

3 November 2023

Portfolio Committee 7  
Parliament House  
6 Macquarie Street  
SYDNEY NSW 2000

**Re: submission to the inquiry into the planning system and the impacts of climate change on the environment and communities**

Dear Committee,

Thank you for the opportunity to make a submission into the planning system and the impacts of climate change on the environment and communities.

While WSROC supports the intent of the proposed inquiry, we note that the current Terms of Reference omits inclusion of extreme heat. Given the severity and scale of potential impacts of extreme heat events on our communities, economy and environment, we urge the committee to ensure extreme heat is included in the inquiry, in addition to the existing focus on flood and fire.

Heat kills more Australians than fire, floods and storms combined<sup>1</sup>. Between 2001 – 2018 more than half of heat-related deaths occurred within (mostly residential) buildings<sup>2</sup>. In a 2020 WSROC survey, our community rated heat of equal importance to bushfire due to impacts to physical and mental health, quality of life, cost of living and ability to work, transport and energy disruptions<sup>3</sup>.

More broadly, consultation with industry has shown the vulnerability of key infrastructure to heat impacts including energy networks, transport systems, mains water and telecommunications systems, just to name a few<sup>4</sup>.

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<sup>1</sup> Australian Institute for Health and Welfare (2023). *Let's talk about the weather: injuries related to extreme weather*. <https://www.aihw.gov.au/reports/injury/extreme-weather-injuries/contents/extreme-heat>

<sup>2</sup> Coates et al. (2022). Heatwave fatalities in Australia, 2001 – 2018: An analysis of coronial records. *International Journal of Disaster Risk Reduction*, 67, <https://doi.org/10.1016/j.ijdrr.2021.102671>

<sup>3</sup> WSROC. (2020). *Heat Smart Gap Analysis*. <https://wsroc.com.au/media-a-resources/reports?task=download.send&id=334&catid=3&m=0>

<sup>4</sup> Resilient Sydney (2018). *A Strategy for City Resilience*, <https://www.cityofsydney.nsw.gov.au/governance-decision-making/resilient-sydney>

In addition, heat has major economic and fiscal impacts to government, households and the private sector. NSW Treasury has outlined the need to better understand economic impacts of heat on areas including workplace productivity, infrastructure costs through higher maintenance, repairs and building infrastructure to higher specifications, as well as costs relating to service delivery including increased hospital admissions also add upward pressure to healthcare expenditure<sup>5</sup>.

Australia's annual productivity loss is estimated to be \$6.9b due to heat stress<sup>6</sup>. This analysis does not capture components of the broader economy and should be viewed as a conservative estimate of the economic effect of heat. International research shows economic impacts of heat are of rising concern for cities across the world. For example, the annual costs of overheating in the United States alone will be close to 500 billion USD, by 2050 if proper mitigation strategies are not immediately implemented<sup>7</sup>.

The planning system is a critical lever to ensure heat mitigation and adaptation policies are implemented proactively. It is our belief that much more can be done within existing planning frameworks to reduce the impacts of heat across NSW, now and in future climates. Ultimately, WSROC would like to see a planning system that comprehensively supports heat resilience by addressing the three key drivers of heat impacts: climate change, urban heat and heatwaves.

Over the past seven years WSROC has worked closely with leading researchers, industry experts, community and policy makers on identifying required changes to the planning system to ensure people can survive and thrive in a warmer climate and during extreme heat events. We have listed the key areas of concern below:

## **1. Improve home and building standards to support thermal safety now and into the future**

A recent study from WSROC in partnership with WSP and UNSW modelled how outdated climate data in NSW BASIX (both existing and updated versions) is delivering new homes that are both energy hungry (high emissions) and thermally unsafe. Importantly, the study showed that NSW BASIX makes it illegal today to build homes that would perform well in 2030 and 2050 climates. Specifically the study found:

- Dwellings in Western Sydney are currently designed for a historical climate which does not represent today's conditions, nor those we will experience in future.

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<sup>5</sup> NSW Treasury (2021). *TTRP21-05 An indicative assessment of four key areas of climate risk for the 2021 intergenerational report*. [www.treasury.nsw.gov.au/documents/ttrp21-05-indicative-assessment-four-key-areas-climate-risk-2021-nsw-intergenerational](http://www.treasury.nsw.gov.au/documents/ttrp21-05-indicative-assessment-four-key-areas-climate-risk-2021-nsw-intergenerational)

<sup>6</sup> . Zander, K. et al. Heat stress causes substantial labour productivity loss in Australia. *Nature Climate Change*, 5(7), 647–651; 2015

<sup>7</sup> Arsh-Rock. (n.d.). *The cost of extreme heat* <https://onebillionresilient.org/project/the-cost-of-heat/>

- BASIX-compliant homes became thermally unsafe when tested in 2030, 2050 climate conditions, as well as under heatwave conditions (modelled on the 2017 heatwave).
- Homes modified to perform better in the future, failed to meet today's NSW BASIX standards and therefore are not allowed to be built. This is because current thermal comfort standards are based on pre-2010 climate, where heating is prioritised over cooling. Whereas the current and future climates will require a stronger focus on cooling.
- If we continue designing for historical climate, homes will neither be energy efficient nor heat resilient. This results in increased energy network demand, higher household energy bills, higher residential emissions and increased health impacts.

**Recommendation:**

- Review and update BASIX and the Sustainable Building SEPP with more representative climate files and encourage construction of buildings that are designed for the future climate, minimising cooling energy consumption, and delivering better heat resilience.
- Address thermal safety to ensure at least part of a dwelling can maintain an acceptable indoor environment during extreme weather events without a mechanical heating and cooling system.

The full study and results can be downloaded from: [Future Proofing Residential Development in Western Sydney 2023](#).

## **2. Embed urban heat island mitigation into state planning policy**

Urban heat is place-based heating produced by the quality and design of the built environment. As the NSW Government looks to accelerate housing delivery and increase residential densities (for which WSROC offers in-principle support), standardising heat-minimising urban design will become increasingly important to reduce temperatures and peak energy demand.

It will be critical to ensure the planning system addresses heat mitigation and adaptation at both the building scale and the neighbourhood or precinct scale. Without mandated consideration or control for heat risk, this risk is ultimately passed down to communities and residents. As decisions are made through the planning process, heat risk should be, where possible, effectively mitigated through targeted initiatives, with the aim being that the long-term residual risk at the community or household level is reduced (Figure 1)<sup>8</sup>.

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<sup>8</sup> WSROC. (2022). *Cool Suburbs user guide and science rationale*, <https://coolsuburbs.com.au/>

There are opportunities to implement heat mitigation and adaptation measures across multiple development scales. Reducing the Urban Heat Island (UHI) effect will be most effectively achieved if mitigation measures are implemented cumulatively and at scale. Decisions to ensure a well-designed urban morphology, that prioritises appropriate street orientation, wind paths, green space and shading, as well as measures to keep water in the landscape, are best made at neighbourhood or precinct scale with design controls over the full development cycle.

The coordination of land use planning and water planning is one example where broader outcomes can be achieved to increase the presence of water in the environment (to support green infrastructure for cooling), reduce UHI and the impact on water and energy infrastructure. State and local government working with the utilities prior to the release of new development areas will ensure that all stakeholder requirements are complementary, not conflicting.

WSROC has been working with leading researchers, industry, government and councils to deliver evidence-based guidance that translates urban cooling science into practical planning policy. As a result, several local councils have integrated heat resilience into their LEPs and DCPs however this is a new area for planning, and action remains fragmented. Around half of new housing development in Western Sydney, those areas at highest risk of heat impacts, bypass council planning pathways. Leadership from the NSW Government is essential not just for guiding consistent action across all LGAs to achieve cumulative cooling impacts, but also to ensure measures are applied to development approved via state pathways including, but not limited to, the Standard Instrument LEP, Exempt and Complying Development Codes, Growth Centres SEPPs and Codes SEPPs.

Action to address UHI through planning policy is often opposed on the basis of affordability, however we believe the issue requires far more examination to independently assess the costs and benefits of action on UHI, as well as the costs of inaction. Such assessment should be conducted at a scale appropriate to the issue, reflecting the cumulative nature of UHI, as well as its far-reaching impacts. Research shows that failing to implement proactive strategies now, will lead to reactive policies (e.g. retrofits) which are estimated to cost 3-4 times more, without properly solving the problem<sup>9</sup>.

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<sup>9</sup> Jie Feng, Kai Gao, H. Khan, G. Ulpiani, K. Vasilakopoulou, G. Young Yun, M. Santamouris, (2023). Overheating of Cities - Magnitude, Characteristics, Impact, Mitigation and Adaptation and Future Challenges, *Annual Review of Environment and Resources*.

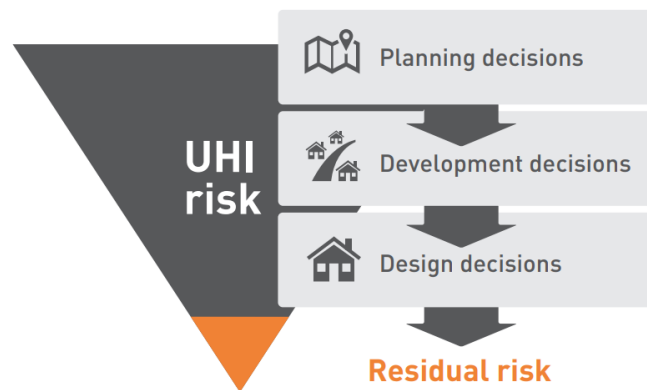


Figure 1. Heat risk can be addressed across the planning and development process.

**Recommendation:**

- Ensure heat risk is holistically and proactively addressed at both the building scale and the neighbourhood or precinct scale.
- Ensure heat mitigation and adaptation requirements are embedded across all levels of the planning system, including, but not limited to, Standard Instrument LEP, Exempt and Complying Development Codes, Growth Centres SEPPs, Codes SEPPs and State Significant Development.

For further information on urban heat island mitigation see: [Urban Heat Planning Toolkit 2021](#) and [Cool Suburbs Tool and Science Rationale 2022](#).

**3. Planning for extreme heat and heatwaves**

Planning for extreme heat is an emerging area that is receiving significant international interest. Planning built environments that support community adaptive capacity and successful emergency response to heatwaves requires a unique set of considerations beyond general climate adaptation or urban heat island mitigation. WSROC would welcome the opportunity to work with the NSW Government to bring planning requirements for heatwave in line with those for fire and flood. Doing so would make our state a world leader in extreme heat resilience.

We highlight the opportunity that presents itself in the State Disaster Mitigation Plan (SDMP) and Disaster Adaptation Plans (DAP) as set out in the NSW Reconstruction Authority Act 2022 (NSW) as a potential mechanism for the NSW planning system to consider extreme heat.

**Recommendations:**

Introduce planning measures to improve extreme heat management include (but are not limited to):

- Ensuring new homes (all typologies) can maintain survivable temperatures in heatwave conditions, with and without power, to support life safety of low-income and other at-risk groups.
- Developing standards for public buildings to act as cool refuges and/or heatwave evacuation centres (e.g. islanded power and batteries).
- Investigating ways to secure alternative energy supply in case of blackouts (e.g. review standards for solar and inverter systems to ensure they can continue to supply homes even in blackout conditions, support community batteries).
- Supporting community adaptive capacity with minimum requirements for shading and water along transport corridors and in public spaces.
- Recognition of the importance of maintaining green infrastructure, in both private and public open space, during extreme heat events. Consideration should be given to non-monetary benefits in business cases and funding applications that promote quality green open spaces.
- Explore the State Disaster Mitigation Plan (SDMP) and Disaster Adaptation Plans (DAP) as a potential mechanism for the NSW planning system to consider extreme heat.

For further information on how the planning system can support heatwave management, see: [Heat Smart Resilience Framework 2021](#)

#### **4. Barriers and opportunities for climate resilient planning**

Beyond the specifics of addressing heat resilience, there are a number of broader challenges impacting the planning system's capacity to deliver climate resilience outcomes. Far more work is needed to understand, articulate and align policy mechanisms at federal, state and local levels, as well as between sectors. WSROC recommends this inquiry investigate the roles and responsibilities for delivering climate resilience at each level of government to understand where barriers and opportunities for action exist. Addressing climate change is a shared responsibility and it will be critical to ensure NSW has a planning system that takes a comprehensive approach to climate change mitigation and adaptation. Several examples are provided below.

##### ***4.1 Local government action is highly dependent on state-level planning policies***

Councils have been working to implement a range of climate mitigation measures in addition to adaptation methods in the sections of the planning framework governed by local government. Areas where councils have been trying to implement meaningful change include urban heat island mitigation, building residential housing with adequate infrastructure for electric vehicles and appropriate source separation of methane producing organic waste. It is important to note that if requirements or standards are not strongly

articulated and embedded in state-level planning policies, councils are mostly powerless to deliver change beyond their own assets.

#### *4.1.1 Heat resilience*

WSROC is aware there are a number of challenges in funding, delivering and maintaining heat resilient built environments in practice. This ranges from lack of formal recognition of the heat issue in federal and state policy, policy conflicts between different levels and sectors of government, understanding of life-cycle costs and benefits of resilient design, and accounting practices for appreciating heat resilience assets like trees. For example, heatwave is not recognised as a designated disaster in federal policy limiting state and local governments' capacity to 'build back better' and ensure new infrastructure is resilient to this hazard.

#### *4.1.2 Food Organics Garden Organics*

Under the NSW Waste and Sustainable Materials Strategy 2041, all households in NSW will be required to have access to a separate waste collection of organic waste by 2030. This ambitious target will need to be delivered by local government and will require the retrofitting of specific waste collection infrastructure in existing medium and high-density housing, and modification of planning controls for new residential apartments. These changes are being led by local government, despite being a NSW Government initiative. Further support is required from the NSW Government and in the state planning framework to undertake these reasonable and pressing climate mitigation and adaptation measures. Given the years it takes to implement change in the planning framework and impending deadlines for delivery of specific climate mitigation actions, such as the 2030 organic waste mandate, change must occur quickly and be supported by change to NSW Government planning policies, otherwise these outcomes are unlikely to be delivered.

### **4.2 State Significant Development**

The capacity of current mechanisms to articulate and address cumulative impacts of climate change is another key area of concern. Current legislation, such as that used for state significant infrastructure preferences local impacts on a project by project (or even stage of a project) basis, and as such, does not outline clear pathways for full consideration of cumulative impacts like heat, public health, and climate change generally. These impacts should be considered as early as possible in the design process when options are being considered.

#### **Recommendation:**

- Insert a new object on climate change in the Environmental Planning and Assessment Act 1979.
- Develop a Climate Change State Environmental Planning Policy (SEPP) and update existing SEPPs to align.

- Require all planning authorities to address climate change considerations when preparing and making strategic plans (SEPPs, regional plans, district plans, local strategic planning statements, LEPs and DCPs).
- Take actions to support local government areas in strategic planning for climate change.
- Update state planning framework to support local government with the implementation of the 2030 organic waste mandate.
- Require a Climate Impact Statement for major projects.
- Review the assessment process for State Significant Development to ensure the cumulative impacts of climate change are considered as early as possible in the design process of state significant infrastructure (i.e. when options are being considered).

### **What's next: The Greater Sydney Heat Taskforce**

In recognition of the scale and complexity of the heat resilience challenge, WSROC and Resilient Sydney have received joint funding from the Australian Government and NSW Reconstruction Authority to establish a Greater Sydney Heat Taskforce. The Taskforce brings together senior executives from federal, state and local government, industry and the community sector to improve governance for managing heat and developing a five-year Heat Smart City Plan.

With a changing climate, rapid development, and El Nino predicted for the next few years, we anticipate these issues will become of increasing importance to government, industry and communities. We would welcome the opportunity to brief the Committee further on our work.

Yours faithfully,

A handwritten signature in blue ink that reads "Charles Casuscelli". The signature is written in a cursive, slightly slanted style.

Charles Casuscelli RFD

WSROC CEO