Parliament of Victoria Legislative Council Environment and Planning Committee Inquiry into Climate Resilience

Asthma Australia Submission, June 2024

ABOUT ASTHMA AUSTRALIA

Asthma is a respiratory condition that affects 2.8 million Australians, with children being the most impacted. Asthma is responsible for at least one Australian death every day, making it a serious health concern. More than 30,000 people are hospitalised each year due to asthma, yet 80% of these hospitalisations are considered potentially avoidable. Despite the prevalence of asthma, it is often misunderstood, causing fear and anxiety for those living with the condition.

Asthma Australia has been the leading charity for people with asthma and their communities for over 60 years. The challenges of climate change, unhealthy air, and health inequity make it more important than ever for people with asthma to have a voice. We search for new and progressive approaches to challenge the status quo. Our work is grounded in evidence and centred on the experiences of people affected by asthma. We believe by listening to those living with asthma, designing solutions with them, and influencing change, people with asthma can live freely, unrestricted by their asthma.

EXECUTIVE SUMMARY

Asthma Australia welcomes the opportunity to comment on the Legislative Council Environment and Planning Committee's Inquiry into Climate Resilience. The focus of the inquiry on climate change risks to Victoria's built environment and infrastructure is particularly relevant to asthma. Built environments strongly influence exposure to climate-driven hazards that can increase the risk of developing asthma and trigger symptoms in people with the condition. Climate change hazards are largely experienced indoors as over 90% of our time is spent indoors, with most of that time spent inside homes.[1] Homes, workplaces, educational facilities, and healthcare facilities are critical settings in which action is needed to increase Victoria's climate resilience and protect health and wellbeing.

Australia is already witnessing the compounding and cascading effects of conditions and events driven by climate change.[2] The past decade has seen the catastrophic 2016 Melbourne thunderstorm asthma event, drought-driven dust storms, a prolonged bushfire smoke crisis, record temperatures and heatwaves, and a mould epidemic linked to extreme weather. These hazards can increase the risk of developing asthma and trigger symptoms and exacerbations in people with the condition, and climate change is increasing their frequency, severity, and duration.[3]

The interactions with between climate change and asthma are particularly concerning the high burden of asthma in Australia. Asthma affects 1 in 9 Australians, or around 2.8 million people,[4] and the prevalence of asthma is increasing. It is the 8th leading contributor to the overall burden of disease in Australia, having risen from 10th place in 2003,[5] and the leading cause of burden of disease for children aged 5-14 years.[6]

Asthma mortality[7] and hospitalisations[8] in Australia are high by international standards, and around 400 people die each year in Australia due to asthma,[9] with a significant increase in deaths in 2023.[10] In 2022-23, there were more than 28,000 potentially preventable hospitalisations due to asthma.[11]

People with asthma experience reduced health outcomes and quality of life.[12] Asthma can affect participation in paid employment, education, care responsibilities, sport, and social events, impacting not only people with asthma but also their carers and communities. A 2015 report, the Hidden Cost of Asthma, found asthma cost the healthcare system $1.2 billion, lost productivity due to asthma cost $1.1 billion, and the total burden of disease cost $24.7 billion.[13] Climate change is likely to increase this burden.

Improving the resilience of the built environment and infrastructure is an important element of minimising the impacts of climate change on asthma in Victoria. To avoid deepening health inequities, policies and investment to increase resilience to climate change will need to prioritise population groups with a greater asthma burden, as well as people with greater exposure to climate change hazards.

In this submission, Asthma Australia focuses on climate change risks to asthma associated with the built environment and, in particular, the need for urgent action to adapt housing to mitigate these risks. We provide an overview of the interactions between climate change and asthma, explain the importance of housing to climate change impacts on asthma, and note relevant consumer research we have undertaken. We then address the Terms of Reference most relevant to asthma.

Climate change and asthma

Asthma is a chronic health condition that is heavily influenced by environmental conditions: it can be both caused and exacerbated by exposure to environmental triggers. Asthma is deeply linked with climate change as the emissions that cause climate change increase the risk of developing asthma and trigger asthma symptoms in people with asthma, while also driving events and conditions that increase asthma prevalence and morbidity. The numerous climate change pathways that can cause and exacerbate asthma in Australia include air pollution from bushfires, mould caused by heavy rainfall and flooding, ground level ozone, pollen, thunderstorm asthma epidemics, and extreme heat.[14] This means people with asthma–and those at risk of developing the condition–are particularly vulnerable to the risks associated with climate change.

As people are exposed to these risks in a range of settings, efforts to increase climate resilience must span multiple policy areas to reduce the impact of climate change on asthma and avoid spiralling healthcare and productivity costs. Importantly, climate change can affect asthma through both extreme events and slow onset, or chronic, impacts. This means climate resilience policies must extend beyond disaster preparedness and include slow onset and chronic climate change impacts.

Housing, asthma, and climate change

Housing is a critical determinant of outcomes in many areas of life: not only health and wellbeing, but also education and employment.[15] These areas are interlinked, with good health supporting participation in education and employment, and education and employment in turn increasing the ability to maintain good health. Climate change is increasing exposure to asthma triggers which can infiltrate homes while also increasing the frequency of extreme events or conditions requiring people to shelter in their homes. However, many Australian homes do not provide healthy environments. In addition to allowing the infiltration of external hazards, such as bushfire smoke, homes can produce hazards, such as mould or gas cooktop emissions.

Asthma Australia's consumer research findings

Asthma Australia has undertaken consumer research to understand how people with asthma and the broader community are affected by climate change, bushfire smoke, and common asthma and allergy triggers in homes. Our research has also investigated what actions people take to reduce climate change impacts and improve their home environment, and whether any barriers prevent them from acting. The insights from these surveys can help inform climate resilience and adaptation planning.

Bushfire Smoke: Are you coping?

Asthma Australia's survey during the 2019-20 bushfires sought to understand how prolonged exposure to bushfire smoke was affecting people with asthma and the broader community.[16] We received more than 12,000 responses and 61% of respondents reported having asthma. The results revealed people with asthma were particularly vulnerable to bushfire smoke, and the impacts on them were broad. People with asthma were more likely to report emergency department presentations, hospitalisations, financial strain, and social restriction. They also described serious mental health impacts, including symptoms of anxiety and depression, due to smoke exposure and being unable to spend time outdoors or exercise to manage their mental health. The significant burden occurred even though people with asthma were more likely to take actions to try to reduce their exposure to smoke. This may reflect the unprecedented and prolonged extent of the smoke crisis, and the inadequacies of existing public health measures, including air quality guidance.

Asthma Australia's Homes, Health and Asthma Research

In 2022, Asthma Australia undertook a nationally representative survey of 5,041 people around how healthy Australian homes are.[17] We sought to uncover the prevalence of key asthma and allergy triggers in Australian homes, what actions people take to reduce these triggers in their homes, and whether they face barriers to action. The results revealed homes are not healthy places for many Australians, particularly people with asthma or allergies, with nearly one-third reporting their symptoms were worse after spending time in the home. Half the survey respondents reported having mould or dampness in their home, which may have been linked to widespread heavy rainfall and storms. People with asthma, people living in social housing, and Aboriginal and Torres Strait Islander people were more likely to report exposure to mould and pests. These groups were also more likely to report facing barriers to addressing triggers in their homes, as were people living in lower income households. These findings revealed the need for a range of policy measures to improve the health of Australian homes, including financial support for low-income households to improve home health, focusing on priority populations, funding to improve the health of existing social housing stock, and improved standards for new homes.

Climate and Health Survey

In 2023, Asthma Australia undertook a nationally representative survey of more than 2,000 people to explore knowledge and attitudes about climate change and health.[18] The results revealed most Australians (88%) are concerned about at least one impact of climate change, including more frequent and severe disasters, air pollution, and health and wellbeing impacts. The survey also highlighted lived experience of climate health impacts, with one quarter of people saying climate change had already affected their health. There was strong support for government policies to support people at risk of climate health impacts, with 70% agreeing that governments should take action to protect these people. However, there was limited understanding of the health impacts of climate change in Australia, with particularly poor understanding of the potential for climate change to cause or worsen other chronic disease outcomes such as heart (16%) or kidney disease (10%).

TERMS OF REFERENCE

(a) The main risks facing Victoria's built environment and infrastructure from climate change and the impact these will have on the people of Victoria

A range of climate change risks affecting Victoria's built environment are adversely impacting the health of Victorians, particularly among people with asthma. As the frequency, severity, and duration of these risks increases, climate resilience policies are urgently needed to minimise health damage. These policies must reflect a comprehensive understanding of climate change risks to the built environment: while climate-related extreme events such as floods and bushfires are often the focus of resilience and adaptation efforts, it is equally important to increase resilience to slow-onset and chronic climate change risks such as mould and heat. Further, while efforts to increase preparedness for extreme events typically focus on avoiding damage to the built environment and infrastructure, it is equally important to adapt built environment settings so they can support the health of occupants during extreme events.

Asthma Australia provides the following examples of climate change risks to Victoria's built environment that impact the health and wellbeing of Victorians:

- **Thunderstorm asthma:** The 2016 thunderstorm asthma event in Melbourne illustrated the devastating consequences of a climate change-driven event affecting a capital city which was unprepared to respond. The impacts included 10 deaths and over 3,300 emergency department presentations in 30 hours.[19] Climate change is likely influencing the risk and impacts of thunderstorm asthma epidemics.[20] Staying indoors with windows and doors closed during storms is a key message in the public health advice around thunderstorm asthma.[21] This means adapting built environments is a critical aspect of reducing the impacts of thunderstorm asthma.
- **Bushfire smoke:** During the catastrophic bushfires in 2019-20, 80% of the Australian population was exposed to bushfire smoke, often for prolonged periods.[22] People with asthma were among those most impacted by the smoke, and a survey of over 12,000 people by Asthma Australia found that despite taking action to reduce their exposure to smoke, people with asthma were still more likely than those without asthma to report emergency department presentations, hospitalisations, financial strain, and social restriction.[23] As public health guidance advises people with asthma, and others at risk of health impacts from bushfire smoke exposure, to shelter inside with windows and doors closed, the built environment is a key setting in which climate resilience needs to be increased to protect Victorians.
- **Mould:** In recent years, many parts of Australia have experienced prolonged heavy rainfall events and repeated floods which have led to a mould epidemic in built environment settings such as homes. Exposure to mould can both worsen asthma and increase the risk of developing the condition.[24] In 2022, a nationally representative survey of over 5,000 people by Asthma Australia found half of respondents had experienced mould or dampness in their home.[25] People with asthma, people living in social housing, and Aboriginal and Torres Strait Islander people were more likely to report mould or dampness in their homes yet, along with people living in lower income households, these groups were also more likely to report facing barriers to addressing triggers in their homes. Climate change is increasing the frequency, duration, and severity of conditions that increase exposure to mould in the built environment, including rainfall events, storms, and floods. This means mould prevention and remediation must be considered in climate resilience planning.
- **Indoor heat:** Extreme heat can trigger asthma symptoms for many people, as can extreme fluctuations in temperature and humid or dry conditions.[26] It is particularly important to have a comfortable indoor environment for people advised to shelter indoors from climate change-

driven events such as bushfires, which often occur during hot weather. As climate change continues to increase both overall temperatures and the frequency and severity of heatwaves, indoor heat is a climate risk in the built environment with acute and chronic dimensions.

These examples of risks to the built environment demonstrate the need for a comprehensive approach to climate resilience. This approach must also take an integrated approach to built environment settings as increasing resilience in one area can produce unintended consequences in other areas. For example, requirements around air tightening and insulation to improve energy efficiency may increase temperatures during hot weather and reduce indoor air quality, which is particularly concerning as people spend more time indoors during extreme weather conditions.[27]

Recommendation 1: To support community health and wellbeing, the Victorian Government should implement a sustainable and comprehensive policy approach to climate change resilience in the built environment that:

- **Encompasses extreme events and slow-onset or chronic climate change risks; and**
- **Both mitigates damage to buildings and adapts built environment settings to support the health of people exposed to climate change hazards.**

(b) How the Victorian Government is preparing for and mitigating the impacts of climate change on our built environment and infrastructure

Asthma Australia welcomes the Victorian Government's adaptation action plans, which cover seven sectors and include the Health and Human Services Climate Change Adaptation Action Plan 2022–2026. However, this plan largely focuses on increasing the resilience of health assets and social housing and improving capability in the health and human services sector. While these actions are welcome, there is an urgent need for actions to support the health and wellbeing of individuals and communities at risk of adverse health outcomes related to climate change impacts.

The Victorian Government has also delivered welcome energy efficiency and thermal comfort upgrades to social housing dwellings which have been shown to improve energy efficiency and health outcomes.[28] However, energy efficiency is just one aspect of ensuring homes are prepared for climate change impacts and can adequately protect the health of residents (as Asthma Australia discusses in more detail in response to term of reference (TOR) (e)).

Lastly, Asthma Australia notes the Victorian Government recently proposed new Minimum Standards for Rental Properties and Rooming Houses that, if implemented, would partially address some health impacts of climate change experienced by people living in rental homes. Asthma Australia intends to provide a submission on the proposed standards supporting further improvements to minimum rental standards to ensure rental homes are climate-resilient and protect the health of residents.

(c) The barriers facing Victoria in upgrading infrastructure to become more resilient to the impacts of climate change, including barriers in rebuilding or retrofitting infrastructure, including but not limited to, issues relating to insurance and barriers faced by local government

The lack of infrastructure needed to measure air quality is a barrier to improving climate resilience in Victoria. The 2021 State of the Environment report found better information could reduce the impact of poor air quality and recognised that communities need real-time, local air quality information during periods of poor air quality. [29] However, many Victorian communities do not have access to local air quality information. Regional and rural populations commonly lack local air quality monitoring facilities, which is particularly problematic when these communities are affected by smoke from nearby bushfires and grassfires. Even in metropolitan areas, air quality monitoring stations cover many suburbs, meaning localised variations in air pollution may not be detected. Low-cost air quality sensors can help to fill the gaps in air quality monitoring networks as they are affordable and easy to install. Asthma Australia provides more detail on air quality challenges associated with climate change in response to TOR (f).

> **RECOMMENDATION 2: The Victorian Government should upgrade and expand air quality monitoring infrastructure to increase climate change resilience, including by expanding the use of low-cost air quality sensors.**

(e) What more could be done to better prepare Victoria's built environment and infrastructure, and therefore the community, for future climate disaster events

Increasing efforts to prepare key settings in Victoria's built environment is critical to reduce the impacts of climate change on the health of the Victorian community. Asthma Australia notes this TOR only refers to climate disaster events and we refer to our response to TOR (a) where we state it is equally important to increase resilience to chronic and slow-onset climate change risks such as mould and heat.

Efforts to increase resilience in Victoria's built environment should prioritise settings which have significant potential to influence climate health outcomes. As more than 90% of our time is spent indoors, climate change impacts are largely experienced indoors, and the majority of this time spent is spent in homes.[30] Further, climate change hazards such as storms, bushfire smoke events, and extreme heat are likely to increase time spent indoors, particularly among people more vulnerable to these hazards, including people with asthma. While Asthma Australia focuses below on housing as a critical built environment setting for climate resilience, healthcare facilities, educational facilities, and workplaces are also important settings in which action is needed to increase climate resilience and protect health.

Australian homes are largely ill-prepared to cope with climate change impacts[31] and there is an urgent need for investment to holistically improve Victorian homes. A holistic approach to increasing the resilience of homes would not only consider mitigating damage from extreme events but would also consider the need to improve indoor air quality, thermal comfort, energy efficiency, and access to renewable energy. This will reduce residents' exposure to climate change impacts such as increased heat, ambient air pollution from bushfires, and mould, while also providing a safe and healthy environment in which to shelter from extreme events such as bushfires, heatwaves, and thunderstorm asthma events.

Efforts to holistically increase the resilience of Victorian homes should include retrofitting existing dwellings, prioritising residents with asthma and others with increased vulnerability to climate change impacts, and improving standards and materials for new homes. Additionally, these efforts should

prioritise improving existing social and affordable housing and ensuring new social and affordable housing dwellings are climate adapted and support health and wellbeing. As mentioned in response to TOR (b), the Minimum Standards for Rental Properties and Rooming Houses will require additional improvements to ensure rental homes are climate-resilient and support the health of residents.

Policies and programs to prepare existing and new Victorian homes for climate change impacts should consider the following features (which are included in a matrix format below in Table 1):

1. Adequate and appropriate ventilation to disperse indoor and outdoor air pollution, prevent indoor airborne hazards such as mould, support thermal comfort, and reduce energy costs.
2. Sealing gaps to minimise infiltration of outdoor air pollution, support thermal comfort, and reduce energy costs, without compromising indoor air quality.
3. Appropriate insulation to support thermal comfort without compromising air quality and reduce energy costs.
4. Appropriate internal and external window shading to support thermal comfort and reduce energy costs.
5. Adequate and appropriate cooling and heating, such as fans and reverse cycle air conditioning, to support thermal comfort.
6. High efficiency particulate absorbing (HEPA) air filters to improve indoor air quality.
7. Electrification to reduce indoor air pollution and greenhouse gas emissions.
8. Access to renewable energy sources to reduce energy costs and greenhouse gas emissions.

These considerations should be integrated with established healthy housing principles. Housing adaptation to climate change must also be locally responsive, responding to relevant climate change risks and prioritising the needs of local communities.

Table 1: Housing features and potential benefits to inform holistic approaches to improving housing conditions and support asthma

		Housing feature							
		Seal gaps	Ventilation	Insulation	Window shading (internal or external)	Cooling and heating (e.g. ceiling fans, air conditioning)	HEPA filters	Electrification	Renewable energy
Potential benefit	Reduce infiltration of outdoor air pollution	✓							
	Remove air pollution (indoor and outdoor sources)		✓				✓		
	Prevent indoor airborne hazards		✓					✓	
	Support thermal comfort	✓	✓	✓	✓	✓			
	Reduce energy costs	✓	✓	✓	✓			✓	✓
	Reduce greenhouse gas emissions		✓	✓	✓			✓	✓

RECOMMENDATION 3: The Victorian Government's efforts to increase resilience in the built environment should include key settings in which there is significant potential to influence climate health outcomes, prioritising:

- **Housing;**
- **Healthcare facilities;**
- **Educational facilities; and**
- **Workplaces.**

RECOMMENDATION 4: The Victorian Government should implement holistic approaches to increase the climate resilience of new and existing homes that integrate established healthy housing principles and ensure homes support good health and wellbeing. Policies to increase the resilience of Victorian homes should consider local climate risks and community priorities and provide the housing features needed to support healthy indoor air quality, thermal comfort, and energy efficiency. These features may include:

- **Adequate and appropriate ventilation to disperse indoor and outdoor air pollution, prevent indoor airborne hazards such as mould, support thermal comfort, and reduce energy costs.**
- **Sealing gaps to minimise infiltration of outdoor air pollution, support thermal comfort, and reduce energy costs, without compromising indoor air quality.**
- **Appropriate insulation to support thermal comfort without compromising air quality and reduce energy costs.**
- **Appropriate internal and external window shading to support thermal comfort and reduce energy costs.**
- **Adequate and appropriate cooling and heating, such as fans and reverse cycle air conditioning, to support thermal comfort.**
- **High efficiency particulate absorbing (HEPA) air filters to improve indoor air quality.**
- **Electrification to reduce indoor air pollution and greenhouse gas emissions.**
- **Access to renewable energy sources to reduce energy costs and greenhouse gas emissions.**

RECOMMENDATION 5: The Victorian Government's efforts to holistically increase the resilience of Victorian homes should include retrofitting existing dwellings and improving standards and materials for new homes, prioritising:

- **Residents with asthma and others with increased vulnerability to climate change impacts;**
- **Improving existing social and affordable housing;**
- **Ensuring new social and affordable housing dwellings are climate adapted and support health and wellbeing; and**
- **Improving minimum rental standards to ensure rental homes are climate resilient and support health and wellbeing.**

(f) Whether further inquiries or investigation may be needed into other aspects of climate change adaptation and climate disaster preparedness in Victoria, noting that climate change will have far-reaching impacts on all aspects of Victorian life, including but not limited to biodiversity, human health, primary production, industry, emergency services and more, and that while these areas may overlap with the matters covered in this inquiry, they may also warrant further investigation in their own inquiries

Asthma Australia suggests further inquiries into climate change adaptation and resilience are needed in three key areas: human health, air quality, and housing. These inquiries should encompass adaptation responses to chronic and slow onset climate change impacts, alongside disaster preparedness.

Human health

As Asthma Australia noted in response to TOR (b), the strategic actions in Victoria's Health and Human Services Climate Change Adaptation Action Plan 2022–2026 largely focus on increasing the resilience of health assets and social housing and improving capability in the health and human services sector. This is a welcome focus as demand on our already strained healthcare sector is likely to increase due to the detrimental effects of climate change of human health, which include a growing burden of asthma and other chronic conditions. It is critical to prepare for these rising healthcare needs and ensure consumers can access appropriate and affordable healthcare as climate change progresses.

Climate resilience and adaptation to support human health requires action by all levels of government. This should include actions to ensure appropriate care is available during climate-change driven emergencies. Increasing access to affordable primary healthcare is an urgent priority, including high quality telehealth services, which are particularly important for people cut off from healthcare services during an extreme event or when people cannot leave their homes due hazardous conditions such as bushfire smoke. Pharmacies must be able to provide appropriate medicines and equipment during extreme events, such as asthma medicines during bushfires and thunderstorm asthma events. Access to mental health support services during and after climate change events is a critical priority for health adaptation planning, both to maintain continuity of care and respond to emerging needs. Action is also needed to support the health and wellbeing of individuals and communities with increased risk of adverse health outcomes related to climate change impacts, including people with asthma.

RECOMMENDATION 6: There should be a dedicated inquiry into human health, climate change adaptation, and climate disaster preparedness, that includes in its terms of reference:

- **The main risks to the health and wellbeing of the people of Victoria from climate change impacts, including extreme events and slow-onset or chronic climate change impacts;**
- **Population groups or communities which have increased risk of experiencing adverse health outcomes associated with climate change impacts;**
- **How the Victorian Government is preparing for and mitigating the impacts of climate change on human health; and**
- **What additional action is needed to prepare for and mitigate the impacts of extreme events and slow-onset or chronic climate change risks on human health.**

Air quality

Climate change is inextricably linked with air quality. The emissions which contribute to climate change also reduce air quality, which can cause people to develop asthma and trigger symptoms or exacerbations in people with asthma. These adverse impacts on asthma are also caused by a number of threats which are increasing as a result of climate change,[32] including bushfire smoke, ground level ozone, and pollen.[33] Additionally, people seek shelter indoors during extreme weather events, and people with asthma are among those advised to stay inside with their windows and doors when air quality is reduced. This can expose people to indoor airborne hazards such as mould and pests, as well as unhealthy temperatures.

While Australia is often assumed to have healthy air quality, 80% of the population was exposed to bushfire smoke for prolonged periods in 2019 and 2020.[34] Further, there is no safe level of exposure to air pollution, meaning health impacts can occur even at low levels of pollution.[35] In Australia, 1.3% of the total disease burden was due to air pollution in 2018,[36] and the financial cost of premature deaths due to air pollution has been estimated to range between $11 billion and $24 billion per year.[37]

Air quality must be a priority area for climate resilience and adaptation planning and a multi-faceted approach is needed to address increasing threats to air quality from climate change. This approach should include actions to improve air quality monitoring, information, and public education, as well as actions to reduce pollution from avoidable sources such as wood heaters and fossil fuel production and combustion. Additionally, resilience and adaptation planning must support population groups most vulnerable to airborne hazards, including people with asthma, to reduce exposure to air pollution. Programs to holistically improve housing conditions and remove sources of indoor air pollution are critical, and some people will require air filtration to maintain a healthy indoor environment during air pollution or extreme weather events.

RECOMMENDATION 7: There should be a dedicated inquiry into air quality, climate change adaptation, and climate disaster preparedness, that includes in its terms of reference:

- **The main risks to air quality in Victoria from climate change impacts, including extreme events and slow-onset or chronic climate change impacts;**
- **Population groups or communities which have increased risk of exposure to reduced air quality associated with climate change impacts;**
- **How the Victorian Government is preparing for and mitigating the impacts of climate change on air quality; and**
- **What additional action is needed to prepare for and mitigate the impacts of extreme events and slow-onset or chronic climate change risks on air quality.**

Housing

Climate resilience and adaptation planning must prioritise housing, as climate change impacts are largely experienced indoors: over 90% of our time is spent indoors, mostly in our homes.[38] Asthma Australia again notes the strategic actions in Victoria's Health and Human Services Climate Change Adaptation Action Plan 2022–2026 relevant to housing largely focus on increasing the resilience of social housing. While the current inquiry into resilience in the built environment includes housing structures, an integrated approach to housing adaptation is needed to connect policies around housing access and affordability, housing standards, housing retrofits, and energy efficiency upgrades.

The housing crisis in Australia is a significant barrier to strengthening adaptation to climate change in the health and social support system. People experiencing homelessness and housing precarity are among the

most vulnerable to climate change impacts;[39] those living in poor housing conditions have reduced protection against climate change impacts and may be exposed to hazards such as heat and mould when trying to shelter from climate change-driven events. The crisis in housing access and affordability has left many people unhoused, living in precarious housing, or unable to afford their rent or mortgage payments. Poor housing conditions are also a barrier to health adaptation, with many homes failing to provide people sheltering from extreme events with a healthy indoor environment, or providing residents with inadequate protection against climate change-driven hazards such as increased heat or air pollution.

A dedicated inquiry into climate change adaptation and resilience focusing on Victorian homes should including rental housing conditions. Renters have a limited ability to adapt their homes as they can't make structural changes. Asthma Australia's research into the prevalence of triggers for common asthma and allergy in homes found half the respondents living in rented homes were unable to make the changes needed to reduce their exposure to mould and pests because they did not own their home.[40] Respondents described their frustration with a lack of action by their landlord or social housing provider and concern about requesting changes in case of rent increases or eviction. Other research has found that renters in Australia are exposed to temperatures below the level considered healthy by the World Health Organisation in winter, and above the healthy limit in summer.[41]

RECOMMENDATION 8: There should be a dedicated inquiry into housing, climate change adaptation, and climate disaster preparedness, that includes in its terms of reference:

- **The main risks to homes in Victoria from climate change impacts, including extreme events and slow-onset or chronic climate change impacts, and the impact these risks would have on the people of Victoria;**
- **Population groups or communities which have increased risk of experiencing climate change impacts associated with housing;**
- **How the Victorian Government is preparing for and mitigating the impacts of climate change on housing; and**
- **What additional action is needed to prepare for and mitigate the impacts on housing of extreme events and slow-onset or chronic climate change risks.**

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