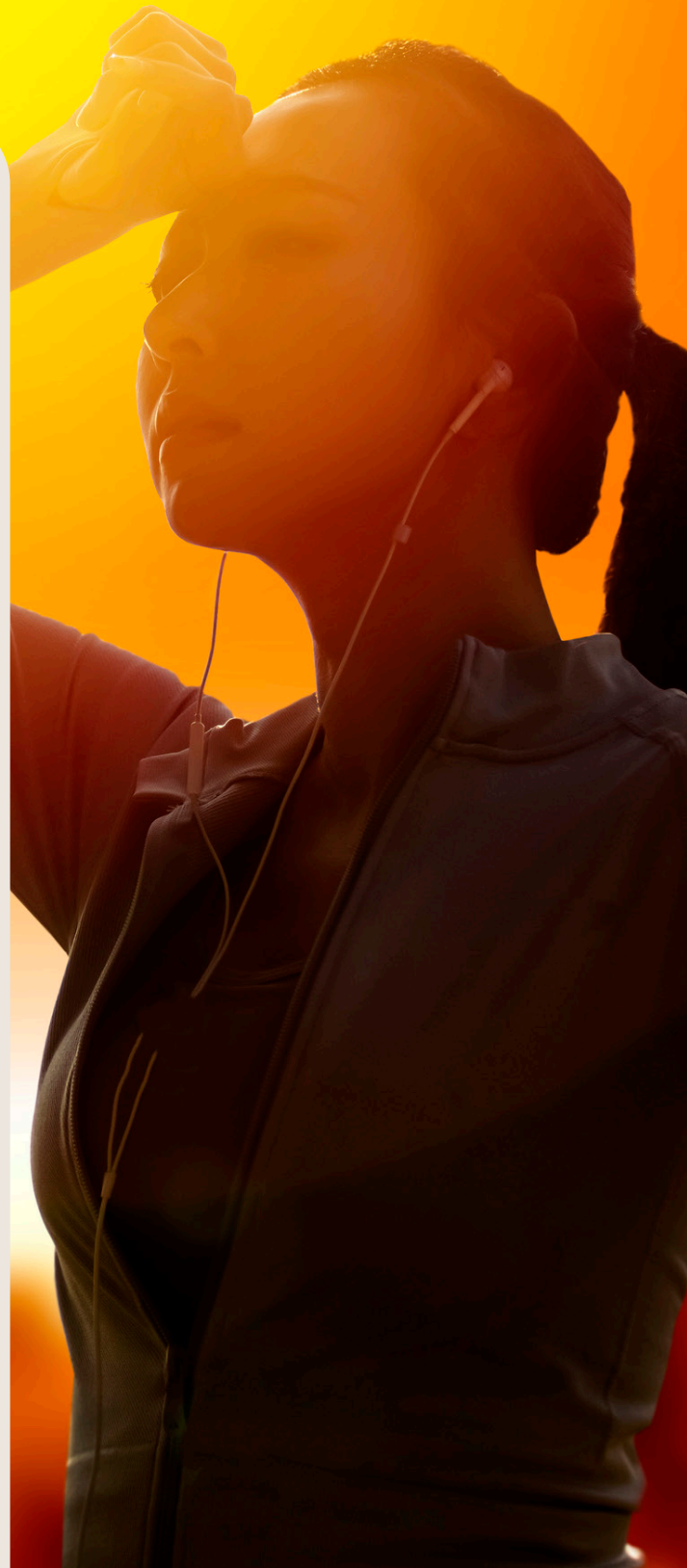


**Western
Sydney
Leadership
Dialogue**

Heat and Health in Greater Western Sydney

Discussion paper



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DISCUSSION PAPER BACKGROUND

The Western Sydney Leadership Dialogue (the Dialogue) is a not-for-profit, regional think tank, leading a national conversation about Greater Western Sydney (GWS). We facilitate interaction between key opinion leaders, across industry, government, academia and the community, to inform public policy debate and to advance a regional agenda through research, analysis, advocacy and events.

The Dialogue presents the following discussion paper on Heat and Health in GWS for consultation and feedback. This paper was created through consultation with a wide range of stakeholders, and we would like to sincerely thank them for generously donating their time to share their knowledge and experiences on this topic.

We intend to continue this project through subsequent focus papers over the coming months, the topics for which have been outlined at the end of the paper. We welcome any feedback or suggestions on these topic areas and the content within the discussion paper.

Heat and Health in Greater Western Sydney

INTRODUCTION

Penrith was declared the hottest place on the planet at 48.9 degrees, in the summer of 2020-21. On average, daily maximum summer temperature is 31.2 degrees, much hotter than the 27 degrees in the city.

In our increasingly hotter summers, there is a great disparity in the impacts of the heat across Sydney and when compared to the cooler coastal regions, Greater Western Sydney suffers under increasingly unsustainable temperatures¹.

The geographical location of GWS plays a major role in the experience of heat. In many areas, the rapid increase in population size and urban renewal has led to higher concentrations of buildings and man-made surfaces, which absorb and retain heat, subsequently radiating it back out into the immediate atmosphere and causing a 'heat island'.

The GWS community faces a multitude of health implications as a result of this experience of heat. The impacts are broad and go beyond the obvious physical effects of heat-induced illness and hospitalisation. Heatwaves are a silent killer, causing the most directly attributable mortalities of any natural hazard in Australia². Across the nation and in GWS, heatwaves can heavily disrupt routines and infrastructure, subsequently causing interference in the accessing of essential goods and services, issues in the storage of medications, reduction in physical activity and incidental exercise, and have serious effects on mental health.

Through discussions with stakeholders, it has become apparent just how far-reaching this impact has been and the need for more in-depth investigation. We have identified a number of regional challenges and key areas for further scrutiny, which are detailed below, and proposed draft policy recommendations that may alleviate or ease these concerns. These early insights and solutions provide a high-level understanding of the current situation in GWS and will guide the Dialogue's future work in this space.

¹ [Bureau of Meteorology](#), 2020

² November 2023, '[Let's talk about the weather: injuries related to extreme weather](#)', Australian Institute of Health and Wellbeing

What we heard: key themes from stakeholder engagement

ITS TOO HOT FOR ACTIVE TRANSPORT

Stakeholder feedback has highlighted a major issue with the accessibility of public transport links in Western Sydney and how the low walkability of neighbourhoods is a significant barrier to residents to engage in active transport, particularly during summer and heatwave events.

The appeal of travelling by public buses is dramatically reduced by difficulties with first and last mile connectivity. The lack of bus shelters and seating, poorly located stops, and inadequate or an absence of footpaths to provide accessibility to this mode of transport impacts communities across GWS. In some suburbs, such as Mount Druitt and Fairfield, residents are faced with the additional burden of unreliable or infrequent services, which contribute to decision making that can see residents miss out on school, work, or other activities that support mental and social health.

When combined with limited tree canopy and shading, a journey involving walking or cycling to a public transport node becomes unsafe and has led to many residents choosing to travel in a private vehicle, or in the case of those with no access to this option, to stay in their homes. Decisions made to reduce active transport, or not to travel to another location for cooling or other essential purposes during heatwaves, can have serious implications for residents' health and safety both in the short- and long-term.

WHAT WE HEARD: REAL LIFE IMPACTS

We heard several examples of how high temperatures (not just heatwaves) impact the health of community members, particularly those that are more vulnerable.

This includes an elderly woman who presented to the hospital after electing to walk in the heat to run her essential errands, instead of experiencing the discomfort of catching the bus.

We also heard of a man who became seriously unwell after following advice to remain at home in the cool during a heatwave, which resulted in him being unable to fill an essential medication script.

³ June 2024, Xu, Z, et al, ['Multimorbidity and emergency hospitalisations during hot weather'](#)

HEAT IS A SOCIAL EQUITY ISSUE

People's experience of heat is markedly different across the socioeconomic spectrum.

When it comes to the home, residents of GWS are increasingly struggling to deal with warmer temperatures as power prices and the cost of living surge. Although housing should provide some refuge from the heat, stakeholders have indicated that accessing and funding cooling infrastructure and appliances is a common issue across the region.

Owning and using a vehicle is expensive, and not a viable option for all. While having restricted transport mobility in our car-dependant region is an issue in itself, the challenges are amplified when heat is overlaid as a factor. As seen above, for those that do not have the option of using a private vehicle, there are legitimate health implications for both going out in the heat and staying home to avoid it.

Additionally, high heats adversely affect the health of those living with chronic health conditions more severely than those without. GWS is well known for its comparatively high rate of chronic health issues among residents, particularly diabetes. As temperatures increasingly climb, the health and lifestyle of these residents will become more greatly impacted.

WHAT WE HEARD: REAL LIFE IMPACTS

We heard stakeholders sharing examples of GWS residents having essential medications, like insulin, spoil in the heat due to being unable to afford to run a refrigerator during summer.

THE IMPACT OF HEAT IS FELT IN DIFFERENT WAYS ACROSS GWS

Though the outlined challenges above affect the vast majority of the GWS community, there are specific population groups we know to be at a higher risk of harm or illness during extreme heat events. Groups include children, the elderly, those with existing illnesses such as diabetes or kidney disease, outdoor workers and those from non-English speaking backgrounds. There is additionally a growing evidence base both anecdotally and in formal research of new groups of concern, including young men, due to misconceptions of or disregard for the seriousness of heatwaves, and those with comorbidities, who have a much higher likelihood of hospitalisation compared to those with none or one existing illness³.

⁴ September 2019, Astell-Burt, T, Feng, X, ['Urban green space, tree canopy, and prevention of heart disease, hypertension, and diabetes: a longitudinal study'](#)

Key themes from stakeholder engagement

TREE CANOPY COVERAGE AND URBAN GREENING IS CRUCIAL FOR MAKING THE OUTDOORS LIVEABLE

A high level of tree canopy coverage and urban greening reduces ambient temperatures through a cooling transpiration process. However, there are many additional health benefits to be had from incorporating more green spaces in our urban environment. Australian research suggests that tree canopy coverage may have a positive impact on the prevalence of a multiple health conditions, including diabetes and cardiovascular diseases⁴, and can lower stress and improve mood⁵.

Not all urban greening is the same. More investigation is needed to understand which form of greenery can provide the greatest positive effect with the highest level of efficiency in a given area.

In some cases, ensuring grass and other shrubbery is sufficiently and smartly watered can prove to be a more efficient way to lower air temperatures than the provision of native, yet drought tolerant and thereby less cooling, tree canopy. The fundamental aspect that drives greening and the cooling that can be achieved is the water in the soil. Without adequate water, vegetation will not be able to provide the cooling benefits in the short term, and will struggle to survive in the long term, especially during prolonged dry weather. Active irrigation is essential to maximise the greening and cooling from trees, shrubs, and all other forms of vegetation. Ensuring we maintain cool spots throughout the region will assist vulnerable groups to keep cool, safe, and active during heatwaves.

Stakeholder organisations reiterated the importance of tree canopy and many have taken steps to improve levels across the region. Discussions highlighted that there is a growing understanding of cooling benefits within communities, however efforts frequently encounter local resistance. It was noted that when a higher degree of engagement accompanies tree planting initiatives, and the community feels actively involved in the decision-making process, the initiative is more widely accepted. Undertaking this method does have its challenges, however, including the potential to substantially increase the time and financial costs involved, making programs less viable for the delivering organisation.

WHAT WE HEARD

Community concern regarding tree planting commonly relates to:

- the potential of trees to turn into hazards and cause damage to utilities such as powerlines and water pipes.
- frustrations around the obstruction of residential views.
- impacts on the aesthetic appeal and/or required upkeep of private properties.

⁵ June 2021, Chomley, F, ['Nature for Health and Wellbeing: A review of the evidence'](#)

COOLING ACTIVITIES ARE MORE COMPLEX THAN THEY APPEAR

A range of measures have been introduced to manage the effects on health of extreme heat in GWS communities, including the creation of outdoor splash parks and the trialling of cool refuges. These amenities are regularly cited across international research as being practical and effective options for quick cooling at a low cost in urban areas with limited access to natural bodies of water.

Shopping centres are a popular destination for GWS residents that are looking to beat the heat, but they aren't always a practical or sustainable option for those in the community who are looking for free, easily accessible options for cool recreation.

Work is being done in this space, with many stakeholders highlighting trials and programs for cooling GWS residents. While Western Sydney is home to multiple river systems, there is a limited (but growing) number of safe and accessible spots for recreational activity. Initiatives such as free outdoor splash parks and making libraries available as cool refuges prove to be equitable, cost-effective, and more accessible alternatives for many sections of the community, including families with children, those experiencing socioeconomic disadvantage, and those with limited private vehicle access.

Interventions such as these, however, are challenging to launch and maintain. Stakeholders have indicated that GWS-based initiatives can experience difficulties such as high running costs, lower than expected patronage during key periods, and problems in tracking attendance. Concerns persist around the viability of continuing these initiatives when usage rates are not high. Funding is threatened when the desired outcomes are not achieved, and other facilities, such as shopping centres, continue to draw in the crowds that are attracted by the cooling activations.

Being able to access a clean and safe local waterway for swimming can provide the GWS community with an opportunity to cool off on a hot day. However, at present, these opportunities are mainly restricted to beaches and coastal areas.

Opening new swimming sites in waterways can be a complicated and lengthy endeavour. Having suitable water quality is only one consideration in being able to open a new swimming site, with a variety of other risk assessments and approvals also required.

Furthermore, finding funding to support infrastructure and ongoing operational requirements can also prove challenging for councils and other landowners who typically manage these sites. Even once opened, natural water bodies are often not well serviced by public transport, limiting access to those with a car.

Key themes from stakeholder engagement

PLACE-BASED INTERVENTIONS CAN BE HIGHLY VALUABLE WHEN ADDRESSING HEAT, ESPECIALLY IN THE GWS CONTEXT

One theme that quickly emerged from the Dialogue's stakeholder consultation is the value of using a place-based approach for programs and initiatives. While resourcing and time restraints don't always allow for the community to be embedded into heat-related projects, we frequently heard of examples where outcomes were improved, or could have been improved, through employing this method.

The case for taking a community-centric and place-based approach to cooling interventions is further strengthened when we consider results from the [GWS Community Wellbeing Survey](#), especially in the context of community responses to urban greening initiatives. The survey, which was produced in partnership with RPS, found that access to quality green spaces featured as highly important across all demographic groups.

This is one of those layers of complexity referred to above. Even when communities broadly see value in an intervention or change, being able to provide input into how this is brought about will still influence the success of the project. Despite green infrastructure being clearly recognised by residents as important to their wellbeing, earlier examples have shown that stakeholders often still meet resistance when seeking to locally plant trees, unless significant community engagement is undertaken. While this doesn't completely alleviate the issue, it does noticeably and positively impact on project outcomes.

8 IN 10

GWS residents surveyed indicated that access to high quality natural environments is "very important" or "critical" to their wellbeing

INTERNAL CHAMPIONS FOR HEAT MANAGEMENT ARE IMPORTANT

Within the organisational context, such as councils and local health districts, the presence of internal champions for ongoing heat-related management is important to maintain momentum. Stakeholders indicated that the seasonal and changing nature of heat brings the risk of waning organisational interest. Priorities and attention can easily shift when outside of heatwave periods, and as the last two wet summer seasons did not bring the disastrous heat associated with previous years.

Success in maintaining a long-term, sustainable view of addressing the impact of heat on the community were particularly seen when stakeholder organisations had an internal advocate for such measures. In some structures this advocate was a formalised position, however, this was also seen through champions identifying the importance of addressing heat, and informally absorbing this remit into their substantive role. Through both channels, these internal advocates were able to ensure that a long-term vision for heat related interventions is maintained.

Additionally, the impacts of heat on health and the community brings a wide remit which tends to touch on the responsibilities of multiple roles across organisations. While this is often necessary, it can cause fragmentation in communication between and within organisations.



Key themes from stakeholder engagement

HEAT HAS IMPLICATIONS FOR COMMUNITY SPORT AND PHYSICAL ACTIVITY

For those wishing to play sport or exercise outdoors, heatwaves and increasing average temperatures will have implications for safety and health. Going forward, sport and exercise is likely to increasingly see heat-related delays, reductions and cancellations. In addition, the risk of heat and exercise-induced ill health will become more frequent and intense as higher heat becomes the norm. While the immediate risk to health (heat induced illness) is obvious, the longer term physical and mental health implications of potentially reduced rates of exercise, is also a challenge we will need to face.

Conversations with stakeholders have shown that cooling the area and cooling the person are the two main approaches that are taken when addressing the effects of and planning to mitigate heat in a sport and exercise context.

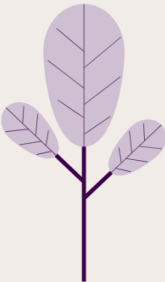
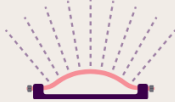


Infrastructure based interventions are often front of mind, with the intent to cool the ambient temperature around participants in sport and exercise through upgrades such as improving shade and adding air conditioning to indoor facilities. While stakeholders would like to be able to make and progress more work of this nature, cost is a significant barrier. Community sport, recreation facilities, and organisers particularly must walk the line between improving heat-related amenities, while also not passing the costs onto the participants to the point that it makes participation financially unfeasible.

Another approach is to cool the person within the hot environment through evidence-based and activity appropriate techniques. These could include improving airflow or ventilation, increasing rest break frequency, choosing lower risk times of the day to exercise, and adequately hydrating. This free [online tool](#) created by the Heat and Health Research Centre at the University of Sydney was highlighted as a highly relevant resource in this space.

While sport and exercise are not regionally specific, the disproportionate impact heat has on GWS is brought into focus when considering equity issues. GWS has higher rates of disadvantage and chronic disease burden in comparison to the rest of Sydney, and the region accounts for more than half of Greater Sydney's population. Addressing heat to ensure ongoing access to sport and exercise for the region's residents right down to the recreational community level is highly important and will be raised in the Dialogue's future work.

Potential future focus areas

Stakeholder consultation for this project highlighted several key areas that will be delved into in more detail over the coming months. The following topics are being put forward by the Dialogue, however we are open to further suggestions and collaboration opportunities.

	<h2>PLACE BASED COOLING</h2> <p>Placed based, people centred interventions are where stakeholders see some of the greatest successes. They are, however, often quite complex, costly and require long term strategic thinking. This paper will seek to look at the opportunities and challenges in this space, including urban greening, improving access to waterways for swimming and aquatic recreation, and smart irrigation.</p>  #1
#2 	<h2>INDIRECT IMPACTS OF HEAT ON HEALTH</h2> <p>Seeking to look at influences on physical activity and the onflow implications for reductions in incidental movement. Will likely include sport and physical activity, active and public transport, as well as social isolation.</p>
<h2>CASE STUDIES</h2> <p>There are so many examples of heat being addressed in smart, innovative ways across the region. This paper will seek to highlight these initiatives.</p>	#3 

Draft recommendations

As we continue our research for Heat and Health in GWS, we will look to investigate how best we can tackle the challenges facing the Western Sydney region. The below draft recommendations will guide our next set of discussions, with the aim to refine them further into a set of actionable goals that can contribute to the growing body of work attempting to tackle this hot issue.

1 **The Pondi Shuttle'** – to ensure equitable recreational access to natural water, the NSW Government should investigate methods to connect “Pondi” (Penrith Beach) to its surrounding suburbs via bus, before next summer. For example, extending the Penrith to Cranebrook loop service (784) to seasonally stop at Pondi, or a form of ‘on demand’ shuttle buses.

2 **Commit to, set targets for, and fund urban greening and cooling** – the Dialogue urges the NSW Government to demonstrate their commitment to greening and cooling GWS in the following ways:

- a. Confirm ongoing support for urban greening by including tree canopy cover and mitigating urban heat as two of the NSW Government’s Wellbeing Priorities.
- b. Set the direction of the Tree Canopy Wellbeing Priority by attaching a target of achieving 30% tree canopy cover per LGA.
- c. Facilitate ongoing accountability for target achievement by publishing an Urban Tree Canopy Coverage Dashboard, which should be publicly available and updated every two years to track progress.
- d. Support achievement of both priorities by working with local governments and stakeholders to establish an equitable, long-term funding stream for applicable projects.

3 **Place-based solutions** that are eventually scaled up, rather than one-size-fits-all measures, should be prioritised as the method for heat related mitigation and adaptation measures.

4 **Climate appropriate bus shelters** – the Dialogue recommends that Transport for NSW take responsibility for ensuring that Climate Adaptive People Shelters are installed at bus stops alongside roads under the remit of TfNSW when they are undergoing a major upgrade or being newly built.

5 **Bus service improvement** – the Dialogue reiterates the recommendation made in our submission to the *NSW Parliament Inquiry on Current and Future Public Transport Needs in Western Sydney*: consider using bus services to immediately address gaps in public transport access for the North West and South West growth areas. This should include investigating the merits of a significant re-design of existing bus networks, and the provision of new funding for contract operators to deliver expanded services and new routes.



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