk defined?

The metric used by Climate Valuation (part of The Climate Risk Group) to measure physical climate risk to property is called Maximum-to-Date Value-at-Risk (MVAR).

MVAR is a measure of the annual risk of damage to an asset. The MVAR captures the costs of expected extreme weather and climate-related damage, relative to the replacement cost of the building. For example, an MVAR of 1% is equivalent to climate-related damage costs of $4,440 per year for a building that costs $444,000 (the average cost to build a home in Australia according to Australian Bureau of Statistics Building Activity Australia 2024 report), noting that this does not include the value of the land.

Climate Valuation uses MVAR to categorise properties as high, moderate or low risk. High Risk Properties (HRP) - the focus of this report - are defined as properties whose estimated annual maximum cost of damage due to climate change is expected to exceed 1% of its replacement cost.

High Risk Properties are becoming increasingly difficult to insure, with premiums becoming unaffordable or unavailable. In areas with high concentrations of High Risk Properties, insurance may be withdrawn entirely.



For more on the methodology, visit the Climate Valuation website.

Image credits

Front cover: AAP Image / Dan Peled

Image 1: Queensland Fire and Emergency Services

Image 2: Shutterstock / katacarix

Image 3: AAP Image / Bulloo Shire Council, Daniel Roy

Image 4: AAP Image / Dave Hunt

Image 5: gettyimages, Mark Snodgrass

Image 6: Trevor King

Image 7: VicEmergency

Image 8: Greater Shepparton City Council

Image 9: iStock / BeyondImages

Image 10: Climate Council

Image 11: iStock / JuanCruzdF

Image 12: Department of Fire and Emergency Services WA

Image 13: Shutterstock / zstock

Image 14: iStock / Marilyn Nieves

The Climate Council is a fearless champion of the climate solutions that Australia needs. People power got us started and we are proudly community-funded and independent.

The Climate Council acknowledges the Traditional Owners of the lands on which we live, meet and work. We wish to pay our respects to Elders, past and present, and recognise the continuous connection of Aboriginal and Torres Strait Islander peoples to land, sea and sky. We acknowledge the ongoing leadership of First Nations people here and worldwide in protecting Country, and securing a safe and liveable climate for us all.

CONNECT WITH US!

facebook.com/climatecouncil
x.com/climatecouncil
instagram.com/theclimatecouncil
tiktok.com/@theclimatecouncil
youtube.com/climatecouncil
linkedin.com/company/climate-council
info@climatecouncil.org.au
climatecouncil.org.au





Subscribe to the Climate Council today for your exclusive inside take on the latest climate science, impacts and solutions.

Visit climatecouncil.org.au/join/

The Climate Council is a not-for-profit organisation. We rely upon donations from the public. We really appreciate your contributions.

DONATE climatecouncil.org.au/donate