



Urban Climate Resilience Program

Understanding heatwave resilience in Western and South Western Sydney: building knowledge to inform action

Climate Resilience Measurement for
Communities baseline findings, 2024



Acknowledgement of Support

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Contents

Acknowledgement of Country	3
Executive Summary	4
Introduction	6
Selecting target communities	7
Measuring baseline resilience using the CRMC	8
Key findings	9
Connection	9
Knowledge	12
Wellbeing	15
Security	18
Personal and community	18
Financial	21
Governance	23
Conclusion and next steps	26
References	28

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Executive summary

This report provides an overview of the impact and management of heatwaves in Penrith, Blacktown and Bankstown in Western Sydney as measured through the Climate Resilience Measurement for Communities (CRMC) framework and tool.

Heatwaves pose significant challenges and risks to the community in Penrith, Blacktown and Bankstown impacting health, financial stability, and daily life. Strengthening resilience to heatwaves requires a multi-faceted approach that integrates individual and community preparedness, capacity building, well-equipped healthcare systems, strategic governance and effective response mechanisms. By prioritising these strategies, suburbs can enhance resilience to heatwaves and support sustainable development amid climate change.

Supported by the International Federation of Red Cross and Red Crescent Societies (IFRC), the Z Zurich Foundation and Zurich Australia, Australian Red Cross has conducted a baseline study of heatwave resilience using the CRMC tool. The findings in this report serve as a needs assessment to guide the efforts of Australian Red Cross to strengthen resilience within the community and will be shared with key actors and sectors to support heatwave resilience decision making and promote collective action.

Red Cross recognises that everyone has unique strengths and are experts of their own circumstances. Factors both within and outside a person's control can affect their ability to manage severe events (Richardson et al, 2022). Red Cross uses adaptive capacities identified by Norris et al. (2008)—**wellbeing, knowledge, security, and connection** (Richardson, 2014)—to guide its efforts and enhance resilience at both individual and community levels. The premise of this framework is that enhancing wellbeing, knowledge, security, and connection results in strengthened resilience. Therefore, the key findings of the CRMC process are presented in this report within the Red Cross capacities framework for disaster resilience:

Connection:

- All suburbs have well established long-term residents who believe that they can rely on each other for support.
- Respondents perceive that socially isolated community members experience increased heatwave risk.
- There are concerns that schools lack sufficient air conditioning which can have flow-on effects for the quality of education for students.
- Public transportation experiences increased operational disruptions during heatwaves, limiting community participation in daily life.

Knowledge:

- There is a lack of understanding amongst residents regarding the factors that increase risk during heatwaves.
- Residents do not regularly prepare for heatwaves.
- Heatwaves are accurately predicted at a regional level, though the community do not always access these forecasts.

Wellbeing:

- Extreme heat poses health risks and disrupts daily life for residents.
- Healthcare is within a safe geographic distance for most, but there are social and financial barriers.
- Few people have been trained in First Aid.
- The community recognises that increasing green spaces is key to mitigating heatwave risks.

Security:

- Homes are not constructed with climate extremes in mind and very few people make changes to their properties to mitigate heat risk.
- Most people stay at home during heatwaves using active cooling measures such as air-conditioning.
- Residents rely on public infrastructure to seek cooling but there are barriers to access.
- Financial insecurity is compounded due to community relying on electricity for cooling.
- Residents experience income instability due to heatwaves.
- Planning and implementation of risk reduction measures is ongoing but funding for these initiatives is limited.
- There are gaps in local heatwave response plans regarding domestic violence.

The report acknowledges its limitations, focusing only on three suburbs—Bankstown, Blacktown, and Penrith—and drawing on community member experiences, which may not fully represent all residents due to sample size constraints.

Informed by this baseline research, Australian Red Cross proposes implementing a range of actions aimed at enhancing psychosocial preparedness and climate resilience in Bankstown, Blacktown and Penrith, as well as in the wider Western Sydney region. Key actions could include delivering programs such as RediCommunities (a locally driven community disaster resilience program), Heatwave Preparedness Workshops, and First Aid for Summer. Red Cross efforts will also focus on enhancing awareness, sharing insights from the baseline research, and integrating heatwave messaging into broader local communications.

This summary underscores the need for proactive measures and collaboration across sectors to mitigate the impact of heatwaves and enhance resilience in Penrith, Blacktown and Bankstown.

Introduction

Heatwaves pose significant threats to health, society, the economy, natural environments, and built structures, causing more fatalities in Australia than any other disaster (Coates et al, 2022). Climate change is a key driver for future heatwaves. Across Sydney, temperatures are projected to rise, with Western Sydney anticipated to experience double 2022's number of days over 35°C by 2030 (Australia Institute, 2022). As heatwaves become hotter, longer, and more frequent, the need for resilient communities becomes increasingly urgent.

The Urban Climate Resilience Program (UCRP) is a global initiative that aims to build sustainable, resilient communities that can withstand, recover from and thrive in the face of climate related

disasters. Funded by the Z Zurich Foundation, the UCRP is a global collaboration between the Foundation, Zurich Insurance National Business Units, Resilient Cities Network (R-Cities), C40, the International Federation of Red Cross and Red Crescent Societies (IFRC), ICLEI and Plan International, currently operating in cities across Australia, Colombia, Ecuador, Italy, Malaysia, Spain, Turkey, the United Kingdom, and the United States of America.

In Sydney, the program is led by Australian Red Cross, supported by the IFRC and Zurich Australia, and targets urban communities that are disproportionately affected by climate change-induced disasters.

There are four key phases of work in this program:

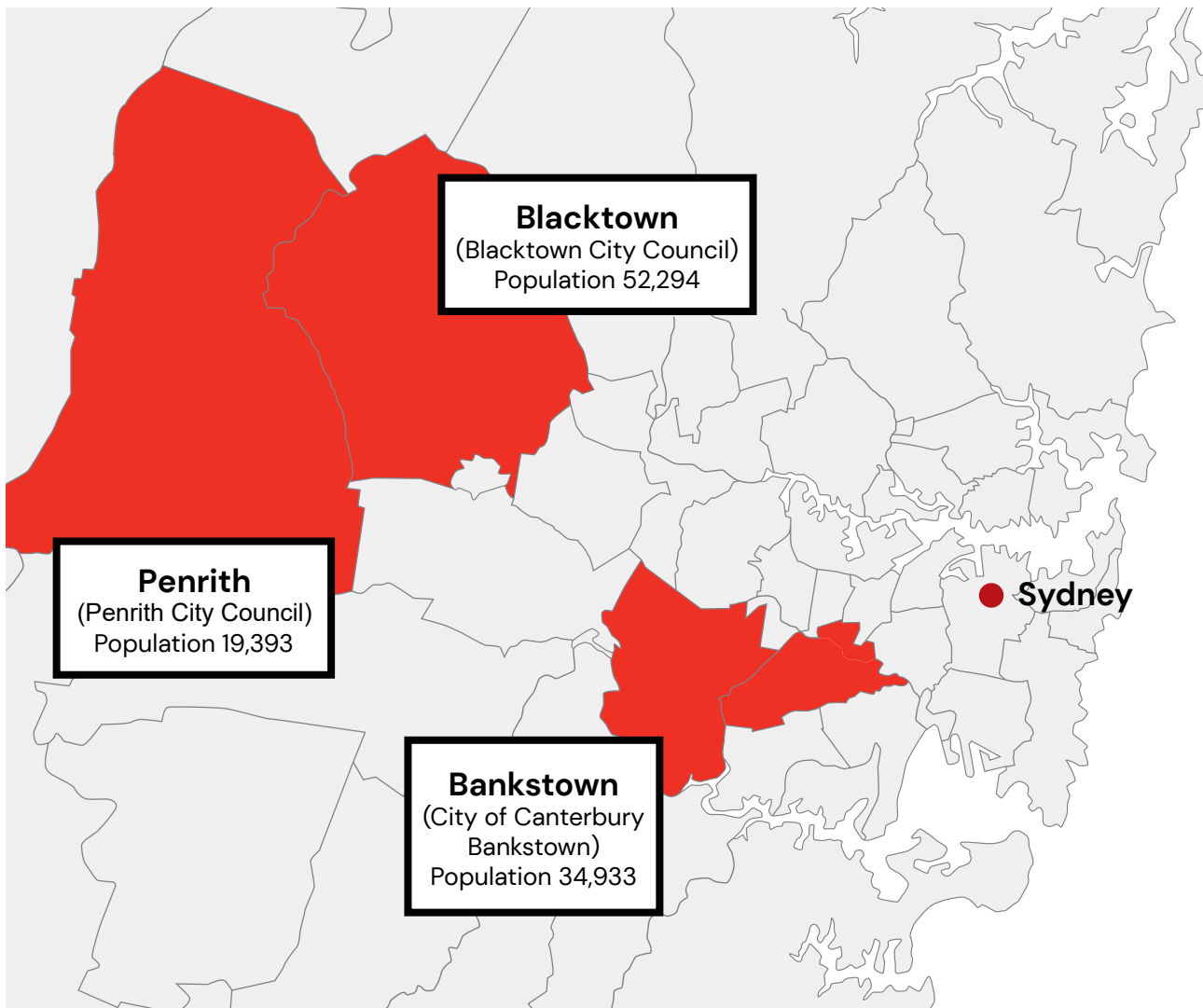
1. Selecting target communities
2. Measuring baseline resilience using the CRMC
3. Planning, developing, and delivering solutions to strengthen community resilience
4. Capturing learning, improving and scaling the project in collaboration with partners



Selecting target communities

Australian Red Cross selected two communities in Western Sydney—Blacktown and Penrith—and one community in Southwest Sydney—Bankstown—to pilot the Urban Climate Resilience Program.

These selections were informed by engagement with local experts and collaboration with Climasens; a climate risk intelligence start up that uses climate and weather data to assess risk to Australian communities. As such, these suburbs were assessed as having significant at-risk communities and a high likelihood of extreme heatwaves, indicating a need for increased support.



Measuring baseline resilience using the Climate Resilience Measurement for Communities tool

Measuring community resilience is essential for identifying and prioritising resilience gaps and needs, as well as leveraging existing strengths and capabilities across diverse actors. Over time, these measurement tools can also track changes and support learning on the effectiveness of resilience-strengthening actions.

Australian Red Cross used the Climate Resilience Measurement for Communities (CRMC) tool to understand the current status of heatwave resilience in Bankstown, Blacktown and Penrith. The CRMC is designed to measure the resilience of communities in the face of climate risk. It examines 50 sources of resilience, extending across human, social, physical, natural and financial capitals to understand a community's ability to withstand, adapt to and recover from the effects of extreme climate events, such as floods and heatwaves.

To collect comprehensive data, the CRMC employs a mix of methods such as household surveys, focus groups, key informant interviews, and secondary data sources.

Across all three communities, Australian Red Cross emergency services staff and volunteers surveyed a random sample of 120 people aged over 18 years who lived in or near the target communities. Red Cross also facilitated one focus group per community, with between 14 and 25 attendees from service organisations or community groups. Interviews were conducted with 49 key informants, including health professionals, educators, business representatives, utility providers, sustainability experts, disaster resilience and emergency services personnel. In total, this resulted in consultation with 220 community members across the three suburbs. In addition to fulfilling the resilience measurement process, these engagement activities were beneficial to building and strengthening relationships with key stakeholders. The information collected through consultation was augmented with data from secondary sources such as Australian Government census data and independent research to solidify the findings.

This multi-faceted approach provides a broad understanding of the current problems and extent of community resilience in the area. Once this data was collected, grades from A to D were allocated for each source of resilience based on quantitative and qualitative data against a rubric of benchmarks. This process highlights strengths and gaps in community resilience and can be used over time to measure the change in resilience in a community.

The data collected has been graded, analysed, and organised to align with the Australian Red Cross capacities approach to disaster resilience. This approach is premised on the notion that strengthening four key capacities: connection, knowledge, wellbeing, and security, leads to increased resilience (Richardson et al., 2022). These dimensions provide a framework to present the findings of the CRMC and proposed Red Cross interventions.

Four adaptive capacities have been identified as the factors that enhance resilience at an individual and community level. Red Cross uses these to help with the targeting of our work. The four capacities are:



Key findings

Connection

Connection is a key capacity in disaster resilience. It demonstrates how well people are connected to others in their community – whether geographic or virtual. It also encompasses access to services, participation in daily life, and a strong sense of belonging (Richardson, 2014). During disasters, lives are saved when people are aware of risks to others, have access to essential services, check on vulnerable individuals, and take proactive measures to care for each other by sharing information, resources, shelter, and emergency supplies (Richardson, 2014).

According to the key findings from the CRMC, there are both strengths and gaps related to Connection:

1. All suburbs have well established long-term residents who believe that they can rely on each other for support.
2. Respondents perceive that socially isolated community members experience increased heatwave risk.
3. There are concerns that schools lack sufficient air conditioning which can have flow-on effects for the quality of education for students.
4. Public transportation experiences increased operational disruptions during heatwaves, limiting community participation in daily life.

KEY FINDING 1

All suburbs have well established long-term residents who believe they can rely on each other for support

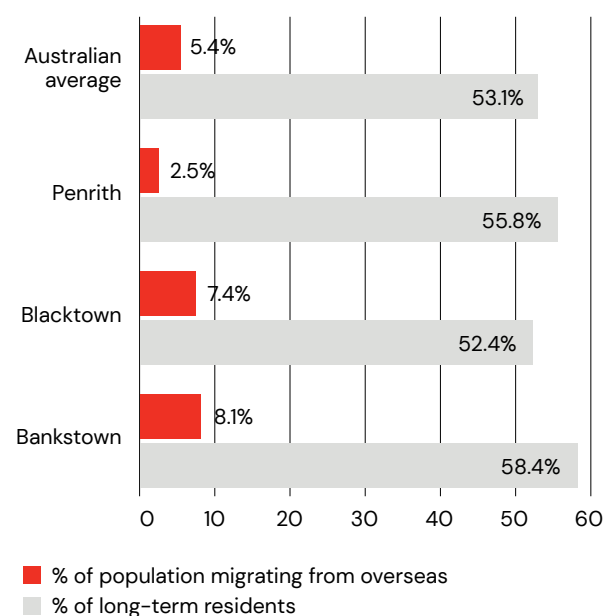
In all three baseline study communities, a significant proportion of residents have lived in their suburbs for over five years (Id.community, 2021), with many having strong, long-term ties, including immediate family members residing in the area for over 20 years. This stability contributes to robust social capital, as long-term residents bring valuable community knowledge and understanding of local risks, enhancing community bonds and support networks during crises (Richardson, 2014).

Despite differing migration patterns—Bankstown and Blacktown have higher proportions of overseas migrants compared to Penrith (Id.community, 2021)—focus group participants across these suburbs expressed confidence in their ability to rely on community support in times of need. This suggests strong interpersonal connections and a shared sense of mutual support within these areas. However, in Blacktown, some representatives from culturally and linguistically diverse communities, refugees, those with health concerns, families and elderly communities reported an inability to rely on their community during crises.

This highlights a specific need for targeted support to strengthen networks among these diverse and at-risk groups.

Overall, the presence of strong social bonds and well-established social networks within the focus communities is a positive indicator for community resilience (Nuno et al, 2018).

Residency and migration patterns





KEY FINDING 2

Respondents perceive that socially isolated community members experience increased heatwave risk.

Focus group participants noted that while there is a level of connectivity within local or cultural communities, certain groups—such as individuals with disabilities, newly arrived migrants, older residents, and those in social housing—are perceived to be more socially isolated. This isolation could heighten their risk during heatwaves. Targeted initiatives aimed at strengthening community ties and enhancing social connections for these groups could be beneficial. By addressing social isolation and fostering stronger networks, these initiatives could improve overall resilience and better prepare communities to manage the effects of heatwaves.

KEY FINDING 3

There are concerns that schools lack sufficient air conditioning which can have flow-on effects for the quality of education for students

Education continues in schools across the region during heatwaves according to key informants, though it is reported that some schools and higher education institutions do not have adequate cooling facilities. New infrastructure for primary and secondary schools is currently being constructed with appropriate resources. However, existing school structures often remain without necessary upgrades or improvements. This infrastructure is crucial for creating conducive learning environments that facilitate student focus and academic achievement, despite challenging weather conditions. Large class sizes can also contribute to increased heat exposure, with one teacher stating that “the more bodies there are, the harder it is to keep them safe and cool.” In a region that regularly experiences extreme temperatures during the school year, it is essential that all classrooms are equipped with effective cooling systems.

“The concentration levels from the students decrease during heatwaves and the students become unproductive during those high temperature days.”

– Quote from a teacher

KEY FINDING 4

Public transportation experiences increased operational disruptions during heatwaves, limiting community participation in daily life

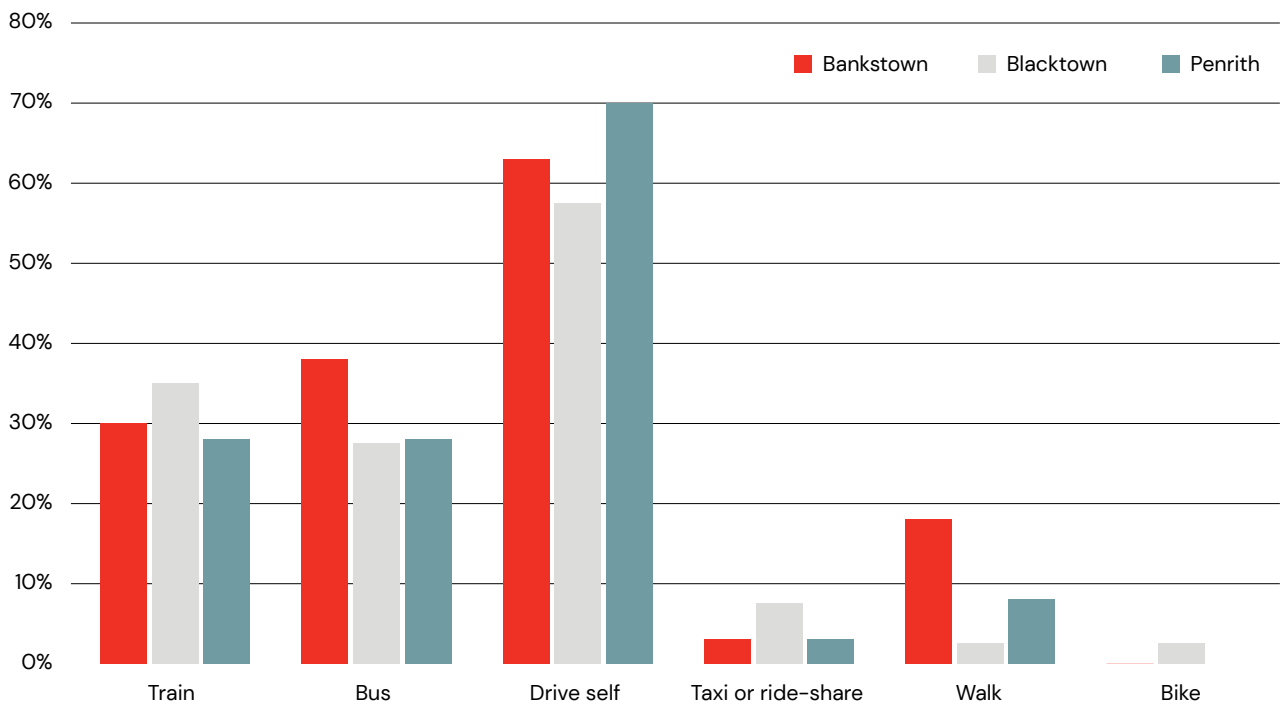
Household survey responses across all three communities revealed that while participation in daily life is relatively easy during normal times, access becomes more difficult during heatwaves.

“The train is not reliable on hot days; I prefer to drive.”

– Quote from a resident of Blacktown

There is a strong reliance on the public transport system across all three communities, with an average of 31% of respondents stating that they use a bus or a train to travel during heatwaves. Many respondents noted in household survey that the public transportation system experiences consistent delays and interruptions during heatwaves and as a result, they resort to driving. With significant delays or at-times inadequate shelter available to commuters, many people face an unavoidable exposure to heat while continuing with their usual routine. As such, addressing the challenges faced by commuters during heatwaves, including reliable access to transportation and adequate shelter at bus stops, remains crucial for enhancing community resilience and well-being.

What means of transport would you use if leaving home during a heatwave?



Knowledge

Knowledge is another essential capacity for disaster resilience. It refers to the collective understanding, expertise, and information available within a community regarding risks or hazards and their potential impacts. Having access to this information enables individuals to make informed decisions, manage threats and reduce the impacts of a disaster. Being aware of factors that increase risk and knowing how to protect oneself and others, particularly during heatwaves, are crucial. Communities that are well-informed about their risks can more effectively support one another.

The CRMC revealed three key findings related to Knowledge:

5. There is a lack of understanding amongst residents regarding the factors that increase risk during heatwaves.
6. Residents do not regularly prepare for heatwaves.
7. Heatwaves are accurately predicted at a regional level, though the community do not always access these forecasts.

KEY FINDING 5

There is a lack of understanding amongst residents regarding the factors that increase risk during heatwaves

Heatwaves can increase risk due to a variety of factors influencing how individuals experience and manage extreme heat. These include inherent characteristics such as age and existing health conditions, as well as circumstantial risks like poor housing quality and geographic location. A significant majority of those surveyed in Blacktown (85%) and Penrith (81%) believed that they understood the factors that increase risk during heatwaves. This is compared to 60% of the survey respondents in Bankstown.

Importantly, when asked which attributes and activities heighten risk, most respondents across all communities were only able to share one or two general characteristics, including “people who are outside” and “children and older people.”

Surveyed residents stated that they understood how to protect themselves and others from heat-related illness.

However, when respondents offered how they would keep cool, they referenced one or two measures only. No respondents volunteered that they knew the symptoms of heat exhaustion or heat stroke, when to seek medical assistance or to contact and check on neighbours who might need support.



Australians embrace the heat. We celebrate the heat. We go out to the beach. We go out to the parks. It's a celebration when there's a heat episode. They don't know that it can kill."

– Quote from a healthcare professional

KEY FINDING 6

Residents do not regularly prepare for heatwaves

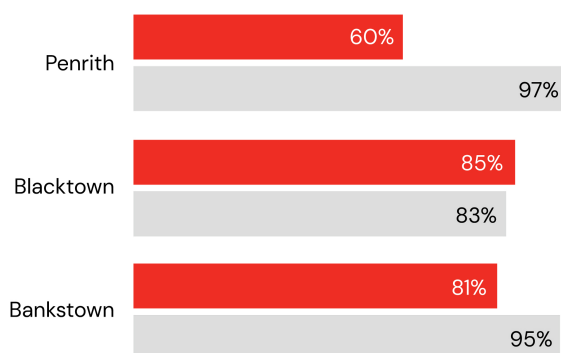
An average of 80% of respondents across Bankstown, Blacktown and Penrith stated that they would usually stay at home during a heatwave, though no residents reported taking steps to prepare themselves beforehand. While 77% of respondents referenced using active cooling techniques as a response measure during heatwaves, no residents mentioned planning or taking preventative action to ensure their safety. These steps could include checking air conditioners and fans before summer, purchasing additional food and medicine, planning transportation and identifying cool refuges ahead of time. Assessing personal risks and taking steps to mitigate against those are particularly important for at-risk communities who may lack the social supports to ensure their wellbeing during extreme heat events.

The lack of detailed knowledge and preparedness action exhibited by community members highlights a consistently indifferent attitude toward heat risks. Numerous key informants discussed Australia's cultural inclination to perceive heatwaves as non-threatening rather than as potential climate emergencies. Increased education to highlight the risks of heat, support individuals to prepare and reframing the way heatwaves are discussed with the broader community is essential to address this issue.

"A client needed regular medication and ran out during the middle of the heatwave. They chose to walk to the pharmacy during the day to get more."

– Quote from a healthcare professional

Community heatwave knowledge



■ % who understand which characteristics or activities increase risk during heatwaves

■ % who know how to prevent heat-related illness during a heatwave



“...how would I know there was a heatwave coming? I wouldn’t.”

– Quote from a survey respondent in Bankstown

KEY FINDING 7

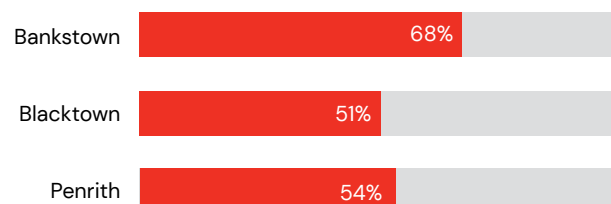
Heatwaves are accurately predicted at a regional level, though the community do not always access these forecasts

A timely early warning system is essential for saving lives and minimising the impact of extreme events. Heatwave forecasts issued by the Bureau of Meteorology and disseminated through media outlets, councils, and service providers are essential for enabling individuals, communities and organisations to take proactive measures to mitigate the effects of extreme heat (Robbins, 2022). However, only 68% of focus group members in Bankstown, 51% in Blacktown, and 54% in Penrith reported that the local population received these warnings. One key informant stated, “a large part of the community of at risk are people are not active online, and they don’t necessarily get the [forecasts]”.

Community members also noted that the forecasts they receive are often for Sydney or the Eastern Suburbs, a region that often experiences temperatures 6–10 degrees cooler than in Penrith (Australia Institute, 2020).

Ensuring that those most at risk during heatwaves are aware of their risk factors, how to prevent heat-related illness and how to access timely warnings will be a high priority moving forward. Addressing these disparities in forecasting and prioritising preparedness will be essential for enhancing community resilience and safeguarding people at risk during heatwaves.

Percentage of community members who receive heatwave early warnings



Wellbeing

Wellbeing is a crucial capacity for disaster resilience. It relates to a person's health and wellbeing status, including their psychological coping ability. Having good health (physical and emotional) and quality of life can assist an individual to physically and mentally prepare for, respond to and recover from an emergency with minimal ongoing disruption. Those with better quality of life typically possess a stronger coping capacity, helping them manage the physical stresses of recovery more effectively. Emergencies can cause direct injuries, exacerbate existing health conditions, and limit access to healthcare services. Therefore, maintaining and enhancing wellbeing through regular physical activity, healthy eating, and mental health support is essential. Enhancing healthcare infrastructure and raising awareness about the importance of wellbeing can also significantly boost the resilience of a community.

Four key findings related to Wellbeing from the CRMC include:

8. Extreme heat poses health risks and disrupts daily life for residents.
9. Healthcare is within a safe geographic distance for most, but there are social and financial barriers.
10. Few community members are trained in First Aid.
11. The community recognises that increasing green spaces is key to mitigating heatwave risks.

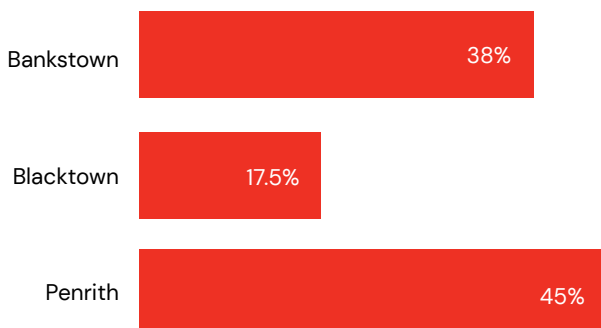


KEY FINDING 8

Extreme heat poses health risks and disrupts daily life for residents

Almost all household survey respondents across all three suburbs advised that they had experienced at least one heatwave that disrupted their lives while living in the region. Among the residents who reported experiencing health impacts during a heatwave, those in Bankstown and Penrith were notably the most affected. This statistic includes both the occurrence of heat related illness, as well as the exacerbation of existing health conditions. These experiences align with the observations of health care professionals, who noted a regular increase in presentations to clinics and hospitals in the region during heatwaves. Increasing and improving preventative and response mechanisms related to health in heatwaves is paramount.

Percentage of respondents who have suffered health impacts as a result of exposure during heatwaves



KEY FINDING 9

Healthcare is within a safe geographic distance for most, but there are social and financial barriers

Key informants advised that healthcare services such as emergency rooms or general practitioners are usually geographically accessible to most residents. Despite this, certain groups face notable barriers to receive healthcare that may mean they are less likely to seek medical care in times of need. Both key informants and focus group participants highlighted that these challenges disproportionately affect lower income earners and individuals with complex medical needs.

A key informant stated that due to the multicultural nature of the three communities, often there is a lack of health literacy which results in a difficulty to access healthcare. Although multicultural health services have been established to support communities to navigate the healthcare system, these findings indicate that more work is required.

Focus group participants also expressed that they face financial barriers to accessing healthcare due to the reduction in bulk billing clinics and the high costs associated with emergency or specialist services. Focus group participants also highlighted that newly arrived migrants or those with insecure visas are not eligible to receive Medicare, making them less likely to seek medical assistance due to anticipated financial burden. With heatwaves confirmed to have a negative impact on the health of the community, improvements are required to ensure all community members have access to healthcare in times of need.

KEY FINDING 10

Few community members are trained in First Aid

First aid training plays a crucial role in helping residents identify early symptoms of heat-related illnesses and provide appropriate treatment. Currently across Australia fewer than 5% of people are qualified to provide first aid, one of the lowest first aid training rates in the world (Australian Red Cross, 2023). Increased uptake in first aid training would enable more residents to promptly recognise and manage heat-related health issues, understand when to seek additional medical help, and provide support to individuals until professional medical assistance arrives. Additional community knowledge could also help alleviate the strain on healthcare services during heatwaves.



KEY FINDING 11

The community recognises that increasing green spaces is key to mitigating heatwave risks

Over 85% of household survey respondents across all three communities recognised that maintaining a healthy natural environment reduces heatwave risk. One survey respondent stated, “since development has come about in Penrith, there has been higher temperatures, the trees were cut down, farmland was changed to industrial areas and developments continue to increase.” Trees play an important role in the ‘greening’ of an area, making surroundings pleasant, providing relief from summer heat and reducing glare from pavement. (Blacktown City Council, 2024). Many survey respondents across all three communities acknowledged this connection, discussing a lack of green spaces within the region and the negative impact on community wellbeing.

A key contributor to a healthy ecosystem within the context of heatwaves is the presence of a robust tree canopy. The NSW Government aims to lift tree canopy coverage across greater Sydney to 40% by 2036 (NSW Planning, 2024). Currently the tree canopy coverage across the three suburbs is reported to be 16.5% in Penrith, 17.6% in Blacktown and 16.32% in Bankstown (NSW Government SEED, 2022). This goal to increase canopy cover is essential for mitigating increasing temperatures and maintaining community wellbeing. Focus group participants emphasised that many community members who rely on public transportation or walking to access services face heightened exposure because of this lack of shade from canopy cover.

“...there’s a there’s a real lack of shade and ability to walk safely to...the major facilities.”

– Quote from a healthcare practitioner



Security

Security is a crucial capacity for disaster resilience, integral to enhancing both individual and community preparedness and recovery. It encompasses several key elements: personal safety, secure housing, financial stability, and effective governance. Ensuring **personal safety** involves protecting individuals from physical harm and threats, which includes addressing issues like family violence that may escalate in the wake of disasters. Secure housing, built to high standards and situated in low-risk areas, reduces the risk of property damage and supports overall safety.

Financial security refers to the economic stability and resilience that enables individuals and communities to withstand and recover from shocks. This includes access to employment opportunities, financial resources, insurance, and social safety nets that support recovery and adaptation efforts. Financial stability is essential for managing preparedness activities and covering the costs associated with disaster recovery, including health impacts and asset restoration.

Effective governance involves planning and implementing risk reduction measures and response strategies, including addressing gaps in support services. Adequate infrastructure, safety measures, and cooling systems further bolster physical security, helping communities withstand and recover from disasters more effectively. By addressing these aspects, security enhances resilience, ensuring that individuals and communities are better prepared for and can recover better from emergencies.

The specific findings from the CRMC on these three key areas of Security are as follows:

Personal and community

12. Homes are not constructed with climate extremes in mind and very few people make changes to their properties to mitigate heat risk.
13. Most people stay at home during heatwaves using active cooling measures such as air-conditioning.
14. Residents rely on public infrastructure to seek cooling but there are barriers to access.

Financial

15. Financial insecurity is compounded due to community relying on electricity for cooling.
16. Residents experience income instability due to heatwaves.

Governance

17. Planning and implementation of risk reduction measures is ongoing but funding for these initiatives is limited.
18. There are gaps in local heatwave response plans regarding domestic violence.

Personal and community

KEY FINDING 12

Homes are not constructed with climate extremes in mind and very few people make changes to their properties to mitigate heat risk

Many Australian houses have not been designed and constructed with climate extremes in mind, with buildings having gaps around windows and doors while also lacking adequate insulation. These construction inefficiencies increase the costs associated with heating and cooling residences by creating an overreliance on air conditioners and fans, resulting in extra strain on household expenses (Climateworks centre, 2023). Making energy efficiency improvements to a household can play a crucial role in helping homeowners to protect themselves and their homes during heatwaves. While this was acknowledged by participants in focus groups, very few have taken steps to upgrade or heat-proof their houses.

“Social housing residents struggle to get basic maintenance to their homes, let alone accessing an air conditioner.”

– Quote from focus group participant regarding social housing

When asked what measures they have taken to protect their health and assets from heatwaves, focus group participants responded that they often closed windows and blinds and used fans to stay cool. Very few had created or installed a cool roof, painted their roof with light or reflective paint, or added windows or doors to allow for a cross-breeze. No residents consulted had built or upgraded to the latest building code. While these protective actions are ideal, they are often inaccessible for many community members.

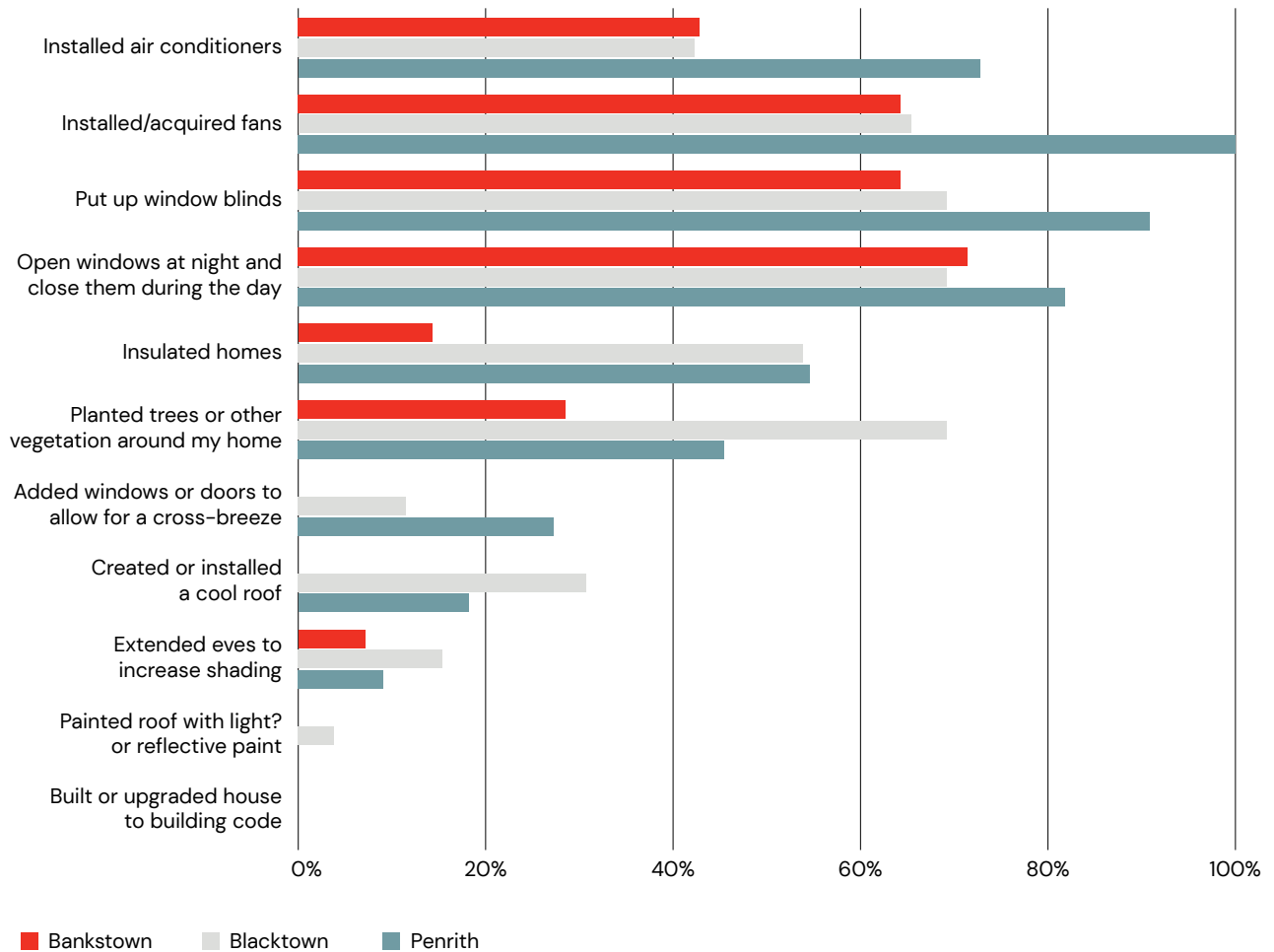
“They have little to no control over their accommodation so they try and cope as best they can.”

– Quote from focus group participant regarding social housing

There is particular concern regarding the limited control that social housing residents and rental tenants have in making household upgrades. A key informant stated that “some of the social housing in Blacktown was built in the seventies... is poorly insulated and generally the thermal coverage is quite poor.” With tenants and social housing residents unable to make permanent changes to their home, including the installation of air conditioners or to increase vegetation around their house to reduce heat risk, many are at higher risk of heat exposure. As a result, residents often rely on other means of cooling during heatwaves or will leave home to seek cooling elsewhere. Focus group participants also highlighted the financial challenges associated with installing cooling systems which will need to be removed when eventually vacating the property. These additional costs often discourage many from investing in such upgrades.



What measures have you taken to protect your health and assets from heatwaves?



KEY FINDING 13

Most people stay at home during heatwaves using active cooling measures such as air-conditioning

As highlighted above, 80% of community members consulted confirmed that they prefer to stay home during heatwaves. When asked, 81% of respondents stated that air-conditioning was their preferred method of cooling. Notably it was found that lower than average percentages of tenants and social welfare recipients would use air-conditioning. Despite concerns regarding increased electricity use during heatwaves, few residents surveyed opted to use energy free methods of cooling such as ice packs, wetting the skin or using wet cloths. The impact of heatwaves can be reduced by encouraging people to take these and similar protective actions—all of which can be employed during power outages, do not have a marked effect on household finances, and do not contribute to climate change—at the household level.



‘I go to the local library [during heatwaves]; however, it closes early, and they do not extend their hours’.

– Quote from a survey respondent in Penrith

KEY FINDING 14

Residents rely on public infrastructure to seek cooling but there are barriers to access

While many survey respondents stated that they would stay home during a heatwave, for some there is a reliance on public spaces to provide affordable cooling. As Bankstown and Penrith do not currently have official cooling centre facilities available during heatwaves, libraries and shopping centres are frequently used.

In Penrith 23% of respondents expressed the intent to seek refuge in public libraries, council facilities, or shopping centres during heatwaves. In Bankstown 38% of survey respondents advised that they would be at a shopping centre and another 15% said they would be at a public library or council facility. In Blacktown 45% said they would be at a shopping centre. However, these spaces are not accessible overnight and lack resources for heat-impacted individuals. This prompts consideration of the capacity of publicly available facilities to effectively meet cooling needs during periods of extreme heat.

There are dedicated cool refuges run by the Blacktown City Council to support communities at risk during heatwaves, where 27.5% of survey respondents stated that they would utilise this resource. While the facilities exist, there are certain barriers to access with many community members relying on public transportation to travel. The centres are also not open at night, leaving community unable to seek refuge anywhere else.

Financial

KEY FINDING 15

Financial insecurity is compounded due to community relying on electricity for cooling

In New South Wales (NSW), one third of residents have not been able to pay their utility bills on time (NCOSS, 2023). In 2022-23, more than 102,000 NSW customers were repaying energy debt to their retailer and almost 18,000 households were disconnected from their energy and gas provider (NCOSS, 2023). Energy affordability impacts whether households, especially at-risk groups, can afford to use electricity to cool their homes during heatwaves and comfortably pay their energy bills afterwards. Air conditioners and electric fans are the preferred cooling methods for residents in all three suburbs.

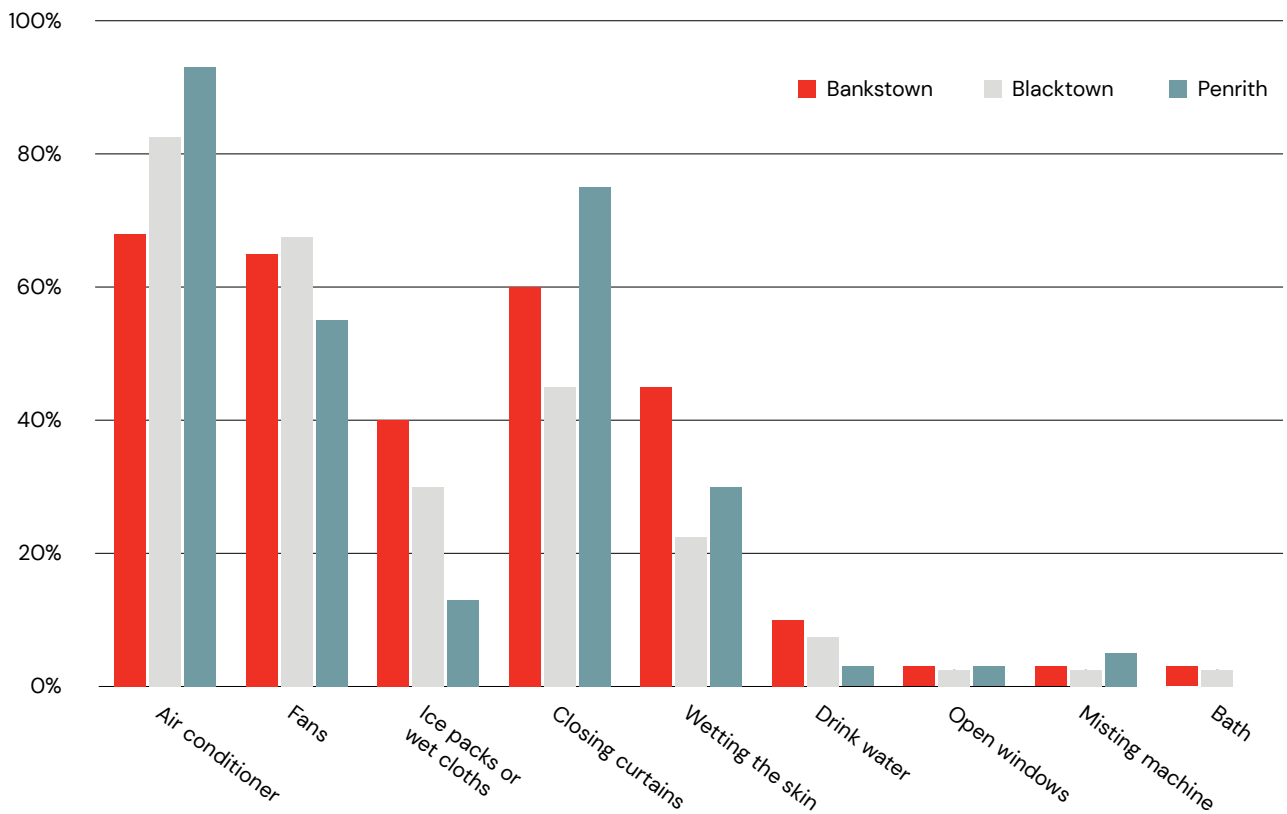
However, it was stressed that the decision to use them was not taken lightly, with many experiencing financial repercussions thereafter.

The rising cost of living has intensified financial challenges for community members, with only approximately one-third of focus group participants across the three suburbs having sufficient savings to handle unexpected expenses or emergencies. Notably representatives of people living with a disability, over the age of 65, and from a culturally and linguistically diverse background stated that very few people in their communities that had accessible savings for emergencies. This lack of savings leaves households susceptible to economic shocks, including those caused by heatwaves.

“I need to prioritise paying my electricity bill over buying food and other necessities.”

– Quote from a resident of Penrith

Which of the following would you use to stay cool in a heatwave?

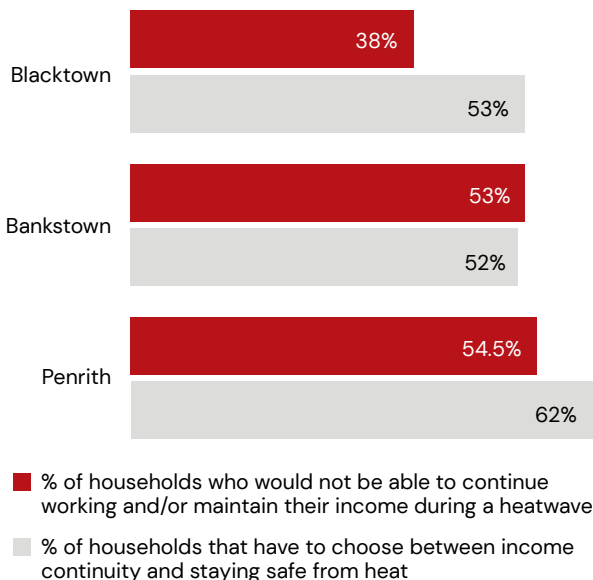


KEY FINDING 16

Residents experience income instability due to heatwaves

As heatwaves become more frequent, there is a growing risk that workers and business owners will face increased income instability. Focus group participants from both Blacktown and Penrith stated that more than half of their community would not be able to maintain their income during a heatwave. This number was slightly lower in Bankstown (38%), however one community member commented, “not many outdoor workers can maintain their income, it gets too hot.” Focus group participants across all three suburbs stated that over half of their communities would have to choose between protecting themselves from heat exposure and maintaining their income. This was particularly true for culturally and linguistically diverse communities, with 68% of the community in Bankstown and 60% in Blacktown were believed to regularly face this decision.

Impact on household income



In the focus groups this ongoing income loss because of heatwaves was attributed to occupational safety regulations, blackouts and fewer customers visiting places of business. One key informant stated, “Fridges and everything get impacted during the heatwaves, increased electricity bills, less customers and food gets spoilt leading to more waste”.

While the exact reasons for income loss were not researched in detail, the ongoing financial impacts on small businesses and outdoor workers during heatwaves could be investigated further in the future.

Family members and informal caregivers who help to care for loved ones can experience financial loss during heatwaves as they would need to take days off work to provide additional support or monitor the wellbeing of at-risk members of their household.

“We do not leave the house (during heatwaves), I sometimes have to cancel work to stay with him.”

– Quote taken from a community member who cares for her husband due to illness in Penrith





Governance

KEY FINDING 17

Planning and implementation of risk reduction measures is ongoing but funding for these initiatives is limited

Up to date heatwave risk mapping strengthens community understanding as to where heatwaves are likely to be most intense and who are most at risk due to their exposure and vulnerability. The level of risk mapping and how this data has been incorporated into policies varies between the three suburbs. Where risks have been identified, regular and dependable funding should be budgeted for communities to be able to reduce and prepare for these risks.

Across the entire region, there is reportedly little funding accessible for heat focused work on a local level, with most of the available funding being allocated to regional strategic planning. One key informant has described difficulty in applying for State and Federal funding due to the lack of updated and consistent data. With no State investment into heatwave data collection, the onus is falling on local councils to obtain this information to apply for funding. With council resources already strained, this data collection is costly and as a result, will have a limited scope.

Much of the current strategic work is being completed by the Western Sydney Regional Organisation of Councils (WSROC) who have received Federal and State funding to form a Heat Taskforce. Given that there is currently no lead agency responsible for the management of heatwaves in New South Wales, the work of the Heat Taskforce strives to address this prevalent gap. By bringing together senior leaders across Local and State Government, industry and the community sector, the aim is to coordinate heat governance across the Greater Sydney area and encourage organised action. It is expected that this will prompt ongoing heatwave risk reduction measures at a council level, building on the work already being completed.

According to a key informant, a heatwave risk map has been developed and identifies communities at risk in Blacktown. This information has been used in risk planning, although there has been limited community involvement in this specific process. Blacktown City Council has endorsed the [Low carbon emissions Blacktown City plan](#) which incorporates heatwave risk reduction measures.

The Council developed this plan to assist with “transitioning to low emission technologies and building resilience to climate change impacts, especially increases in urban heat and intensity of storms” (Blacktown City Council, 2022). This plan guides the Council’s climate mitigation and risk reduction efforts. It is important to note that though there is currently no dedicated heatwave risk reduction budget at the local level, funding has been allocated to response efforts.

The Penrith City Council reportedly does not currently have a specific heatwave risk reduction plan in place, though heatwave mapping and data has been utilised to bring heat to the forefront of the Council’s priorities in multiple other policies. The Council’s [Resilient Penrith Action Plan](#) aims to “*enhance the capability of Council and the community to adapt and improve resilience to risks, shocks and stresses*” (Resilient Penrith Action Plan, 2021). This plan, along with the Cooling the City strategy are the current driving forces for risk mitigation and preparedness efforts on a local scale. There are various budgets for climate risk reduction in place, though these are not specific to heatwave.

According to a key informant, a heatwave risk map was developed as part of a local urban heat study in Bankstown in 2020. This study identifies heat risk based on data for land surface temperature, urban heat vulnerability and tree canopy coverage. However, the data for heat vulnerability is from the 2015–2016 summer and more recent data is not available. The lack of, and lack of funding for, more up to date data is a key barrier for local authorities in planning for heat risk reduction and the ability of these authorities to gain funding for such initiatives.

The Bankstown Urban Heat Study has been used to inform strategic planning at the local level, including town and urban centre master planning processes and the *Resilient CBCity Action Plan*. The community has been consulted as part of the development of these plans, which includes actions around heat. A key informant also advised that there is currently no dedicated heatwave risk reduction budget or funding for a heat risk reduction plan at the local level. Local authorities recognise this as a gap.

There are also multiple region-wide plans and locally relevant resources including the [Turn Down the Heat Strategy and Action Plan](#), [Urban Heat Planning Toolkit](#) and the [Cool Suburbs](#) tool. The new [State Disaster Mitigation Plan](#) also identifies heatwaves as a key hazard and includes a toolkit with a range of options to reduce hazard vulnerability and hazard exposure. Place based Disaster Adaptation planning is occurring, focused on localised solutions to reduce disaster risk. A new [Resilient Sydney Strategic Plan](#) and a [Heat Smart City Plan](#) are also in development for Metropolitan Sydney.

Though at-risk cohorts have been considered in all plans highlighted above, extensive consultation has not occurred with all communities across the three councils. In resilient societies, all social groups, including communities at risk, should have their voices heard or represented, so their specific concerns and needs can be addressed.

KEY FINDING 18

There are gaps in local heatwave response plans regarding domestic violence

Local emergency management plans typically apply uniform provisions across all hazards. However, heatwaves present a distinct challenge compared to traditional hazards like floods and fires. Unlike these events, heatwaves do not threaten property or infrastructure; their primary risk is to human life. Additionally, heatwaves are less visible and often underestimated, leading to a general lack of awareness about their significant risks. Therefore, heatwaves require specialised consideration and tailored strategies in emergency plans to address their unique threat.

Effective heatwave response plans must address the needs of at-risk communities to ensure comprehensive protection against heatwave impacts. Current policies and plans, including the NSW Heatwave Subplan, mandate that local-level responses go beyond information distribution to include practical support activities.

This is one core area of growth for the Penrith City Council and the City of Canterbury Bankstown, with response efforts to date predominately consisting of alerts for health impacts being distributed to community through social media and at local pop-up days and events. Though there has been some investigation into the potential of establishing formal cooling centres in these government areas, due to logistical challenges, no concrete plans are yet in place. Instead, libraries and other public spaces are available for community members to use during the day, with potential for extended opening hours during a heatwave. In contrast, Blacktown City Council reportedly has a heat response plan, which includes budgeting for planning and resourcing of their 'Cool centres' which are in operation during heatwaves each summer.

In NSW, one in six women have experienced physical or sexual violence by a current or former partner. In New South Wales, it has been found that rates of domestic violence increase with extreme heat (Stevens et al, 2023). Currently, there is no reference to domestic violence in the statewide Heatwave Emergency Sub-Plan or the existing heatwave response plans.

Penrith City Council and Blacktown City Council are White Ribbon Accredited Workplaces, reflecting their commitment to addressing domestic and family violence. The City of Canterbury Bankstown has a Domestic Violence Liaison Committee working for the community, providing services to women, children and families where domestic violence is identified.

To enhance heatwave response planning, it is crucial to integrate policies and build capacity to identify and support those experiencing domestic violence, addressing the increased risk during heatwaves. This approach should be incorporated into future response plans across all three councils.

Conclusion and next steps

The key findings explored in this report provide a clear picture of heatwave resilience, including gaps, priorities, strengths and opportunities, in three of the urban suburbs most vulnerable to the impact of extreme heat in New South Wales. This baseline understanding of heatwave resilience in the Western Sydney context is an important resource for Australian Red Cross, as well as other key actors, sectors and the broader population, to support decision-making, resource allocation and to promote action across the four areas described in this report: namely wellbeing, knowledge, security and connection.

These key findings will guide the next steps of the Urban Climate Resilience Program (UCRP) in Western Sydney in line with the institutional mandate and expertise of Australian Red Cross to strengthen resilience within the target communities. Furthermore, Australian Red Cross will seek to work with local councils, community groups and other key stakeholders to support building psychosocial resilience in these suburbs and the wider Western Sydney region.

Australian Red Cross will look to explore the following activities in coordination and collaboration with key stakeholders:

RediCommunities

Using a strengths-based, community-led approach, Red Cross assists residents to identify community strengths that can be leveraged and identify any gaps to be addressed. Red Cross provides support, facilitates workshops, and links community members with specialist services, guidance and other communities undertaking similar work. We recognise that every community is unique and therefore best placed to develop meaningful solutions for strengthening their resilience locally.

Heatwave Preparedness Workshops

Heatwave Preparedness workshops support people to learn about preparing for heatwaves and take steps towards building their individual and household resilience. Participants learn about the practical, psychological and social steps they can take to prepare for all climate-related emergencies and minimise the impacts of disaster and other crises on their lives. These workshops can be delivered in partnership with other subject matter experts to provide participants with holistic guidance on heatwave resilience.

First Aid for summer

In partnership with Australian Red Cross First Aid, the course will be designed to have a specific focus on summer-related dangers including heat exhaustion and heat stroke, burns, smoke inhalation and drowning. This training may be provided to community for low or no fee to ensure accessibility.

Provide psychosocial support in Cool centres

Red Cross will continue to be present, providing psychosocial support at Cool centres or mobile cooling hubs across Central and Western Sydney.

Suite of offerings for service providers

Red Cross will work to support service providers such as community service organisations, health providers and community organisations, offering a comprehensive suite of resources and workshops to support working with vulnerable communities.

These may include:

- Heatwave preparedness and response plan templates
- Heatwave preparedness workshops
- Key messaging for staff
- Printed or digital resources
- Workshops regarding how to support at-risk clients to prepare for climate-related emergencies

Telecross REDi (subject to funding)

Telecross REDi assists vulnerable and isolated people cope with extreme weather events. The Telecross REDi service supports people by calling them daily during declared heatwaves to check on their welfare and provide support to engage. Red Cross is currently running this service in South Australia under a funding arrangement with the South Australian Government. The Western Sydney Regional Organisation of Councils (WSROC) Heatwave Taskforce's has referenced the desire for Red Cross to pilot Telecross REDi in New South Wales in their strategic *Plan on a Page*, subject to external funding. If this program is of interest to local and state government, Red Cross are happy to explore this opportunity further in NSW.

Advocacy

Due to the broad scope of the baseline research, some of the actions required to improve issues highlighted in this report fall outside the direct responsibilities and mandate of Australian Red Cross. Where appropriate, Red Cross may work with Councils and other parties to advocate for the adoption of these potential solutions.

Key areas of advocacy include:

- Advocating for the updating of heatwave risk mapping to improve local risk assessments.
- Promoting the creation and integration of comprehensive heatwave preparedness and response plans that address all community needs, including domestic violence.
- Supporting the establishment and operation of cooling centres.
- Securing funding for community transport and local initiatives to assist with heatwave relief.
- Pushing for improved development controls and building codes to mitigate heat impacts.
- Ensuring that climate change considerations are embedded in relevant policies and procedures.
- Advocating for the installation of fountains, misting fans, and shaded bus stops, and supporting initiatives like free pool or cinema passes.
- Encouraging the provision of air-conditioning in all classrooms in schools and TAFEs.

Get involved!

The scale and urgency of the climate crisis warrants a collective approach to reducing the risk of extreme climate events and limiting their impact through adaptation measures. As such, this report is openly available to ensure that this knowledge can be widely shared and integrated into climate resilience work. Likewise, Australian Red Cross welcomes opportunities for collaboration with diverse stakeholders to ensure resilience building actions can have widespread significant and sustainable impact on communities at risk.

Reach out to Australian Red Cross at disaster_resilience@redcross.org.au



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Notes



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