NATIONAL HOUSING AND HOMELESSNESS PLAN ISSUES PAPER

Asthma Australia submission
October 2023

ABOUT ASTHMA AUSTRALIA

Asthma Australia is a for-purpose, consumer organisation which has been improving the lives of people with asthma since 1962.

Asthma is an inflammatory condition of the airways, which restricts airflow and can be fatal. There is no cure, but most people with asthma can experience good control of their condition. Asthma affects 1 in 9 people in Australia, or 2.7 million people. It has various degrees of severity (mild to severe) and affects people of all ages, from childhood to adulthood. Asthma can appear at all ages and stages of life.

Asthma Australia's purpose is to help people breathe better so they can live freely. We deliver evidence-based prevention and health strategies to more than half a million people each year. To ensure people can access effective treatments and best practice healthcare for their asthma, we work directly with people with asthma, their family and friends, health professionals, researchers, schools and governments. This way, we can ensure people with asthma are supported with education and access to high-quality information and care where they live, work and play in all stages of life.

EXECUTIVE SUMMARY

HOUSING AND ASTHMA

Asthma Australia welcomes the opportunity to provide comments on the National Housing and Homelessness Plan Issues Paper. Housing is a key social determinant of health. It is particularly important for asthma as housing conditions can influence an individual's asthma control and risk of developing asthma. Climate change is increasing both the presence of asthma triggers and the occurrence of extreme weather events from which people need to seek refuge in their homes. However, Australian homes are often not healthy environments. Homes may harbour indoor air pollutants such as mould or emissions from gas cooktops. Additionally, external pollutants can enter homes, including pollutants caused by climate-change driven events such as prolonged bushfires.

While air quality policy largely focuses on outdoor air pollution, people spend an estimated 90% of their time indoors, meaning indoor air quality is particularly influential on health.[1] When homes are

poorly designed, built or maintained, the indoor environment is less likely to be healthy. For example, poorly sealed windows and doors allow air pollution to enter the home, while lack of ventilation can increase indoor temperatures during hot weather and or encourage the growth of mould and dust mites.[2]

In this submission, Asthma Australia first sets out the importance of housing to health. We provide insights into the health of Australian homes using consumer research we conducted in 2022, including findings that people who rent, either privately or through social housing, as well as people on low incomes, are more frequently exposed to asthma and allergy triggers in their homes, and face barriers to making their homes healthier. We then answer a selection of questions from the Issues Paper relevant to people with asthma, their carers, and people at risk of developing asthma.

HOUSING STANDARDS AND CONDITIONS

Many features of a home can influence health and wellbeing, including the physical structures and the home's ability to provide shelter, security, privacy and space, access to fuel and electricity and protection from pollutants, hazards, mould, and pests. Poorly designed, built or maintained homes can present significant health risks as they can:

- **Harbour indoor triggers**, which are substances to which people with asthma and allergies are sensitive. For instance, pests such as cockroaches and dust mites are sources of allergens that can cause allergic reactions and trigger asthma. Mould is another common indoor trigger and exposure to it can cause asthma flare-ups and other health issues. No amount of mould is considered safe for human health.
- Be **poorly sealed** and allow entry of pollutants such as smoke, dust and pollen, which are common triggers for asthma flare-ups and can contribute to the development of asthma.
- Provide **inadequate ventilation**, making it difficult to reduce accumulated air pollutants or other harmful substances, protect against mould or reduce the indoor temperature during hot weather.
- Be fuelled by **harmful energy sources** such as gas cooktops and gas and woodfire heaters, which emit pollutants such as nitrogen dioxide and fine particulate matter that can trigger and cause asthma symptoms. Cooking with gas is estimated to be responsible for up to 12% of the childhood asthma burden in Australia.[3]

ASTHMA AUSTRALIA'S HOMES, HEALTH AND ASTHMA RESEARCH

In 2022, Asthma Australia undertook a nationally representative survey of 5,041 people to understand how healthy Australian homes are for people with asthma or allergies, and those at risk of developing asthma.[4] In particular, we sought to uncover how common key triggers – mould, emissions from cooking and heating, and pests – are in Australian homes. We also sought to understand the actions people take to reduce these triggers in their homes, and any barriers to action. We set out below some of the key research findings from the Homes, Health and Asthma in Australia report.

Exposure to triggers

Homes are not healthy places for all Australians, particularly people with asthma or allergies. Among respondents with asthma and allergies, **three in ten reported that their symptoms are worse after spending time in the home.** In addition, many people are exposed to asthma triggers in their home:

- **70% of respondents had pests** including spiders, ants, cockroaches, dust mites and mice in their home in the last 12 months.
- **50% of respondents had mould or dampness** in their home in the last 12 months.
- **48% of respondents use a gas cooktop and 7% of respondents use unflued gas heating**. Unflued gas heaters are particularly dangerous as the pollutants they emit remain inside the home.
- **13% of respondents regularly use wood heaters**.

The following population groups were more likely to report greater exposure to triggers in their homes than other respondents, which is particularly concerning as these groups are also more vulnerable to the effects of triggers or have a greater likelihood of having asthma:

- **People with asthma and allergies** were 1.4 times more likely to report mould and dampness, 1.5 times more likely to report pests and 1.2 times more likely to report regularly using unflued gas heating.
- **People with children** in their home were 1.7 times more likely to report dampness, 1.6 times more likely to report mould, 1.4 times more likely to report having pests and using gas cooktops. Asthma is the leading cause of burden of disease for people aged 5–14 years and children aged 0-14 years are much more likely than adults to be hospitalised for asthma, constituting 43% of the 25,000 hospitalisations for a primary diagnosis of asthma in Australia in 2020-21.[5]
- **People living in social housing** were 2 times more likely to report mould and dampness and 1.7 times more likely to report having pests in their home. The prevalence of asthma is 13% for people living in the lowest socioeconomic area compared with 10% for those living in the highest socioeconomic area.[6] People from the lowest socioeconomic group have around 6 times the rate of fatal burden for asthma in Australia than people from the highest group.[7]
- **Aboriginal and Torres Strait Islander people** were 6.5 times more likely to report dampness, 2.3 times more likely to report mould, 2 times more likely to report pests and 1.5 times more likely to report regularly using unflued gas heating. The prevalence of asthma among Aboriginal and Torres Strait Islander Australians was 1.6 times as high as non-Aboriginal or Torres Strait Islander Australians in 2018-19.[8]

Barriers to reducing triggers

Many survey respondents reported barriers to reducing triggers in their home. Certain population groups, who were more likely to report having triggers in the home were also more likely to report barriers to taking action to reduce triggers. Again, there was an overlap between these groups and vulnerability to the health impacts of triggers: people renting, living in social housing and from lower

income households, Aboriginal and Torres Strait Islander people and people with asthma and allergies.

- **Lack of autonomy over property**

Half of respondents who rent or live in social housing reported being unable to make changes to their home because they do not own their home, such as reducing cooking emissions, switching their heating source or taking action against mould and pests**.** People described frustration with their landlord or housing provider's lack of action, and concern about requesting action in case they increased rent or evicted them. Respondents noted this was particularly concerning in the highly competitive housing market.

Comments included:

> *I live in a rental house during a rental crisis so I do not want to do anything that will make the real estate want to remove me from the property.*
>
> *I rent, and the property manager takes ages to get back to me. There is currently mould in all rooms as since rainy days have come, I've noticed all the windows leak. They have not replied to my email. It took them six months to address the fact I had no hot water so I'm not holding my breath.*
>
> *I would like things done but [am] afraid the owner will put up the rent. The extraction fan in the bathroom has never worked and I have been here over 3 years. The owner knows about it.*
>
> *Door frames and window frames in my property leak air, and this allows entry to insect pests, and there are holes in the floor which allows entry to mice and insects. I cannot afford to have these fixed and the manager of my property (government housing) refuses to fix them.*
>
> *I am in a government property. I am not allowed to install things into the property and have to get approval. My requests have been declined because it is seen as not required/unnecessary, and I'm told I just have to clean more.*

In addition, **13% of people living in social housing and 9% of renters** said they were not happy with the air quality inside their home, compared to 4% of homeowners. Similarly, **16% of people living in social housing and 17% of renters** said they are not confident to make changes to improve the air quality inside their home, compared to 9% of homeowners.

- **Cost**

One quarter of respondents said it is too expensive to purchase or use equipment, like air purifiers, to help reduce triggers while cooking or to tackle mould and pests. Air purifiers with HEPA (high-efficiency particulate absorbing) filters can be highly effective in reducing indoor air pollution.[7] Additionally, among respondents who did not have their preferred heating or cooktop type, 47% said cost was a barrier to changing to their preferred type. This is despite the fact that gas and wood heating and gas cooktops are typically more expensive to run than electric appliances.

- **Lack of concern or knowledge**

Thirty eight percent of people stated that they were not concerned about addressing at least one of the triggers and 18% reported that they do not know what to do to protect themselves against at least one of the triggers. This lack of knowledge or concern highlights the need for a public health approach to healthy housing, including improved regulations for design, construction and maintenance and education about healthy homes to ensure everyone is protected from health risks within the home.

SUMMARY OF RECOMMENDATIONS

Australian homes should be safe and healthy places which are free from harmful substances, regardless of tenure. This has become more important as climate change has increased the frequency, severity and duration of conditions which require people to shelter in their homes, particularly people with asthma and others who are highly vulnerable to environmental hazards. However, as evidenced by Asthma Australia's research, homes frequently fail to provide healthy environments. Additionally, energy inefficient homes contribute to greenhouse gas emissions. Many energy efficiency measures can improve the indoor environment and contribute to positive health outcomes. For example, replacing gas and woodfired appliances can improve indoor air quality, while insulation and ventilation can improve thermal comfort.

Asthma Australia's recommendations are summarised below and set out ways in which the National Housing and Homelessness Plan can help improve Australia's housing stock to support health outcomes, particularly for people with asthma – and those at risk of developing asthma – for whom a healthy indoor environment is essential.

RECOMMENDATION 1: The National Housing and Homelessness Plan should prioritise improving the supply of housing for Aboriginal and Torres Strait Islander people to ensure that homes support health and wellbeing. These efforts should be tailored to the specific needs and cultural contexts of Aboriginal and Torres Strait Islander communities and may include:

- Providing financial support to Aboriginal and Torres Strait Islander households seeking to improve home health, which could contribute to the costs of:
    - Transitioning to healthy and efficient heating and cooking, including installing reverse cycle air conditioning, induction cooktops and efficient rangehoods.
    - Installing solar power and batteries.
    - Purchasing air purifiers.
    - Energy used to run electric home appliances.
- Co-designing solutions with Aboriginal and Torres Strait Islander 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 Aboriginal and Torres Strait Islander people about home health.
- Investing in programs that empower Aboriginal and Torres Strait Islander communities to take a leading role in addressing housing and homelessness issues. This includes skills development and capacity building.
- Supporting Aboriginal and Torres Strait Islander people with asthma and other respiratory conditions to source housing options free from asthma and allergy triggers such as gas cooktops or heaters, mould and pests.

RECOMMENDATION 2: The National Housing and Homelessness Plan should recognise that social and affordable housing must provide a healthy environment that supports the health and wellbeing of residents. This should include recognition of the need for social and affordable housing to be well designed, built and maintained to ensure healthy indoor air quality, thermal comfort, and an indoor environment free from asthma and allergy triggers.

RECOMMENDATION 3: The National Housing and Homelessness Plan should:

- Recognise the role of housing conditions in mediating both acute and slow-onset health impacts of climate change, in addition to the impacts of disasters on housing availability.
- Recognise the importance of homes that are well designed, built and maintained in providing a safe environment for residents to shelter from acute climate change impacts, and protection against slow-onset impacts.
- Prioritise housing improvements the population groups more likely to have asthma (or other vulnerabilities to climate change health impacts) and live in poor housing conditions, including Aboriginal and Torres Strait Islander people and people on low incomes.

RECOMMENDATION 4: Any changes to housing standards or housing modification programs in the National Housing and Homelessness Plan which aim to increase hazard resilience should also consider the impacts of airborne hazards produced by extreme weather events.

RECOMMENDATION 5: Housing standards should ensure that new homes provide healthy indoor air quality by recognising the need for sealing to prevent infiltration of ambient air pollution and adequate ventilation to reduce indoor air pollution and aeroallergens.

RECOMMENDATION 6: The National Housing and Homelessness Plan should recognise the need to retrofit existing homes, prioritising people with asthma and others vulnerable to climate change health impacts. Home retrofit programs should be designed to provide protection against local conditions and climate change risks and may include indoor air quality improvements such as sealing draughts and ensuring adequate ventilation. These programs should prioritise social housing dwellings and people on low incomes.

RECOMMENDATION 7: The National Housing and Homelessness Plan should recognise the need to support population groups vulnerable to airborne hazards, including people with asthma, with the costs of purchasing and running HEPA air purifiers to improve home air quality.

RECOMMENDATION 8: The National Housing and Homelessness Plan should include financial support towards the costs of housing modifications and design to improve energy efficiency and health outcomes, prioritising people on low incomes. This support should assist with the costs of electrification, addressing damp and mould issues, and improving thermal efficiency while maintaining healthy indoor air quality.

RECOMMENDATION 9: Governments should implement measures to improve the energy efficiency of rental properties and health outcomes without increasing costs for renters. This support should address electrification, damp and mould issues, thermal efficiency, and indoor air quality.

RESPONSES TO FOCUS AREA CONSULTATION QUESTIONS

3.3 ABORIGINAL AND TORRES STRAIT ISLANDER HOUSING

1. What are the main cultural, social and economic factors that must be considered by governments and providers (including ATSICCHOs) when considering how to improve housing outcomes for Aboriginal and Torres Strait Islander people?

Asthma Australia's Homes, Health and Asthma in Australia research revealed important housing considerations for Aboriginal and Torres Strait Islander people, which are particularly concerning given the known health and asthma inequities already faced by this population group.[9] Our research showed Aboriginal and Torres Strait Islander people were 6.5 times more likely than non-Aboriginal or Torres Strait Islander people to report dampness in their homes, 2.3 times more likely to report mould, twice as likely to report pests, and 1.5 times more likely to report using unflued gas heating. Compounding this, Aboriginal and Torres Strait Islander people experience poorer health outcomes than other Australians, including an overall burden of disease that is 2.3 times higher than that of non-Aboriginal or Torres Strait Islander people, and asthma prevalence that is 1.6 times higher.[10]

Asthma Australia supports government efforts to address social and economic determinants of the health and wellbeing of Aboriginal and Torres Strait Islander people with asthma, including housing. These determinants can either positively or negatively impact health and asthma outcomes.

For Aboriginal and Torres Strait Islander people, cultural determinants of health can also influence housing-related health outcomes. Based on First Nations' knowledges, cultural determinants of health are interrelated with the social determinants of health, and these determinants are collectively a foundational element of health outcomes. The cultural determinant domains identified by the Mayi Kuwayu Study (The National Study of Aboriginal and Torres Strait Islander Wellbeing Study) include connection to Country; family, kinship and community; cultural beliefs and knowledge; cultural expression and continuity; language, and self-determination and leadership.[11] Cultural determinants of health are an important additional consideration for governments and providers engaging in housing policy development and planning.

2. How can governments best work with communities and the Aboriginal community-controlled housing sector to support better housing outcomes for Aboriginal and Torres Strait Islander people, including embedding the Priority Reforms of the National Agreement on Closing the Gap and promoting self-determination?

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

Asthma Australia encourages governments to empower Aboriginal and Torres Strait Islander communities to design, build, and manage their own housing for health projects. Working in this

way provides governments with the best opportunity to impact positively on the health and wellbeing of Aboriginal and Torres Strait Islander people.

Governments need to ensure sufficient time is provided to consider the cultural needs of Aboriginal and Torres Strait Islander organisations and communities and truly listen to their housing needs; they must be realistic and factor this time into planning. Like many organisations working alongside Aboriginal and Torres Strait Islander communities, Asthma Australia has learnt that building the foundations of a solid relationship takes significant time. However, investing this time will improve the quality of future relationships and ultimately benefit long-term housing and health outcomes.

Aboriginal and Torres Strait Islander peoples and communities are culturally diverse. There are many Nations, Traditional Owners, languages, kinships, and ways of being. Understanding the perspectives, experiences and needs of distinct peoples and communities requires consulting individually, and governments must approach each community or organisation in a unique and considered way.

Asthma Australia aims to adopt a co-design approach in our work with local communities. We recommend that governments use co-design methodology when working with Aboriginal and Torres Strait Islander people, as co-design will allow Aboriginal and Torres Strait Islander perspectives' – ways of being, knowing and doing – to come to the forefront of building for improved health outcomes for Aboriginal and Torres Strait Islander people.

3. How can governments ensure diverse Aboriginal and Torres Strait Islander voices are included in the development of housing and homelessness policies and programs?

The following principles may guide governments to elevate the voices of Aboriginal and Torres Strait Islander people in developing culturally affirming housing and homelessness policies and programs:

- Acknowledging that every Aboriginal and Torres Strait Islander community is unique and diverse.
- Valuing that Aboriginal and Torres Strait Islander knowledges, experiences and perspectives are intrinsically linked to Aboriginal and Torres Strait Islander housing and health outcomes.
- Recognising the importance of relationships, respect and reciprocity, along with sustainability, guiding a long-term focus on housing and health outcomes with Aboriginal and Torres Strait Islander communities.
- Supporting a self-determination framework is central.

4. What are the ideal short, medium and long-term policies and programs government can pursue to improve the supply of housing for Aboriginal and Torres Strait Islander people, including increasing the capacity and capability of ATSICCHOs?

Asthma Australia's Homes, Health and Asthma in Australia research revealed homes are often not healthy environments for Aboriginal and Torres Strait Islander people, with significant disparities in exposure to asthma and allergy triggers as well as barriers to addressing these triggers.[12] This is likely to increase health inequities for Aboriginal and Torres Strait Islander people, who are already more likely to have asthma than non-Aboriginal or Torres Strait Islander people.

To improve asthma outcomes for Aboriginal and Torres Strait Islander people, priorities for housing improvements should include:

- Providing financial support to Aboriginal and Torres Strait Islander households seeking to improve home health, which could contribute to the costs of:
    - Transitioning to healthy and efficient heating and cooking, including installing reverse cycle air conditioning, induction cooktops and efficient rangehoods.
    - Installing solar power and batteries.
    - Purchasing air purifiers.
    - Energy used to run electric home appliances.
- Co-designing solutions with Aboriginal and Torres Strait Islander 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 Aboriginal and Torres Strait Islander people about home health.
- Investing in programs that empower Aboriginal and Torres Strait Islander communities to take a leading role in addressing housing and homelessness issues. This includes skills development and capacity building.
- Supporting Aboriginal and Torres Strait Islander people with asthma and other respiratory conditions to source housing options free from asthma and allergy triggers such as gas cooktops or heaters, mould and pests.

These priorities should be tailored to the specific needs and cultural contexts of different Aboriginal and Torres Strait Islander communities, as there is no one-size-fits-all solution. Additionally, ongoing consultation and collaboration with Aboriginal and Torres Strait Islander Elders and communities are essential to ensure that policies are effective and respectful of their perspectives and values.

RECOMMENDATION 1: The National Housing and Homelessness Plan should prioritise improving the supply of housing for Aboriginal and Torres Strait Islander people to ensure that homes support health and wellbeing. These efforts should be tailored to the specific needs and cultural contexts of Aboriginal and Torres Strait Islander communities and may include:

- **Providing financial support to Aboriginal and Torres Strait Islander households seeking to improve home health, which could contribute to the costs of:**
    - **Transitioning to healthy and efficient heating and cooking, including installing reverse cycle air conditioning, induction cooktops and efficient rangehoods.**
    - **Installing solar power and batteries.**
    - **Purchasing air purifiers.**
    - **Energy used to run electric home appliances.**
- **Co-designing solutions with Aboriginal and Torres Strait Islander 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 Aboriginal and Torres Strait Islander people about home health.**
- **Investing in programs that empower Aboriginal and Torres Strait Islander communities to take a leading role in addressing housing and homelessness issues. This includes skills development and capacity building.**
- **Supporting Aboriginal and Torres Strait Islander people with asthma and other respiratory conditions to source housing options free from asthma and allergy triggers such as gas cooktops or heaters, mould and pests.**

3.4 SOCIAL HOUSING

1. What is the role of social housing for low-income Australians?

- **Social housing**

Social housing is critically important for people who lack the means to buy a home or rent privately. The current crisis in housing affordability has made social housing more important than ever, yet underinvestment in the social housing supply has led to long waiting lists, with the Issues Paper noting nearly 40% of people on waiting lists in 2021 were assessed as meeting priority criteria for social housing access. Housing is a critical determinant of positive outcomes in many areas of life: not only health and wellbeing, but also education and employment.[13] 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.

Social housing must provide a healthy environment that supports the health and wellbeing of people on low incomes. However, the Issues Paper recognises that social housing dwellings are increasingly failing to meet minimum standards. The indoor environment is important for asthma prevention and control, more so in social housing as asthma is more prevalent among people on low incomes than those on higher incomes.[14]

Social housing dwellings must be well designed, built and maintained to ensure the indoor environment is free from common asthma and allergy triggers. This includes providing adequate ventilation to allow healthy indoor air quality, reduce temperatures during hot weather, and prevent the growth of mould.[15] While homes must be well-sealed to prevent outdoor air pollution entering the home and minimise energy needs, this must be balanced with ventilation to ensure healthy indoor air quality.[16] Insulation is important to maintain thermal comfort during cold weather, but may increase indoor temperatures during hot weather, particularly when combined with airtightness.[17] Where home air conditioning is necessary to protect health against heat, the need to use it should be it should be minimised to reduce costs and greenhouse gas emissions, for example by installing ceiling fans or adapting the exterior of the home.[18]

- **Affordable housing**

Affordable housing is an important part of Australia's housing supply and, as the Issues Paper recognises, can help ensure people can afford to live near their workplaces, where housing costs are too high for these workers. Our comments above regarding the importance of social housing in supporting health and wellbeing apply to affordable housing, and we encourage recognition of the importance of design, construction and maintenance in ensuring that affordable housing provides residents with a healthy indoor environment.

> **RECOMMENDATION 2: The National Housing and Homelessness Plan should recognise that social and affordable housing must provide a healthy environment that supports the health and wellbeing of residents. This should include recognition of the need for social and affordable housing to be well designed, built and maintained to ensure healthy indoor air quality, thermal comfort, and an indoor environment free from asthma and allergy triggers.**

3.7 THE IMPACT OF CLIMATE CHANGE AND DISASTERS ON HOUSING SECURITY, SUSTAINABILITY AND HEALTH

Asthma Australia welcomes the recognition in the Issues Paper of the relationship between climate change, housing and health, which includes both 'acute impacts' and 'slow-onset impacts'. However, the Issues Paper only recognises the impacts of disasters on housing availability. A broader understanding of relationship between climate change, housing and health should be taken which recognises the role of housing conditions in mediating climate change health impacts.[19] Homes that are well designed, built and maintained are likely to provide a safer indoor environment in which residents can shelter from acute climate change impacts such as heatwaves or bushfire smoke pollution, reducing adverse health outcomes. In contrast, poor housing conditions may worsen health outcomes if residents take shelter from climate change impacts in unhealthy indoor environments. Further, homes should protect residents' health against slow-onset climate change impacts, such as the proliferation of mould following heavy rainfall and flooding, or the entry of ozone, an air pollutant that is increasing due to climate change. The National Housing and Homelessness Plan should therefore recognise both acute and slow-onset impacts of climate change in articulating the links to housing and health.

Climate change is increasing outdoor air pollution in Australia, for example, through longer, larger and more intense bushfires. Outdoor air pollution presents a significant risk for people with asthma and exposure to it can lead to asthma emergency department presentations, hospitalisations and premature death.[20] Even at relatively low levels of air pollution, people with asthma are advised to consider closing windows and doors when inside to prevent pollution entering the home; at higher pollution levels, people with asthma are advised to stay inside with windows and doors shut.[21] However, Australian homes are known to be 'leaky', meaning pollution can easily enter the home.[22] Homes may also offer inadequate ventilation, making it more difficult to disperse indoor air pollution when conditions improve.[23] Further, homes often harbour triggers for asthma, such as mould, emissions from gas cooktops or heaters, and pests.[24]

Efforts to improve home energy efficiency can affect the ability of a home to protect health against climate change impacts. Ensuring homes are well-sealed can reduce the entry of outdoor air pollution, while insulation can maintain thermal comfort during cold weather and reduce energy demands. However, insulated homes can be hotter during high temperatures, particularly when combined with airtightness.[25] Additionally, airtight homes may accumulate indoor air pollutants in the absence of adequate ventilation.[26] While reverse cycle air conditioning may be necessary to maintain thermal comfort in parts of Australia, particularly for population groups at high risk of health damage from heat exposure, air conditioning needs can be reduced in ways that don't compromise the indoor environment, for example, installing ceiling fans or adapting the exterior of the home.[27] Access to renewable energy and storage would help to offset the costs and emissions associated with air conditioning use, which is particularly important for people on low incomes.[28]

Improving the health of Australian homes through retrofitting existing housing stock and improving building standards is a critical climate change adaptation strategy. This is particularly important for people who are vulnerable to climate change health impacts, including people with asthma. Asthma Australia lists a number of pathways through which climate change affects asthma in our Climate Change Policy Position Statement. We are concerned that population groups more likely to have asthma are also more likely to live in poor housing conditions, including Aboriginal and Torres Strait Islander people and people on low incomes, compounding the health threats posed by climate change.[29] These groups should be prioritised for support to improve housing conditions. Asthma Australia also recognises the importance of improving the conditions of rental housing without

disadvantaging tenants by contributing to increasing rents, particularly during the twin crises in housing and cost of living.

The ability of homes to mediate climate change health impacts means that housing is an important aspect of climate change adaptation in Australia. While specific needs will vary across Australia depending on local climate risks and population vulnerability, in general, a climate-adapted home would be well-sealed, provide adequate ventilation (e.g. windows, exhaust fans in wet rooms and rangehoods in kitchens), ensure thermal comfort (e.g. appropriate insulation, fans, external shading or other means) and minimise indoor sources of air pollution (e.g. gas cooktops and heaters).

RECOMMENDATION 3: The National Housing and Homelessness Plan should:

- **Recognise the role of housing conditions in mediating both acute and slow-onset health impacts of climate change, in addition to the impacts of disasters on housing availability.**
- **Recognise the importance of homes that are well designed, built and maintained in providing a safe environment for residents to shelter from acute climate change impacts, and protection against slow-onset impacts.**
- **Prioritise housing improvements the population groups more likely to have asthma (or other vulnerabilities to climate change health impacts) and live in poor housing conditions, including Aboriginal and Torres Strait Islander people and people on low incomes.**

2. How can governments support hazard resilient housing and housing modifications for new and existing housing, in particular within rural and remote locations that are more likely to be impacted by extreme weather events?

Asthma Australia recommends that housing standards and modifications designed to increase hazard resilience consider the impacts of airborne hazards produced by extreme weather events. Climate change is increasing the frequency and levels of outdoor airborne hazards such as bushfire smoke, dust storms, thunderstorm asthma and ground level ozone.[30] However, Australian homes are typically leaky, meaning airborne hazards can easily enter many homes.[31] It is also important to ensure homes can be ventilated when outdoor conditions are favourable. Ventilation disperses outdoor pollution that has entered a home and pollution generated indoors; it also prevents aeroallergens such as mould and dust mites.[32] For people with asthma and others who are particularly vulnerable to airborne hazards, a hazard resilient home may require high efficiency particulate absorbing (HEPA) air purifiers.[33]

Housing standards and modifications therefore need to both improve the airtightness of homes to limit the infiltration of outdoor air pollution and allow adequate ventilation to reduce the growth and accumulation of airborne hazards in the home when ambient air quality is good. The balance between these considerations may vary between regions and it should reflect local conditions and climate change risks. It is critical that governments support retrofitting of existing homes, as well as improving housing standards, prioritising people with asthma and others who are highly vulnerable to climate change health impacts. Government programs to retrofit housing should cover social housing dwellings and people on low incomes. Support towards the costs of purchasing and running air purifiers should target people with asthma, and others vulnerable to airborne hazards, on low incomes.

RECOMMENDATION 4: Any changes to housing standards or housing modification programs in the National Housing and Homelessness Plan which aim to increase hazard resilience should also consider the impacts of airborne hazards produced by extreme weather events.

RECOMMENDATION 5: Housing standards should ensure that new homes provide healthy indoor air quality by recognising the need for sealing to prevent infiltration of ambient air pollution and adequate ventilation to reduce indoor air pollution and aeroallergens.

RECOMMENDATION 6: The National Housing and Homelessness Plan should recognise the need to retrofit existing homes, prioritising people with asthma and others vulnerable to climate change health impacts. Home retrofit programs should be designed to provide protection against local conditions and climate change risks and may include indoor air quality improvements such as sealing draughts and ensuring adequate ventilation. These programs should prioritise social housing dwellings and people on low incomes.

RECOMMENDATION 7: The National Housing and Homelessness Plan should recognise the need to support population groups vulnerable to airborne hazards, including people with asthma, with the costs of purchasing and running HEPA air purifiers to improve home air quality.

3. How can governments better encourage the uptake of energy efficient housing modifications and design?

Asthma Australia recognises the importance of improving home energy efficiency to reduce energy costs and greenhouse gas emissions. Energy efficiency measures can also improve health outcomes. For example, replacing gas cooktops and heaters with efficient, electric alternatives can reduce indoor air pollution, as gas appliances can release harmful pollutants known to trigger asthma and increase the risk of developing asthma. Wood heaters are a major source of fine particulate pollution and should be replaced with efficient, electric heating.[34] Improving home airtightness and insulation can reduce energy demands and improve health outcomes by reducing infiltration of outdoor air pollution and improving thermal comfort. However, these measures can also adversely affect the health of residents if inadequate ventilation prevents dispersal of indoor air pollution and encourages growth of aeroallergens such as mould and dust mites.[35]

The Issues Paper recognises that low income homeowners are among those facing barriers to modifying their homes to increase energy efficiency. The National Housing and Homelessness Plan should therefore prioritise people on low incomes for financial support towards the costs of energy efficient housing modifications and design.

RECOMMENDATION 8: The National Housing and Homelessness Plan should include financial support towards the costs of housing modifications and design to improve energy efficiency and health outcomes, prioritising people on low incomes. This support should assist with the costs of electrification, addressing damp and mould issues, and improving thermal efficiency while maintaining healthy indoor air quality.

5. What options should be explored for improving the energy efficiency of rental properties?

Asthma Australia recognises the importance of improving the energy efficiency of rental properties, for the same reasons we noted in response to Question 3. Additionally, people living in rental homes

typically rely on owners to improve the energy efficiency of their homes. It is important that any efforts to support owners of rental properties to improve energy efficiency do not lead to rent increases. This is particularly critical during the twin crises in housing and cost of living.

RECOMMENDATION 9: Governments should implement measures to improve the energy efficiency of rental properties and health outcomes without increasing costs for renters. This support should address electrification, damp and mould issues, thermal efficiency, and indoor air quality.

REFERENCES

[1] Liang et al, 2021. Estimating climate change-related impacts on outdoor air pollution infiltration. Environ Res. 196:110923. DOI: 10.1016/j.envres.2021.110923
[2] Levasseur et al, 2017. Integrated Management of Residential Indoor Air Quality: A Call for Stakeholders in a Changing Climate. Int J Environ Res Public Health. 14(12):1455. DOI: 10.3390/ijerph14121455
[3] Knibbs, Woldeyohannes, Marks, Cowie, 2018. Damp housing, gas stoves and the burden of childhood asthma in Australia. MJA. 208(7): 299–302.
[4] Asthma Australia, 2022. Housing, Health and Asthma in Australia. Available online: AA2022_Housing-Survey-Report_full_v4.pdf (asthma.org.au)
[5] Australian Institute for Welfare and Housing (AIHW), 2023. Chronic Respiratory Conditions: Asthma. Available online: https://www.aihw.gov.au/reports/chronic-respiratory-conditions/asthma-1
[6] AIHW, 2022. National Strategic Framework for Chronic Conditions, reporting framework: indicator results. Available online: https://www.aihw.gov.au/getmedia/891c2a30-800b-4117-919f-fde48ef9f2f9/aihw-phe-299.pdf.aspx?inline=true
[7] AIHW, 2023.
[8] AIHW, 2023.
[9] Asthma Australia, 2022.
[10] Australian Institute of Health and Welfare. 2020. Asthma Web report. Cat. no. ACM 33. Canberra: AIHW.
[11] Mayi Kuwayu National Study of Aboriginal and Torres Strait Islander Wellbeing. Available online: https://mkstudy.com.au
[12] Asthma Australia, 2022.
[13] Baker et al, 2016. Poor housing quality: Prevalence and health effects, Journal of Prevention & Intervention in the Community, 44(4): 219-232. DOI: 10.1080/10852352.2016.1197714
[14] AIHW, 2022.
[15] See e.g. Eguiluz-Gracia et al, 2020. The need for clean air: The way air pollution and climate change affect allergic rhinitis and asthma. Allergy. 75(9):2170-2184. DOI: 10.1111/all.14177.
Lundgren Kownacki et al, 2019. Heat Stress in Indoor Environments of Scandinavian Urban Areas: A Literature Review. Int J Environ Res Public Health. 16(4):560. DOI: 10.3390/ijerph16040560.
Vardoulakis et al, 2015.Impact of climate change on the domestic indoor environment and associated health risks in the UK, Environment International, 85:299-313. DOI: 10.1016/j.envint.2015.09.010.
[16] Levasseur et al, 2017.
[17] Hatvani-Kovacs et al, 2016. Drivers and barriers to heat stress resilience,
Science of The Total Environment, 571: 603-614. DOI: 10.1016/j.scitotenv.2016.07.028. Taylor et al, 2018. Comparison of built environment adaptations to heat exposure and mortality during hot weather, West Midlands region, UK. Environ Int. 111:287-294. DOI: 10.1016/j.envint.2017.11.005
[18] Hatvani-Kovacs et al, 2016.
Romanello et al, 2022. The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels. Lancet. 400(10363):1619-1654. DOI: 10.1016/S0140-6736(22)01540-9.

[19] See e.g. Howden-Chapman et al, 2023. Review of the Impact of Housing Quality on Inequalities in Health and Well-Being. Annu Rev Public Health. 44:233-254. DOI: 10.1146/annurev-publhealth-071521-111836
[20] Pillay et al, 2023. Safer Air, Healthier Communities: Ten reasons for investment in Australia. Available online: Available online: https://safeair.org.au/safer_air_healthier_communities/
[21] See e.g. NSW Department of Planning and Environment, 2023. "Activity guide", About the air quality categories. Available online: https://www.environment.nsw.gov.au/topics/air/understanding-air-quality-data/air-quality-categories#:~:text=In%20New%20South%20Wales%2C%20five,5)
[22] Vardoulakis et al, 2020. Bushfire smoke: urgent need for a national health protection strategy. Med J Aust, 212(8): 349-353.e1. DOI: 10.5694/mja2.50511
[23] Levasseur et al, 2017.
[24] Asthma Australia, 2022.
[25] Hatvani-Kovacs et al, 2016.
Taylor et al, 2018. Comparison of built environment adaptations to heat exposure and mortality during hot weather, West Midlands region, UK. Environ Int. 111:287-294. DOI: 10.1016/j.envint.2017.11.005
[26] Levasseur et al, 2017.
[27] Hatvani-Kovacs et al, 2016.
Romanello et al, 2022.
Standen et al, 2022. Aboriginal Population and Climate Change in Australia: Implications for Health and Adaptation Planning. Int J Environ Res Public Health. 19(12):7502. DOI: 10.3390/ijerph19127502
[28] Australian Council of Social Service, Brotherhood of St Laurence, The Climate Institute, 2017. Empowering disadvantaged households to access affordable, clean energy. Available online: https://www.acoss.org.au/wp-content/uploads/2017/07/ACOSS_BSL_TCI_Empowering-households.pdf
[29] AIHW, 2022.
AIHW, 2023.
Asthma Australia, 2022.
Quilty, Frank Jupurrurla, Bailie, Gruen, 2022. Climate, housing, energy and Indigenous health: a call to action. Med J Aust. 217(1):9-12. DOI: 10.5694/mja2.51610
[30] D'Amato et al, 2014. Climate change and respiratory diseases. Eur Respir Rev, 23, 161–169. https://doi.org/10.1183/09059180.00001714.
Intergovernmental Panel on Climate Change, 2021. Regional fact sheet—Australasia (Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change). Available online: https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Australasia.pdf
[31] Vardoulakis et al, 2020.
[32] Levasseur et al, 2017.
[33] Levasseur et al, 2017.
[34] Pillay et al, 2023.
[35] Levasseur et al, 2017.