

Heat Smart: building resilience to heatwaves in Western Sydney

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Heat resilience is a significant and growing challenge for NSW and is of particular concern in Greater Western Sydney. The region's historical temperature patterns and rapid rate of urbanisation, combined with its socio-economic and demographic make-up combine to deliver a significant risk profile. Rising global temperatures, continued urban development and an ageing population will see risk increase in the coming decades.

The Western Sydney Regional Organisation of Councils (WSROC) has instituted the Heat Smart Western Sydney program to address this challenge. The program is part of the Turn Down the Heat Strategy¹ that provides a coordinated approach to building a heat-resilient Western Sydney. This paper describes the development of a regional program to improve heat resilience for at-risk groups in the area.

Heatwaves and the community

At a community level, heatwaves are acknowledged as a major source of stress and anxiety. The experiences of residents in Western Sydney show heatwave is perceived as a threat equal to, or greater than, bushfire. A survey (n=317) conducted in May 2020, found 62% of respondents thought heatwaves posed 'extreme' or 'high risks' to their health and safety, 30% had felt unwell or sought medical treatment and 34% had felt distressed/mentally stressed during previous heatwaves. Further, communities had experienced disruption to critical infrastructure during previous heatwaves, with 32% losing power and 24% reporting transport disruption.

Respondents' key concerns about heatwaves were the possibility of bushfires (80%, n=227), personal discomfort (71%, n=201) and loss of sleep (70%, n=198). There were also consequences for at-risk people (68%, n=193), pets and animals (65%, n=184) and people's physical health (61%, n=173). Over half (58%, n=163) of respondents were concerned about additional costs of electricity. Only 2% (n=5) of respondents indicated they had no concerns about heatwaves.

How prepared are communities?

Most respondents considered themselves to be either 'well prepared' or 'somewhat prepared' for heatwaves. More males than females thought they were prepared. The percentage of respondents who considered themselves well prepared generally increased with age and a much greater percentage of those with a chronic illness or disability reported being well-prepared. Actions respondents reported undertaking are listed in Table 1.

Respondents nominated several barriers to becoming prepared for future heatwaves. The most significant related to socio-economic factors including the cost of home upgrades or inability to carry out such upgrades due to tenancy.

Table 2 shows that cohorts with heat-related vulnerabilities, including chronic illness, disability or age, were over-represented in reporting these barriers.

These results indicate improved information on low-cost adaptations, including options for renters, as well as assistance schemes for older and low-income groups could reduce barriers to adaptation.

Heatwave-risk management and governance

Despite posing a significant and growing risk, heatwaves have not historically received similar attention as other natural hazards when it comes to risk assessment, mapping, land-use provisions, construction standards or emergency management planning. In contrast to the comprehensive planning for flood, bushfire and coastal erosion hazards, the NSW State Heatwave Sub Plan deals exclusively with

Table 1: Preparedness actions

Preparatory actions taken for future heatwaves	Percentage responses	Number of responses
Installed air conditioner	61	170
Purchased fans	59	163
Installed blinds and shutters	44	122
Planted trees for shade	25	70
Purchased cool packs	21	57
Discussed preparedness with vulnerable family members, friends or neighbours	18	51
Developed an emergency plan	12	32
Installed swimming pool	9	26
Developed an emergency kit	8	23
Relocated to cooler suburb	4	11
Redesigned home	4	11
Visited doctor prior to summer regarding treatment of illnesses during severe heat	2	5
Nothing	8	23
Unsure	3	8
Other (please specify)	10	29
TOTAL	100	277

Table 2: Barriers to heatwave adaptation

People surveyed (%)	Barrier	Groups affected
46	I can't afford it	31–40 and 71–80 age groups people living with chronic illness or disability
22	I rent my home/unit	18–30 and 31–40 age groups people living with chronic illness or disability
14	I don't know what to do	18–30 age group
9	I am not physically able	People over 70 years people living with chronic illness or disability
5	I live alone and have no assistance	people over 70 years

information-sharing between agencies and the public. It does not fully address the reduction of risk before the event nor practical response in an emergency. This sits in contrast with sub plans for other natural hazards.

A review of the literature and interviews with Western Sydney organisations, including emergency management personnel, found some limitations in the current approach to heatwave management and governance:

- There is no specific organisation in NSW accountable for prevention and preparedness for heatwaves as is the case for flood, bushfire and storms.
- There is a lack of clarity in the roles of local government with respect to heatwave and emergency management generally. There is also a lack of heatwave emergency planning at the local level.
- The broad scale of current heatwave warning systems does not reflect the significant variation in exposure across greater Sydney.
- Governments and community organisations in Western Sydney expressed concerns that at-risk individuals are not well-identified, nor communicated with well, and building capabilities of community organisations and service providers is critical to connect with these individuals.
- Regional approaches to heatwave are preferred given the spatial distribution of exposure and vulnerability, urban nature of the community, and the benefits of collaboration with stakeholders who work across local government boundaries.

What action is occurring?

Heatwave resilience is a priority regional issue for WSROC, local governments, the health sector, community service providers and infrastructure operators. Many local governments are already addressing heatwave resilience by:

- quantifying urban heat island affects²
- developing cooler public places³
- implementing urban forest strategies and tree-planting programs
- updating land-use planning and development controls⁴
- improving infrastructure resilience⁵
- enhancing community awareness and engagement⁶
- encouraging household cooling activities
- establishing extreme weather protocols for rough sleepers
- trialing cool refuges.

What still needs to occur? A framework for action

To build heat resilience in Western Sydney, an integrated, whole-of-community approach based on prevention, preparedness, response and recovery (PPRR) principles is needed. An integrated heatwave management strategy encourages partnerships, shared responsibility, better understanding of the risk environment and an adaptive community that acts on

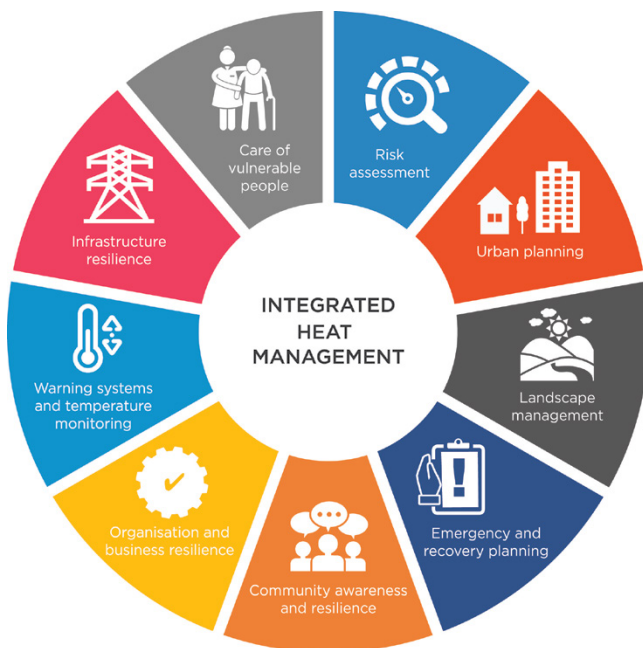


Figure 1: Integrated heatwave risk management approach.

this understanding. Such a strategy includes components as illustrated in Figure 1.

Specific themes identified to improve heatwave resilience:

Prevention

- Revise state and local planning instruments to mitigate urban heat islands and support adaptation to a warmer climate.
- Revise housing design standards so that dwellings can maintain survivable temperatures in extreme events without air-conditioning.

Preparedness

- Enhance governance and coordination through clearly defined extreme heat management arrangements including localised triggers for action.
- Improve understanding of extreme heat risk considering current and future conditions, as well as community exposure and vulnerability.
- Provide information on better practice risk management planning to define a state-wide extreme heat management framework.
- Improve identification and connection with individuals exposed to extreme heat.
- Expand community engagement and capacity building around heat risk and preparedness.
- Enhance the capacity of local government, community organisations and institutions to mitigate and manage local heat risks.
- Integrate community organisations and frontline services (e.g. primary health care) in local emergency management planning.

- Enhance the capacity of businesses, community organisations and institutions to withstand extreme heat effects.
- Improve infrastructure resilience to heat so it functions when people need it most (e.g. energy, transport and telecommunications networks).

Response

- Enhance warning services so they are locally tailored and targeted (suburb level).
- Develop outreach programs to support at-risk individuals during extreme events.
- Improve the availability of cooling shelters, cooled water facilities, and air-conditioned venues with a focus on areas of highest risk.
- Support energy affordability for at-risk groups.

Recovery

- Undertake research to understand the effectiveness of extreme heat management measures.
- Improve measurement of extreme heat effects on people and cities.

Next steps

Given current and future patterns of heatwave and community exposure, expansion of current heatwave management approaches is required for a heat-resilient Western Sydney. In partnership with regional stakeholders, a Heatwave Resilience Framework has been produced that outlines key actions for addressing gaps and inspiring co-ordinated action.

Acknowledgements

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End notes

1. Turn Down the Heat Strategy, at: <https://wsroc.com.au/projects/project-turn-down-the-heat>.
2. Benchmarking heat studies, at: <https://apo.org.au/person/198421>.
3. UV Smart Cool Playground project, at: www.cumberland.nsw.gov.au/uv-smart-cool-playground-project.
4. Urban heat planning toolkit, at: <https://wsroc.com.au/media-a-resources/reports/summary/3-reports/306-wsroc-urban-heat-planning-toolkit>.
5. Western Sydney Cool Roads trial, at: www.cityofparramatta.nsw.gov.au/western-sydney-cool-roads-trial.
6. Cool Streets, Blacktown, NSW – Pilot Project, at: www.coolstreets.com.au/blacktown-pilot-project.