

National Heat Vulnerability Observatory

Smart and Cool Places Phase 1



Planning &
Environment



UNSW
SYDNEY



Why is urban heat important?

Urban overheating is a major challenge now facing Australia's cities. It is expected that Sydney and Melbourne will have 50°C+ summer days in the near future, with Western Sydney already reaching 48.9°C in January 2020. These extreme temperatures have significant impacts on Australian cities such as:



Deaths: The death toll from heatwaves in Australia has exceeded that for any other environmental disaster (36,000 deaths between 2006 and 2017).



Increased energy consumption: Urban overheating increases cooling energy usage and can cause blackouts from increased peak electricity demand.



Increased water consumption: Urban overheating will increase water demand for irrigation and maintenance of green spaces, parks and recreational areas.



Equity issues: Those with less resources available to them are less likely to have air conditioning or the ability to pay for the increasing cost of electricity to power air conditioning.



Business: Extreme heat in commercial pedestrian streets can significantly affect retail businesses.

Hence, examining the impacts of urban overheating and heat vulnerability in Australia's cities, and developing appropriate intervention strategies to mitigate them, becomes a critical and urgent task.

Challenges

The impacts of urban overheating and heat vulnerability are acknowledged as a significant issue for the future of Australian cities across all levels of government. There are currently a wide range of mitigation and adaptation interventions that can be used to reduce the impacts of urban overheating in the built environment. A number of case studies have been conducted nationally and internationally to demonstrate the cooling potential of these interventions. However, there are considerable challenges to implementing these solutions:

- » An analysis done for one location is not generally transferable to others due to differences in local topography, climate, built form and land use.
- » There is a lack of standardised approaches to data collection, analysis and evaluation.
- » There is no consistent way to compare different mitigation measures for a given location taking in account their effectiveness to support planning controls and decisions.

NaHVO: innovative, robust & consistent

The National Heat Vulnerability Observatory (NaHVO) aims to develop rigorous national datasets and an innovative, robust and consistent methodology to report and measure the heat vulnerability issues and cooling potential of Australia's cities. NaHVO will provide:

- » **City/town specific datasets** for heat vulnerability that are tailored to specific urban contexts and local overheating issues.
- » **State and national datasets** to provide the ability to monitor the heat vulnerability and cooling potential trends of Australian cities.
- » **Performance measures and key indicators** derived from these datasets to establish a consistent methodology for heat vulnerability assessment and benchmarking.
- » **Analytical modelling** for city and precincts with what-if scenario analysis of mitigation and adaptation interventions.
- » **Data interoperability** with the NSW Digital Twin and other urban networks and government data platforms.

Smart and Cool Places Phase 1 will develop a digital capability in NSW to increase the state's resilience to urban overheating. It will inform the scaling of these approaches to all communities in NSW through the development of digital platforms and standards.

Who will benefit?



Government

- » Develop effective mitigation strategies and policies
- » Prioritise heat vulnerability investments
- » Monitor heat vulnerability performance of cities and towns
- » Track effectiveness of policies and investments over time



Planners, Developers, Architects & Designers

- » Establish specific heat mitigation planning controls and design requirements
- » Evaluate urban and building mitigation interventions for specific locations



Community Members

- » Make decisions about where to live and what can be done to adapt to extreme heat

Phase 1: NSW

Phase 1 is a pilot of NaHVO using two NSW cities: **Dubbo** and **Maitland**.



National Scale Up

The next step will be a scale up of NaHVO to integrate **Australia's largest cities**.

