

# HOUSING AND ASTHMA POLICY POSITION STATEMENT

June 2024

## INTRODUCTION

Housing is an important determinant of health. More than 90% of our time is spent indoors, mostly inside homes.<sup>1</sup> Homes should provide residents with safe and secure spaces that support their health and wellbeing by providing shelter, sufficient space, healthy indoor air quality, thermal comfort and affordable, efficient, and healthy energy sources. Additionally, homes should be affordable and provide a sense of belonging, security, and privacy.

Certain housing conditions can increase the risk of developing asthma and, in people with the condition, trigger symptoms and exacerbations. For example, hot and cold temperatures can trigger asthma, while indoor airborne hazards such as gas cooktop emissions and mould can contribute to the development of asthma and trigger symptoms. Housing conditions associated with asthma can also cause other health problems; for example, cold homes contribute to increased sickness and death from cardiovascular illnesses in winter. This means a healthy home environment is not only important for asthma prevention and management, but also supports broader health and wellbeing.

However, many homes do not provide healthy indoor environments. Asthma Australia's research has found almost one-third of people with asthma or allergies report experiencing worse symptoms after spending time in their homes.<sup>2</sup> People living in private rental and social housing, and homeowners on low incomes, are more likely to report barriers to making the changes to their homes needed to support good health, such as cost and not owning the home.<sup>3</sup> These issues are compounded by the housing shortage, competitive housing market, and high cost of living. Finding alternative housing can be difficult, and renters may be reluctant to ask the owner of their home to make improvements because they are afraid of rent increases or non-renewal of their lease.<sup>4</sup>

Housing is a key determinant of health and wellbeing for First Nations people, and housing-related health outcomes intersect with a range of cultural determinants of health.<sup>5</sup> The proportion of First Nations people living in poor quality housing is unacceptably high, particularly in remote areas,<sup>6</sup> contributing to health inequities that include higher asthma prevalence and mortality.<sup>7</sup> Policies and programs to improve housing and health among First Nations people should be prioritised, co-designed by First Nations people, and implemented in culturally respectful and affirming ways.

The importance of housing is increasing as climate change causes hazards that require people to shelter in their homes. Climate adaptation policy should therefore focus on improving housing conditions, particularly for people with asthma and others who are highly vulnerable to climate change impacts. Additionally, electrification of homes and connection to renewable energy sources can improve housing conditions, reduce energy costs, and contribute to climate change mitigation.

In this position statement, Asthma Australia provides recommendations to improve housing conditions and asthma outcomes. We outline interactions between housing and asthma in key areas: social determinants of health, housing and health among First Nations people, indoor air quality, and climate change. We then identify policy areas where action is needed to improve housing-related health outcomes and access to high quality, healthy social and affordable housing.

## A holistic approach to a healthy home

Asthma Australia supports holistic approaches to improving the conditions of new and existing housing. Policies and programs should consider the housing features needed to reduce asthma risk and support broader health and wellbeing, including the following features (which are included in a matrix format 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 and inform both standards for new homes and programs to retrofit existing homes. Undertaking improvements across the housing supply is likely to support a range of health outcomes associated with housing conditions, in addition to asthma. These considerations are particularly important in climate change housing adaptation, which must ensure homes provide a healthy living environment and avoid adverse consequences. Housing adaptation must also be locally responsive, responding to relevant climate change risks and prioritising the needs of local communities.

## ABOUT ASTHMA AUSTRALIA

Asthma is a respiratory condition that affects around 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.

**Table 1: Matrix of housing features and potential benefits to inform holistic approaches to improving housing conditions and supporting 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
<b>Potential benefit</b>	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		✓	✓	✓			✓	✓

## RECOMMENDATIONS

Asthma Australia recommends all levels of government take action to increase access to healthy and affordable housing for the reasons set out in the remainder of this policy position statement. Doing so will reduce asthma risks and contribute to broader health benefits.

**RECOMMENDATION 1:** Australian governments should implement holistic approaches to improve new and existing homes, ensuring homes support good health and wellbeing, are climate-resilient, and are energy-efficient. These approaches should consider local community priorities and the housing features needed to support healthy indoor air quality, thermal comfort in homes, and resilience to local climate change risks, and 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 2:** Australian governments should take urgent action to address homelessness and housing precarity and improve access to affordable, healthy, and secure housing for people on low incomes. This should include implementing recommendations from the Australian Council of Social Service to:<sup>8</sup>

- Develop a **national housing strategy** that includes all sections of the housing market, uses a wide range of policy levers, and involves long and short term solutions.
- Increase and sustain **investment in affordable housing** over the long-term, including subsidised rental housing and targeted affordable home ownership programs.

**RECOMMENDATION 3:** Australian governments should take action to ensure **social and affordable housing** provides a healthy environment that supports the health and wellbeing of residents, as well as prioritising social and affordable housing in climate change housing adaptation measures. The features listed in Recommendation 1 should be considered in actions to both:

- Ensure **new** social and affordable housing is well designed, built, and maintained.
- Holistically retrofit **existing dwellings**, prioritising residents with asthma and others with increased vulnerability to climate change impacts.

**RECOMMENDATION 4:** The **National Construction Code** should be reviewed and updated to ensure new buildings, including homes, are adapted to climate change, provide healthy indoor environments for occupants, and avoid potential unintended consequences of energy efficiency upgrades undertaken in isolation of broader indoor environmental considerations.

**RECOMMENDATION 5: Minimum rental standards** should be enhanced and implemented to protect the health of renters by improving housing conditions and energy efficiency.

**RECOMMENDATION 6:** Australian governments should provide **financial support to low-income households** seeking to improve their housing conditions, focusing on priority populations such as people with asthma. This should include supporting the costs of implementing features listed in Recommendation 1.

**RECOMMENDATION 7:** Australian governments should implement policies to **incentivise owners** to improve the private rental housing conditions, ensuring these policies to do not lead to rental increases or tenants being forced to leave their homes. Incentives should support:

- **Retrofits** to improve air quality and thermal comfort such as improving ventilation, insulation and window shading.
- **Electrification**, including installing induction cooktops and reverse cycle air conditioning.
- Installing **solar power and batteries**.

**RECOMMENDATION 8:** Australian governments should fund **education programs** to increase understanding of healthy housing conditions and empower people to improve their homes, including:

- Raising **awareness** of the health risks associated with the home environment.
- How to prevent or reduce **exposure to airborne hazards** such as mould, pests, and emissions from cooking and heating.
- What to consider when choosing a **new home**.

**RECOMMENDATION 9: First Nations people** must be prioritised in policies and programs aiming to improve housing supply and quality so that homes support health and wellbeing. These policies and programs must be co-designed by First Nations people and implemented in culturally respectful and affirming ways. Policies and programs to improve housing supply and quality for First Nations people must be tailored to the specific needs and cultural contexts of First Nations communities and may include:

- Providing **financial support** to First Nations households to improve housing conditions, which may include supporting the costs of implementing features listed in Recommendation 1.
- **Co-designing solutions** with First Nations communities to remove current barriers to addressing asthma and allergy triggers in the home such as gas emissions, mould and pests.
- Providing **culturally appropriate and affirming education and support** to First Nations people about home health.
- Investing in **programs that empower First Nations communities** to take a leading role in addressing housing and homelessness issues. This includes skills development and capacity building.

- Supporting **First Nations people with asthma and allergies** to source housing options free from asthma and allergy triggers such as gas cooktops or heaters, mould, and pests.

**RECOMMENDATION 10:** Australian governments should **ensure healthy indoor air quality is a key consideration** in the design and implementation of policies aiming to improve housing conditions and increase household energy efficiency. Policies should target population groups with increased vulnerability to airborne hazards, including people with asthma. Housing standards and efforts to retrofit existing homes should ensure that new homes provide healthy indoor air quality, including recognition of the need to:

- Seal gaps to prevent infiltration of outdoor air pollution.
- Ensure adequate ventilation to reduce indoor air pollution, prevent indoor airborne hazards, and disperse outdoor air pollution.
- Electrify homes to remove sources of indoor air pollution.
- Provide HEPA air purifiers to populations with increased vulnerability to airborne hazards.

**RECOMMENDATION 11:** The **National Clean Air Agreement**, and its work plans, should be strengthened to ensure actions are taken to reduce exposure to air pollution inside homes. These actions should include:

- **Strengthening the National Environment Protection Measure for Ambient Air Quality** to align with the World Health Organisation air quality guidelines.
- Developing and implementing **indoor air quality standards**.
- **Reducing air pollution** from avoidable sources.
- **Expanding access to local air quality information**, including the increased use of low-cost air quality sensors.
- Implementing a **national air quality public education campaign**, such as AirSmart.

## **HOUSING AS A SOCIAL DETERMINANT OF HEALTH**

Social determinants of health are conditions in the social environment that influence health outcomes.<sup>9</sup> Housing is recognised as an important social determinant of health, alongside—and often interlinked with—income, early childhood development, and access to healthcare. These determinants contribute to health inequities. Figure 1 illustrates the pathways by which housing influences health. Social determinants of health significantly impact asthma. The chronic condition disproportionately affects people with low incomes, as well as other groups more likely to experience adverse social conditions, including First Nations people and people with disabilities.<sup>10</sup>

The Australian Institute of Health and Welfare has explained the relationship between housing and health as follows:<sup>11</sup>

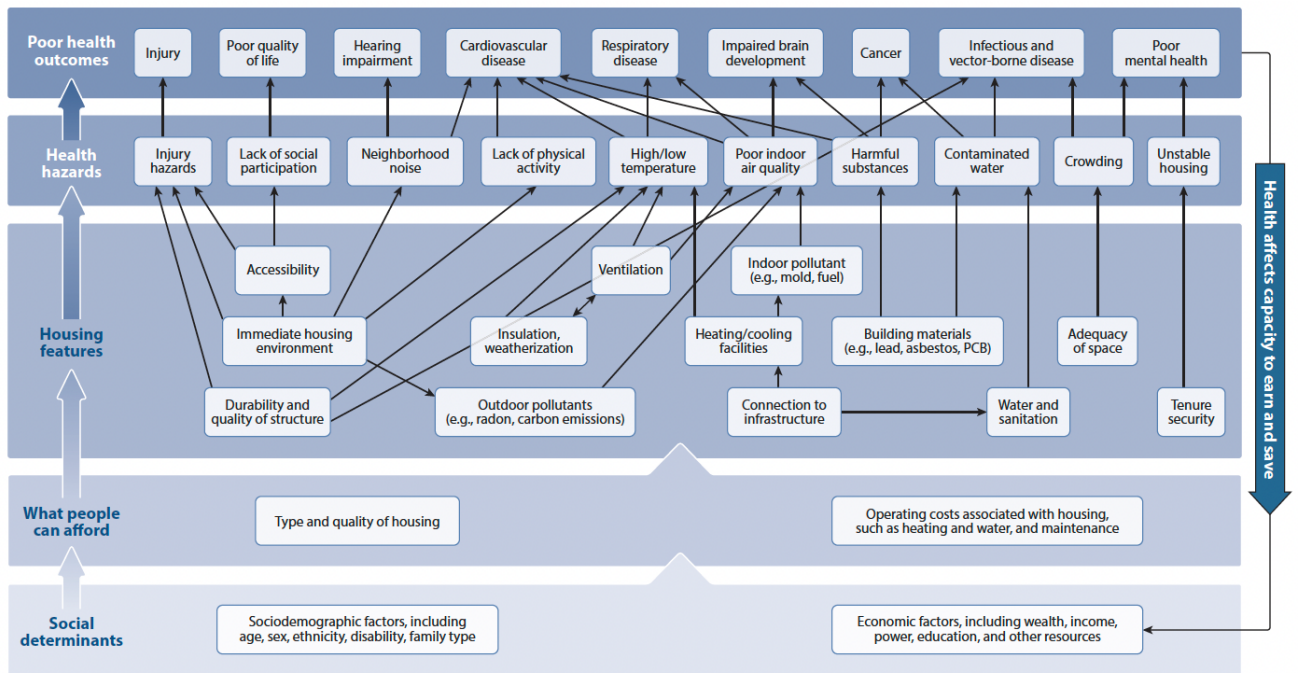
*Safe, affordable and secure housing is associated with better health, which in turn impacts on people's participation in work, education and the community. It also affects parenting and social and familial relationships (Mallet et al. 2011). There is a gradient in the relationship between health and quality of housing: as the likelihood of living in 'precarious' (unaffordable, unsuitable or insecure) housing increases, health worsens. The relationship is also two-way, in that poor health can lead to precarious housing. Single parents and single people generally, young women and their children and older private renters are particularly vulnerable to precarious housing (AIHW 2015b; Mallet et al. 2011).*

The influence of housing precarity on health and participation is particularly concerning given the high levels of housing stress, particularly among lower income households renting privately, and increasing rate of homelessness in Australia.<sup>12</sup> Social housing is critically important for people who lack the means to buy a home or rent privately, yet underinvestment has led to insufficient supply of social housing and long waiting lists.<sup>13</sup> And while social housing must provide a healthy environment that supports the health and wellbeing of people on low incomes, social housing dwellings are increasingly failing to meet minimum standards.<sup>14</sup>

Affordable housing is another integral element of Australia's housing supply, supporting households with lower incomes and ensuring people can afford to live near workplaces in areas with high housing costs, including workers in essential services.<sup>15</sup>

Housing is a significant determinant of asthma outcomes. Certain housing conditions can influence the risk of developing asthma, as well as triggering asthma symptoms and exacerbations in people with asthma. In turn, poor asthma control influenced by an unhealthy living environment can contribute to a negative health cycle, affecting an individual's ability to participate in work, recreation, exercise, and education, and increasing health costs. In contrast, affordable and adequate housing can influence a positive health cycle by increasing participation and income and decreasing health costs.<sup>16</sup> Healthy housing can positively influence asthma outcomes by preventing or minimising indoor hazards associated with the development of asthma and asthma symptoms.





**Figure 1: Housing pathways to health.** Abbreviation: PCB, polychlorinated biphenyls.

Reproduced under Creative Commons Attribution 4.0 International License from Howden-Chapman P et al. 2023. Review of the impact of housing quality on inequalities in health and well-being. *Annu Rev Public Health*;44:233–54.

## HOUSING AND FIRST NATIONS PEOPLE’S HEALTH AND WELLBEING

Housing is a key determinant of health and wellbeing for First Nations people. Cultural determinants of health can also influence housing-related health outcomes, including connection to Country; family, kinship and community; cultural beliefs and knowledge; cultural expression and continuity; language, and self-determination and leadership.<sup>17</sup> First Nations people are a priority population for policies and programs to improve housing-related health and wellbeing, which must be co-designed by First Nations people and implemented in culturally respectful and affirming ways.

Housing conditions are an important contributor to the health gap experienced by First Nations people<sup>18</sup> and the proportion of First Nations people living in poor quality housing is unacceptably high. More than one-quarter of First Nations people aged 15 years and over live in homes with major structural problems such as major cracks in walls or floors and plumbing problems, with an even higher proportion among people living in remote areas.<sup>19</sup> This is particularly concerning given the health inequities experienced by First Nations people, which include increased asthma prevalence and mortality.<sup>20</sup> A study on determinants of asthma among First Nations people demonstrated the complex relationship between health and social determinants, including indoor pollutants.<sup>21</sup> Asthma Australia’s Homes, Health and Asthma survey found Aboriginal and Torres Strait Islander people are more likely to live in homes with asthma triggers such as mould, dampness, pests, and unflued gas heaters than non-Aboriginal or Torres Strait Islander people.<sup>22</sup> Further, while First Nations people are more likely to report taking action to address these triggers, they are also more likely to report facing barriers to taking action, such as cost or not owning the home.<sup>23</sup>



However, there is significant potential to improve health outcomes among First Nations people by improving housing conditions. For example, evaluation of the NSW Housing for Health program, which implements a structured housing improvement program in Aboriginal community housing, demonstrated the program achieved a 40% reduction in hospital separations for infectious diseases over 10 years.<sup>24</sup> The Northern Territory Healthy Homes Program aims to incorporate Healthy Living Practices (HLP), which are critical to improving health outcomes, into housing service delivery in remote communities.<sup>25</sup> The program includes Housing for Health, which is delivered by Healthabitat and identifies and fixes problems in homes,<sup>26</sup> integrates HLP into remote property and tenancy management, builds the capacity of Aboriginal community-controlled organisations to deliver HLP health promotion programs, and undertakes monitoring and evaluation.

Improving First Nations people's housing and health outcomes requires a holistic and community-driven approach that acknowledges and respects the sovereignty and self-determination of First Nations peoples. This includes building sustainable, respectful, reciprocal relationships with First Nations people, communities, and organisations. Building these relationships will enable governments to better understand the housing experiences of First Nations people, identify priorities, and understand cultural perspectives and practices. It is imperative to involve First Nations people in determining local housing and health priorities and solutions.

## INDOOR AIR QUALITY IN HOMES

Poor indoor air quality can influence a range of health conditions, including asthma, other chronic respiratory conditions, acute respiratory infections and cardiovascular conditions.<sup>27</sup> Indoor air quality is particularly important as people spend more than 90% of their time indoors, mostly inside homes.<sup>28</sup> In recent years, Australians have been advised to shelter inside in response to the 2019-20 bushfire smoke crisis and ordered to stay at home during the COVID-19 pandemic. However, while Australia has standards for outdoor air quality under the National Environment Protection Measure, there is no national standard for indoor air quality.<sup>29</sup>

Poor indoor air quality can be caused by sources inside the home, such as gas cooktop emissions, or the infiltration of pollutants from outside sources, such as bushfire smoke.<sup>30</sup> Indoor air quality is influenced by housing conditions with well-sealed homes reducing the entry of pollutants from outside sources (and retaining warmth during cold weather).<sup>31</sup> At the same time, adequate ventilation disperses pollutants generated indoors and prevents mould growth (while also reducing temperatures during warm weather).<sup>32</sup> Natural ventilation includes windows and doors while mechanical ventilation includes kitchen range hoods and exhaust fans in bathrooms and laundries. Range hoods that vent to the outside are more effective in reducing cooking emissions than recirculating range hoods. Mechanical air filtration can improve indoor air quality, as can high-efficiency particulate air (HEPA) filters. However, ionising and ozone air filters can produce ozone, which is associated with adverse asthma and other health outcomes.<sup>33</sup>

Asthma can be caused or exacerbated by a range of pollutants produced by sources commonly found in homes, including:<sup>34</sup>

- Particulate matter, both fine (PM<sub>2.5</sub>) and coarse (PM<sub>10</sub>), which can be produced by cooking, wood heaters, gas appliances, tobacco smoking, and dust.

- Gases such as nitrogen dioxide, which is produced by gas cooktops and heaters, wood heaters and tobacco smoking, and ozone, which can be produced by equipment.
- Biological pollutants including mould, pollen, bacteria, viruses, and allergens such as those produced by house dust mites, pets and cockroaches.
- Volatile organic compounds, which can be produced by a wide range of sources, including paint, furnishings, and cleaning products.

Residents face a range of barriers to improving indoor air quality in their homes and understanding these barriers was a key focus of Asthma Australia's Homes, Health and Asthma Survey.<sup>35</sup> For example, residents may not be able to ventilate their homes using windows and doors if they have security concerns or lack screens. And while gas cooktops are the most common type of cooktop in Australian homes, people in rental properties require permission from the owner to replace a gas cooktop, while many people may not be able to afford to replace their cooktop. Ensuring healthy indoor air quality should be a key consideration in the design and implementation of policies aiming to improve housing conditions and increase household energy efficiency.

### **The Homes, Health and Asthma Survey**

Consumer research by Asthma Australia in 2022 revealed certain asthma triggers are present in many Australian homes. Our nationally representative survey of 5,041 people focused on indoor air pollution from cooking, gas or wood heating, mould and dampness, and pests such as cockroaches and dust mites. We found that many people are exposed to these triggers in their homes and that some population groups are more likely to be exposed to certain triggers. The survey found the groups most likely to report these triggers included people with asthma, First Nations people, people living in social housing, and people with children in their homes.

Our research also found that most Australians are taking action to reduce their exposure to mould and pests in their homes, and that the groups more likely to be exposed to these triggers are also more likely to be taking action to combat them. However, only six out of 10 people felt confident to make changes to improve the air quality inside their home. Common barriers are cost, not owning the home, not being concerned, and not knowing what to do.

Additionally, while gas cooktops are associated with adverse health and environmental outcomes, our survey found they are the most common type of cooktop in Australia and the most common preference among people who don't already have their preferred cooktop type. We also found low levels of awareness of the potential health consequences of gas appliances compared to other triggers in the home, with one quarter of Australians aware that emissions from gas appliances can trigger asthma or allergy symptoms, compared to 82% of people for dust and 70% for mould.

Our survey showed 7% of Australians regularly use unflued gas heaters. This is particularly concerning because these heaters release harmful pollutants directly into the home. A further 8% regularly use flued gas heaters. Further, 13% of people reported regular use of wood heaters, which can release harmful pollutants into the home and cause outdoor air pollution. Our survey found a strong preference for efficient and healthy types of home heating, with nearly half of Australians saying they would prefer to have reverse cycle or central air conditioning. In contrast, 15% preferred wood heating and 7% preferred gas heating. We found that cost and not owning the home are common barriers to switching to reverse cycle air conditioning.

The survey results also suggest triggers in Australian homes are likely to be contributing to the burden of asthma and allergies: almost one third of people with asthma or allergies reported experiencing worse symptoms after spending time at home, regardless of tenure type.

## HOUSING AND CLIMATE CHANGE

Climate change has been recognised as a risk multiplier<sup>36</sup> because it interacts with social factors, such as poor housing, to increase vulnerability and worsen existing health, social, and economic inequities.<sup>37</sup> Minimising the adverse health impacts of climate change requires both urgent reduction of greenhouse gas emissions to limit warming and adaptation measures to limit damage.<sup>38</sup> Housing is an important focus for adaptation planning and action as climate change impacts are largely experienced indoors, where people spend the vast majority of their time.<sup>39</sup> Homes that are well designed, built, and maintained provide a safe indoor environment for residents to shelter from acute climate change impacts and reduce the risk of adverse health outcomes. In contrast, poor housing conditions may worsen health outcomes if residents are forced to shelter in unhealthy indoor environments.

People experiencing homelessness and housing precarity are among the most vulnerable to climate change impacts.<sup>40</sup> Additionally, people living in poor housing conditions are at greater risk of health damage from exposure to environmental hazards<sup>41</sup> such as indoor heat, infiltration of air pollution from outside sources, and indoor airborne hazards such as mould. Having a healthy indoor environment is particularly important for people with increased vulnerability to climate change impacts, including people with asthma. The priority population groups recognised by the National Health and Climate Strategy (NHCS) include people with chronic diseases such as asthma, as well as people in areas more exposed to climate change hazards.<sup>42</sup> Several priority population groups recognised in the NHCS already experience a greater burden of asthma, including First Nations people, people with disabilities, and people with low income.<sup>43</sup> It is particularly important that these priority populations have healthy homes in which to shelter from climate change impacts.

Interactions between climate change and housing can affect asthma outcomes in multiple ways. Homes powered by fossil fuels contribute to greenhouse gas emissions and, in turn, climate change-driven hazards that increase the risk of developing asthma and trigger symptoms in people with asthma.<sup>44</sup> These homes also contribute to air pollution, with fossil fuel power generation generating outdoor air pollution and gas appliances such as cooktops producing indoor air pollution.<sup>45</sup> In contrast, all-electric households powered by renewable energy can benefit asthma outcomes in multiple ways, including by reducing indoor and outdoor air pollution and contributing to climate change mitigation.<sup>46</sup> However, the interactions between housing conditions, environmental conditions, and health are complex. Interventions to improve one aspect of a home can cause unintended consequences that adversely affect health, e.g., sealing draughts to improve energy efficiency can also increase indoor heat and airborne hazards.<sup>47</sup>

Climate change adaptation policy should prioritise holistically improving the quality and climate resilience of homes, particularly for the priority populations most likely to experience health problems related to climate change or housing conditions, including people with asthma. Below, we provide examples of climate change health risks that are influenced by housing conditions. We then outline considerations for adapting housing conditions to protect against climate change health risks.

### Increased airborne hazards

Climate change is increasing the frequency, duration, and levels of outdoor airborne hazards such as bushfire smoke, dust storms, thunderstorm asthma, and ground level ozone.<sup>48</sup> Many Australian homes are leaky and allow infiltration of outdoor airborne hazards.<sup>49</sup> The 2019-20 bushfire crisis demonstrated the importance of homes in providing shelter from prolonged bushfire smoke events

and the associated health risks: 80% of the population was exposed to bushfire smoke<sup>50</sup> and people with asthma were among those advised to stay indoors with windows and doors closed for extended periods in many areas. While it is important to seal gaps in homes, it is also critical to ensure homes can be adequately ventilated when outdoor conditions are favourable. Ventilation disperses pollution generated indoors, as well as pollutants that have infiltrated a home; it also prevents aeroallergens such as mould and dust mites and can contribute to thermal comfort during hot weather.<sup>51</sup> For people with asthma and others with increased vulnerability to airborne hazards, a climate change resilient home may require high efficiency particulate absorbing (HEPA) air filters,<sup>52</sup> particularly when people face barriers to modifying their homes, such as cost or not owning the home.

## Mould

The warming climate is increasing the risk of heavy rainfall and flooding events.<sup>53</sup> In addition to increasing the risk of injuries, death, and damage to homes, heavy rainfall and flooding can promote mould growth in homes, increasing the risk of developing asthma and worsening existing asthma.<sup>54</sup> Asthma Australia's 2022 [Homes, Health and Asthma in Australia](#) survey found 50% of respondents had mould or dampness in their home in the last 12 months,<sup>55</sup> a period in which heavy rainfall and flooding affected many parts of Australia. Mould prevention should be an important consideration for housing adaptation in areas prone to heavy rainfall and flooding, including ensuring adequate ventilation.<sup>56</sup>

## Temperature extremes

Temperature-related asthma triggers include heat, cold, and sudden changes in weather.<sup>57</sup> Climate change is increasing heat extremes in Australia.<sup>58</sup> Efforts to understand the impacts of heat inside homes have found people living in rental properties and those on low incomes are particularly exposed to heat health impacts and face barriers to improving thermal comfort.<sup>59</sup> Having a comfortable indoor environment at home is particularly important during extended periods of poor air quality, such as bushfire smoke events, as extreme heat can amplify the adverse impacts of air pollution on health.<sup>60</sup>

Measures to reduce indoor heat include improving ventilation, installing ceiling fans, installing window shading (particularly external shutters), and improving roof and wall materials.<sup>61</sup> In contrast, energy efficiency measures in isolation, such as air tightening and insulation, can increase indoor temperatures during hot weather.<sup>62</sup> While air conditioning can be effective in reducing heat-related illness,<sup>63</sup> it generates air pollution and greenhouse gas emissions when powered by fossil fuels, produces waste heat, and increases energy costs for residents.<sup>64</sup> Housing adaptation to increasing temperatures and heatwaves should therefore implement modifications to reduce heat and, if needed, install efficient, reverse cycle air conditioning. Additionally, connecting a home to renewable energy can reduce energy costs, including those associated with air conditioning.<sup>65</sup>

## Adapting housing to protect against climate health impacts

Policies and programs to adapt homes to climate change should holistically consider the housing features needed to support good health and wellbeing in response to local climate change risks. Asthma Australia suggests the holistic healthy housing features listed in the Introduction and Table 1, should inform the design of housing adaptation policies and programs. These considerations should be integrated with established healthy housing principles and inform both standards for new homes

and programs to retrofit existing homes. Undertaking improvements across the housing supply is likely to support a range of health outcomes associated with climate change and housing, in addition to asthma. Climate change housing adaptation must be holistic, ensuring homes provide a healthy living environment and avoid adverse consequences. Housing adaptation must also be locally responsive, responding to relevant climate change risks and prioritising the needs of local communities.

## THE HOUSING POLICY LANDSCAPE

The policy landscape for housing in Australia is complex, with a range of bodies involved in decision-making and implementation at the federal, state/territory and local levels of government. In addition to housing departments, health, planning, social services, climate change, environment, and consumer affairs bodies influence housing in Australia. For-purpose, corporate, and academic bodies are also involved, for example, providing affordable and private rental housing, research, standards-setting, and advocacy. Below, we highlight policy areas particularly relevant to asthma.

### Housing policy

Responsibility for housing policy is shared across levels of government. For example, state and territory governments provide social housing and housing affordability schemes, while the federal Government has distributed funding to the states and territories through the National Affordable Housing and Homelessness Agreement.<sup>66</sup> It also provides Commonwealth Rent Assistance to people on certain income support payments and delivers the National Rental Affordability Scheme, which is due to end in 2026.<sup>67</sup> Local governments play an important role in housing policy through planning and development approvals. The forthcoming National Housing and Homelessness Plan (NHHP) has the potential to drive urgent and holistic improvements in housing supply and quality that support health and wellbeing.

Access to social and affordable housing is essential for people unable to buy a home or rent privately. Government investment in new social housing, including plans funded by the Social Housing Accelerator fund,<sup>68</sup> provides a significant opportunity to not only increase the supply of social housing but also ensure new homes support good health and wellbeing and are climate adapted. Investment in retrofitting existing social and affordable housing is also critical for health and wellbeing.

Construction of new homes must comply with the National Construction Code (NCC) and relevant Australian Standards.<sup>69</sup> A coalition of welfare, health, energy efficiency, and environmental organisations successfully advocated for changes to National Construction Code in 2022 that raised energy efficiency standards for new homes.<sup>70</sup> These changes will reduce energy demand, in turn reducing household energy costs and greenhouse gas emissions. New Zealand's healthy homes standards introduced minimum standards for insulation, ventilation, moisture and drainage, draught-proofing, and heating and could inform future improvements to housing standards in Australia.<sup>71</sup> However, climate change presents challenges to building design, as increasing resilience in one area can produce unintended consequences in other areas. For example, as mentioned above, requirements around air tightening and insulation to improve energy efficiency may increase temperatures during hot weather and reduce indoor air quality. This is particularly concerning as people spend more time indoors during extreme weather conditions.<sup>72</sup> A broader review and update

of the NCC should ensure that new buildings, including homes, are adapted to climate change and support the health of occupants.

Improving rental housing conditions should be a priority for housing policy action, and the National Framework for Minimum Energy Efficiency Rental Requirements should establish minimum requirements for rental homes that protect the health and wellbeing of occupants, while also increasing energy efficiency and reducing emissions. Renters have a limited ability to adapt their homes as they can't make structural changes. Asthma Australia's Homes, Health and Asthma survey 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.<sup>73</sup> Other research has found that renters in Australia are exposed to temperatures below the level considered healthy by the World Health Organisation (WHO) in winter, and above the healthy limit in summer.<sup>74</sup>

### **Environmental policy and regulation**

Air quality policy and regulation affect housing and health outcomes because, as explained above, people are exposed to airborne hazards in their homes from outdoor and indoor sources. Responsibility for air quality and its impacts is shared across levels of government and between portfolios.

The National Clean Air Agreement (NCAA) was established in 2015 by federal, state, and territory environment ministers with the aim of addressing air quality challenges and preventing deterioration of air quality in Australia. The NCAA should be reviewed and updated to reflect current evidence around air quality and address the current and anticipated pressures on air quality and health. Additionally, the NCAA's biennial work plans should be strengthened to improve outdoor air quality and address indoor air quality through actions in the agreement's four strategic areas (standards, emission reduction measures, cooperation and partnerships, and better knowledge, education and awareness). Actions to support housing and health under the NCAA's strategic areas should include:

#### ***Strengthening the National Environment Protection Measure for Ambient Air Quality (Standards)***

Outdoor air quality is regulated under the National Environment Protection Measure for Ambient Air Quality (AAQ NEPM), which states a desired outcome of "ambient air quality that minimises the risk of adverse health impacts from exposure to air pollution".<sup>75</sup> The AAQ NEPM provides standards for six air pollutants. However, these standards do not meet the current guidelines from the WHO.<sup>76</sup> This means Australian communities may be exposed to air pollution levels that meet the national standards but are considered unhealthy by the WHO. Air quality experts agree there is no safe level of air pollution and support continuous reduction of air pollution.<sup>77</sup> The importance of reducing air pollution from avoidable sources is increasing as populations are becoming more exposed to largely unavoidable airborne hazards related to climate change.

#### ***Developing and implementing a national standard for indoor air quality (Standards)***

In addition to weak outdoor air quality standards, Australia lacks a national standard for indoor air quality. The NCAA's next work plan should commit to developing and implementing a national indoor air quality standard that includes indoor air quality in homes.



***Strengthening regulation of wood heaters (Emission reduction measures)***

Regulation of wood heaters demonstrates both the complexities and inadequacies of the current approach to air quality in Australia. Standards Australia oversees standards for wood heater emissions and efficiency that must be enacted and enforced by state and territory governments to become mandatory. The current standards are not supported by air quality experts because they do not reflect ‘real world’ wood heater use, meaning wood heaters compliant with the standards are likely to be far more polluting than indicated by the standards’ testing procedure.<sup>78</sup> State and territory environmental agencies monitor and report on outdoor air pollution, including wood heater pollution, and provide air quality information to the public that links to guidance from health agencies. Local councils are responsible for enforcing compliance with local regulations and responding to complaints about wood heater pollution. Government agencies have also supported education and behaviour change initiatives that aim to reduce wood heater pollution.<sup>79</sup>

However, the current approach to regulating air pollution from wood heaters has largely failed to reduce pollution or the associated health impacts. While just 7% of Australian households use wood heaters as their main source of heating, wood heaters are the largest source of winter air pollution in many areas, including Sydney, Canberra, and Tasmania.<sup>80</sup> The health impacts are significant:

- The pollution caused by using a wood heater for a single day is comparable to driving a diesel truck 500 km,<sup>81</sup> while each wood heater is estimated to cause more than \$4,000 in health costs each year.<sup>82</sup>
- In Tasmania, wood heater smoke is significantly more problematic from a health perspective than bushfire or hazard reduction burn smoke, with estimated annual health costs of \$293 million compared to \$16 million for landscape fire smoke.<sup>83</sup>
- In Victoria, the total health costs of wood heater emissions have been estimated at more than \$8 billion over 10 years.
- Long-term exposure to fine particulate matter from wood heater smoke has been associated with more deaths than fine particulate matter from power stations or on-road traffic in the Greater Metropolitan Region of Sydney.<sup>84</sup>

Given these impacts, the absence of a safe level of air pollution, and the increase in largely unavoidable airborne hazards due to climate change, urgent action is needed to reduce air pollution from avoidable sources such as wood heaters. While the NCAA mentions wood heaters in reference to actions in the first work plan to reduce emissions, there has been inadequate action to remove wood heaters or prevent the installation of new wood heaters, and wood heater emissions standards are inadequate.

***Increasing local, near real-time air quality information using air quality sensors (Cooperation and partnerships / Better knowledge, education and awareness)***

Access to local, near-real time air quality information is essential for people to reduce their exposure to air pollution, including by taking shelter in their homes when air quality is unhealthy. However, many communities lack this information, and the next NCAA work plan should prioritise expanding access to air quality information. Increased use of low-cost air quality sensors can help to fill gaps in the monitoring network, particularly for regional and rural communities, which are often more exposed to smoke from bushfires and hazard reduction burns.



***Implementing a national AirSmart air quality education campaign (Cooperation and partnerships / Better knowledge, education and awareness)***

In addition to increasing the coverage of local air quality information, education is needed to ensure people can access and interpret this information and protect their health by reducing exposure to air pollution. Both the Royal Commission into National Natural Disaster Arrangements<sup>85</sup> and the NSW Bushfire Inquiry<sup>86</sup> identified the need for increased access to protective public health advice and education following their inquiries into the 2019-20 bushfires. To address this need, Asthma Australia developed and piloted the AirSmart public education campaign and mobile app. Evaluation of the pilot strongly indicated that consumers want access to air quality information and tools with for example, over 16,000 app downloads and 23,000 website views over six weeks in the pilot areas, despite there being no air pollution events. However, despite this demand and the identified need for improved air quality public education, Asthma Australia has not secured funding for a national AirSmart campaign. The next NCAA work plan should prioritise partnering with Asthma Australia to implement a national AirSmart air quality education campaign.

**Climate change policy reforms**

As outlined above, climate change interacts with housing in health in multiple ways. Housing and health should be a focus of both climate mitigation and adaptation policies, that should holistically address local climate change risks and community needs to increase climate resilience and support health and wellbeing.

**Policy reforms targeting people with chronic health conditions**

Policies have been introduced to improve housing conditions and support people with chronic health conditions. For example, the Australian Capital Territory's Chronic Health Conditions Home Energy Efficiency Upgrades Pilot provides insulation and appliance upgrades to homeowners who either have a chronic health condition or live with a dependant with a chronic health condition, with the aim of improving energy efficiency and thermal comfort.<sup>87</sup> At the national level, the Essential Medical Equipment Payment provides support towards the energy costs of people on low incomes with an eligible medical equipment that requires the use of eligible medical equipment, including nebulisers.<sup>88</sup> However, asthma is not listed as an eligible medical condition and air filters are not included.

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