Advocating for the people of Western Sydney

Western Sydney Regional Organisation of Councils Ltd
Suite 201, Level 2, 85 Flushcombe Road
PO Box 63, Blacktown, NSW 2148
Tel (02) 9671 4333 Fax (02) 9621 7741
Email info@wsroc.com.au www.wsroc.com.au

SUBMISSION:

Net Zero Commission Consultation Paper

Western Sydney Regional Organisation of Councils Limited.

July 2025

This document

WSROC thanks the NSW Net Zero Commission for the opportunity to provide feedback on this Consultation Paper.

Some of our member councils, and councils participating in relevant WSROC programs, will make their own submission. This document should be viewed in addition, and complementary to those submissions.

We would welcome the opportunity to discuss local government views and requirements further.

Should you have any further questions on this submission, please contact Judith Bruinsma at WSROC on (02) 9671 4333 or at judith@wsroc.com.au.

Judith Bruinsma

Interim CEO & Project Coordinator

WSROC

Suite 201, Level 2, 85 Flushcombe Road, Blacktown

PO Box 63, Blacktown NSW 2148

Phone: 02 9671 4333

Email: judith@wsroc.com.au or info@wsroc.com.au

Web: wsroc.com.au

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1. About WSROC

Formed in 1973, the Western Sydney Regional Organisation of Councils (WSROC), represents local government across Greater Western Sydney.

With a reputation for considered policy analysis and bipartisan advocacy, WSROC brings a collective voice to those issues which are crucial for Western Sydney's growing population. WSROC's primary role is to represent the councils and communities of Greater Western Sydney as well as developing resource sharing and other co-operative projects between Greater Western Sydney councils.

Over the past 50 years WSROC has developed a strong reputation for bi-partisan advocacy, especially in the key areas of economic and social development, job creation, transport and infrastructure, planning, health and the environment, and has proven itself a reliable partner in intergovernmental relations, regional strategic planning, and coordinating joint projects and programs. Current programs include:

- Western Sydney Regional Waste and Sustainable Materials Strategy 2022-27

  The Western Sydney Regional Waste and Sustainable Materials Strategy 2022-27 ('the Strategy') is a collaboration between councils and WSROC to transition towards a circular economy. Since 2014, Western Sydney councils have successfully developed and delivered three regional waste strategies, fostering a successful and collaborative working relationship. The strategy not only builds on the lessons and achievements from the previous strategies to ensure continuous improvements but reflects the significant changes in the management of waste in Australia. *Participants include: Blacktown City Council, Blue Mountains City Council, Cumberland City Council, Fairfield City Council, Hawkesbury City Council, The Hills Shire Council, Liverpool City Council and City of Parramatta.*

- Western Sydney Energy Program

  Established in 2019, the Western Sydney Energy Program is a collaboration between Western Sydney councils. The program aims to realise energy, cost and emission savings for Western Sydney councils and their communities. To date, collective efforts of Western Sydney councils have already saved more than $75 million, and reduced emissions by over 650,000 tCO2e across a wide range of projects such as lighting and equipment upgrades, renewable energy programs, and Smart Cities initiatives. The Western Sydney Energy Program aims to maximise existing programs as well as implement new initiatives.

  Participants include: Blacktown City Council, Blue Mountains City Council, Camden City Council, Cumberland City Council, Hawkesbury City Council, The Hills Shire Council, Liverpool City Council and City of Parramatta.

- Heat Resilience Program

  Heat is Australia's most deadly natural hazard with significant and growing impacts on our communities, economy, environment, and infrastructure. Despite these impacts, Sydney has no coordinated arrangements in place to measure, mitigate or manage heat impacts. In 2023 WSROC and Resilient Sydney established the Greater Sydney Heat Taskforce with funding from Australian (NEMA) and NSW (Recovery Authority) governments to address this gap, aiming towards a long-term vision where people living in Greater Sydney can survive and thrive in a warming climate and during extreme heat events. Taskforce program outputs include:

  - Heat Smart City Plan: A multi-sector heat resilience plan for Greater Sydney.
  - Cool Suburbs NSW: A science-led heat resilience rating tool for urban design and development (Coolsuburbs.au).
  - Community Heatwave Risk Assessment: Place-based heatwave risk assessment tool that focuses on community health and wellbeing.
  - Heatwave Management Guide: For local government on the management of heatwaves.

  Taskforce members: Resilient Sydney, Blacktown City Council, Liverpool City Council, NSW Department of Planning, Housing and Infrastructure, NSW Health, NSW Reconstruction Authority, Transport for NSW, NSW Department of Climate Change, Energy, the Environment and Water, NSW Police, Sydney Water, Committee for Sydney, Endeavour Energy, Swiss Re, Property Council of Australia, Green Building Council of Australia, Australian Red Cross, Sweltering Cities, Western Sydney Community Forum, Western Sydney University, UNSW, University of Sydney.

- Cumberland Plains Conservation Plan (CPCP) Compliance Support Program

  WSROC in partnership with the NSW Department of Planning, Housing and Infrastructure is implementing two new initiatives in support of the CPCP:

  - Caring for Country Council Grants Program (2 years),
  - Compliance Strategy Pilot (15 months), all CPCP councils.

  The CPCP has authority by virtue of the NSW Biodiversity Conservation Act 2016 and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. The CPCP recognises councils as one of the key delivery partners for implementing its conservation program. Both aforementioned initiatives form critical components of the CPCP deliverables and are designed to assist councils with their contribution towards achieving the CPCP outcomes.

  CPCP participants: Blacktown City Council, Blue Mountains City Council, Camden Council, Campbelltown City Council, Fairfield City Council, Hawkesbury City Council, Liverpool City Council, Penrith City Council and Wollondilly City Council.

2. Climate change in the Western Sydney region

WSROC member councils and their communities are already experiencing the impacts of a changing climate through the increased frequency and intensity of extreme events (flood, bushfire, heatwave), but they are also feeling the pressures due that general rising temperatures bring that impact liveability and cost of living standards.

WSROC has been working with its members to better understand the future impacts of climate change for the environment, energy, human health, infrastructure and service provision.

An important fact for acknowledgement by the Commission, is the rapid progress of climate change in our region. Several projects that WSROC has undertaken has sought to compare current climate (2015-2025 observed weather data) with future climate scenarios as outlined by the IPCC. Shockingly, in each case it has become apparent that Western Sydney observed weather is already exceeding those expected in 2070 or 2090 climate years under high emissions scenarios. The degree to which current conditions exceed projections increases the further you move west from Observatory Hill (Figure 1). These findings speak to the urgency of adaptation – Western Sydney is experiencing far-future climate conditions today.

Recommendation:

- Ensure better understanding and recognition of the discrepancy between modelled future climate change versus actual change.

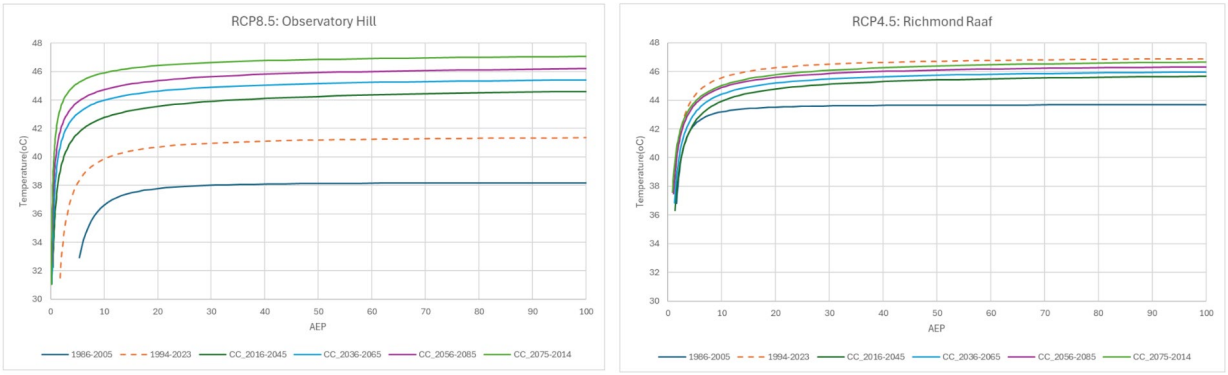

FIGURE 1. HEATWAVE ANNUAL EXCEEDANCE PROBABILITY FOR OBSERVATORY HILL (LEFT) AND RICHMOND RAAF (RIGHT) DURING THE REFERENCE PERIOD (1986 – 2005), PRESENT TIME PERIOD (1994 – 2023), AND CLIMATE CHANGE SCENARIOS RCP 8.5 EMISSION SCENARIO)

3. Local government: A key gap in the consultation paper

WSROC appreciates the depth and breadth of the consultation questions provided in this paper. However, we are concerned that there has been little consideration of measures to support and empower local government to support delivery of NSW's Net Zero Transition and adaptation actions.

As will be highlighted in further detail in the following sections, local government plays a critical, yet underappreciated role in enabling NSW's transition.

If local efforts were counted, current council targets could contribute 29% of Australia's commitments by 2035. However, support is needed to address structural and practical challenges faced by councils to enable them to fulfil their potential in climate change mitigation and adaptation efforts[1].

Not only is local government a delivery mechanism for many state emissions reduction programs, but our connections with, and experience engaging with communities could be a powerful resource for delivering on the Commission's objectives.

Recommendation:

- Ensure local government is appropriately recognised in the Commission's work and that it is reflected in NSW government programs and policies.

3.1 Structural collaboration and resourcing

Local Government needs structural support to maximise their potential on climate mitigation and adaptation initiatives.

Establishing a coordinated state-wide local government program would support all levels of government to deliver on their climate mitigation and adaptation targets by promoting effective coordination between and across governments and their communities. The program should provide support for councils to mitigate emissions from their own operations, actions they can facilitate across their community, effective monitoring and reporting and climate risk and adaptation measures. This would greatly contribute to state and federal emissions targets and initiatives.

Existing initiatives could be considered for replication, including the NSW Government's Joint Organisation (JO) Net Zero Acceleration program (JONZA). This program provides funding and support for JOs to develop net zero pathways and implement projects that reduce emissions. It would be beneficial to expand this program to metropolitan councils.

[1] Australian Local Government Climate Review 2024

In addition, support and resourcing for regional coordination programs for local government would be powerful in strengthening outcomes and achieving efficiencies.

WSROC's Western Sydney Energy Program is an example of regional coordination on emission reductions for local government and community. Since 2019, the program has achieved a 650 ktCO2e reduction in emissions and saved $75 million in energy bills. However much more could be achieved with resourcing for ongoing regional collaboration.

Recommendations:

- Establish formal coordination between and across all levels of government to overcome the current fragmented approach to policy, funding and resourcing
- Support, expand and replicate regional programs such as the Western Sydney Energy Program or the NSW Government's Joint Organisation (JO) Net Zero Acceleration program across all of NSW.

3.2 Consistent reporting standards

Our councils strongly recommend the development of consistent climate data and reporting standards. Current lack of consistency in data and reporting makes benchmarking and tracking process difficult for local government.

Provide clear guidance for local government on reporting standards, to bring them in line with the Australian Sustainability Reporting Standards developed for businesses, and advocate for these to be adopted nationally. Local risk needs to be matched with investment to enable rapid and deep emissions reductions and embed climate change risk management in council operations.

Recommendation:

- Work with all levels of government to establish consistent reporting standards

3.3 Access to data

Local Government needs standard, accessible place-based data to inform investment cases and interventions that advance State's net zero ambitions in their communities. Two thirds of Sydney's councils have now set net zero targets for their LGAs and are progressively endorsing and implementing localised net zero action and investment plans to deliver more efficient buildings, electrification programs, collaborative renewables procurement and greening initiatives that reduce emissions. To enable councils to support NSW Government net zero targets it is imperative that the state government support baseline data and tools such as the Net Zero App for place-based net zero community plans, linked to NSW policies.

This enables councils to concentrate limited resources on actions local government can control – such as setting local plans and investing in people and programs to make net zero implementation happen in place.

It is disappointing that the NSW Government ceased funding (30 June 2025) for the Net Zero App which provides a consistent set of projections aligned to State government policies for Greater Sydney decision makers to develop locally relevant evidence-based policies and plans. WSROC members Blacktown City Council and Blue Mountains City Council were the most recent councils to use the App to develop and endorse evidence based locally relevant Net Zero Plans for their LGAs.

The Global Protocol for Community-scale Greenhouse Gas Emission Inventories (GPC) provides two approaches to developing community emissions reporting inventories, a "territorial" approach and a "city-induced" (consumption based) approach. The "city-induced" approach focuses on how business and residential activity and consumption within a defined geographic boundary leads to an increase or reduction in greenhouse gas emissions. For local governments engaging their community in climate mitigation efforts, this reporting method best highlights community opportunities to reduce emissions.

Resilient Sydney has worked extensively to support council access to place-based datasets for our region with the Resilient Sydney data Platform. This resource has been invaluable for WSROC members, and we urge the NSW Government to support this by collaborating to develop and share datasets where place-based data is either unavailable or needs to be evolved, in particular for commercial waste generation and residential travel.

There is an ability for NSW Government to share more standardised information that could support councils to model and implement changes to services and functions where emission reduction can be achieved. For example, there is no simple calculation guidance or standardised calculation for councils to understand the emission modelling of council waste collection vehicles. This results in various approaches being taken to calculate emissions, and high costs to councils for consultancy costs to access basic assessments. It is highly likely that the NSW Government is already undertaking similar emissions modelling in various agencies and could share methodology and tools enabling calculations with councils to reduce costs (and therefore barriers) and increase consistency in analysis and reporting.

Recommendations:

- Work with local government to develop standard, accessible place-based data
- Provide systems to support councils to more efficiently and accurately gather Scope 3 emissions data.
- Provide common tools for the creation and update of corporate emissions inventories.
- Develop standardised modelling to assist councils in calculation of the emissions of council waste collection vehicles

3.4 Consultation on program design

Local councils are often relied on as the delivery mechanism for state government programs yet are rarely consulted during program design. This is despite local government's strong understanding of the residential and business communities in their LGAs, including cultural, political and logistical factors that may influence a program's success. As such, councils can make a significant contribution to the design of state programs including providing advice on:

- What's needed to enable local government support of programs (including considerations of local regulation, processes, skills and resourcing).
- Community sentiment regarding proposed mitigation or adaptation programs, and how to manage these.
- Potential implementation barriers (political, cultural or logistical) and how to overcome these.
- Effective implementation pathways and partnerships.

When local government is not consulted on state program design, or their advice is disregarded, it is communities who miss out. This is particularly the case in Western Sydney where program uptake can be slowed by economic factors, language or cultural barriers, and/or knowledge and trust of government.

Genuine co-design processes that capture and respond to local advice would significantly improve the effectiveness and success of government programs and grant provisions – delivering more effective outcomes.

Recommendation:

- Engage local government early on for program design as well as implementation.

4. Mitigation: NSW's Net Zero Transition

Greater Western Sydney generates over 25 million tonnes of CO_2e annually, representing 7%[2] of Australia's total emissions (Figure 2). The region is already facing the impacts of climate change - including rising temperatures and more frequent extreme weather events. At the same time, increasing energy costs place pressure on both councils and the communities they serve.

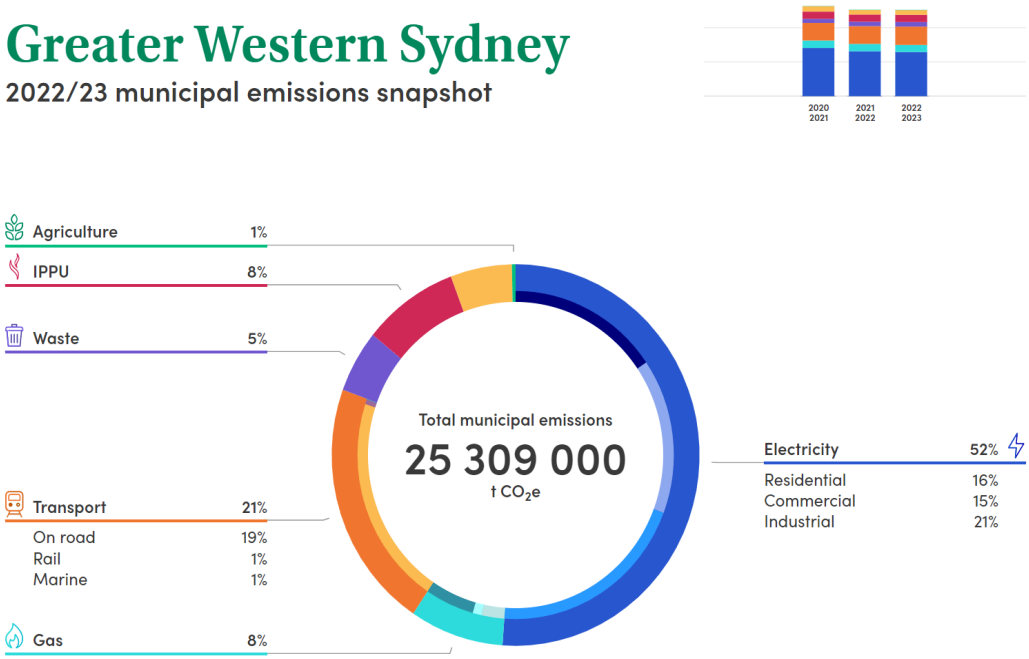

FIGURE 2. SOURCE: SNAPSHOT CLIMATE

Through the efforts of State and Local Governments, organisations and the personal decisions of communities and residents, NSW is moving quickly towards reducing emissions throughout multiple sectors. Advances in technology and best practice across sectors such as transportation, waste and energy are aiding in the transition of NSW to a net zero state. To increase the chances of NSW reaching its 2030 and 2035 targets, further investment should be made in potential carbon sink and capture strategies. As outlined in the Consultation Paper, multiple sectors are accelerating emissions reductions technology and best practice to reduce overall emissions from public and private sources. To aid further, increased investment should be put toward sectors including reforestation, ecosystem rehabilitation and environmental protection, which can actively store emissions and protect nature carbon sinks.

The Commission should consider the social and economic effects of NSW targets. It is important to monitor how policies affect energy costs, jobs and small businesses, such as the number of solar jobs in Blacktown or financial impacts on households in Fairfield.

[2] Snapshot Climate Tool (https://snapshotclimate.com.au/)

In addition, the review should include council-led initiatives, as there is opportunity to learn from local projects such as the WSROC Community Energy Project (Solar and Battery Bulk-buy). This program led to a Virtual Power Plant for Residents, Businesses and Council owned/operated properties.

Recommendations:

- Invest in industries which can actively store emissions and protect nature carbon sink
- Ensure council-led initiatives are reviewed for learning and replication
- Consider social and economic benefits

Deployment of electricity generation and infrastructure

Western Sydney councils offer the following suggestions to speed up infrastructure for accelerated reduction of emissions:

Recommendations:

- Simplify planning with local involvement: Set clear timelines for project approvals and engage councils early. See the NSW Renewable Energy Planning Framework:
- Speed up transmission projects: Prioritise lines linking Renewable Energy Zones (REZs) to Greater Western Sydney. Use the Transmission Acceleration Facility and the Capacity Investment Scheme.
- Engage communities early: Ensure early engagement and benefit-sharing, like funding local batteries.
- Support local industry and jobs: Provide clear investment signals to attract developers and manufacturers - e.g. solar in Blacktown, batteries in Liverpool.
- Train the local workforce: Expand clean energy courses through TAFE NSW.

4.1 Engaging communities in the transition

Cross-government collaboration

As outlined above, local government is well-placed to advise on and support delivery of community engagement relating to climate change mitigation and adaptation. However, there are certain emissions reduction projects that are complex and require cross-agency and council collaboration to achieve the desired outcomes set by NSW Government. In these cases organisations like the Net Zero Commission can support faster delivery of outcomes by facilitating a cross-governmental approach.

For example, the NSW EPA has tasked councils with the provision of FOGO services to every household in NSW to contribute to meeting the state's Net Zero targets. While new FOGO services are simple to deliver in traditional forms of housing (e.g. free-standing houses), it is far more complex and costly to retrofit

organic waste services in medium and high-density housing that was has no provision for this type of waste in its design. The provision of waste infrastructure and disposal processes such as waste chutes in apartments are designed at project inception and difficult to add onto after construction is complete. For example, the images below of dual chute systems show such common waste infrastructure makes no easy provision for the addition of separate organic waste disposal through these pathways constructed into the buildings. *(Images provided by The Hills Shire Council).*

WSROC has been working with leading councils and the NSW EPA to support NSW councils to update local planning controls to facilitiate the design of residential buildings that accommodate the seperation of organic waste from residual waste disposed of to landfill. Similar measures are urgently needed for the significant volume of residential development approved through state planning approval pathways.

This is also the case for EV charging and other measures delivering net zero outcomes. There is work that can be done to take measures to ensure new buildings are designed and constructed with these changing practices in mind. WSROC would welcome the Commission's involvement to engage with the relevant agencies to ensure planning requirements can be updated to reflect these NSW Government mandates and priorities for mitigation and adaptation. Delivering the right policy and infrastructure that shapes the community's behaviour and enables the community to participate in meaningful action is critical to achieve greater gains.

Recommendations:

- Partner with local government and community organisations to design programs that address community needs.
- Update state level planning controls to require organic waste separation in new residential development
- Facilitate cross-agency collaboration on mitigation and adaptation programs
- Share best practice examples where community engagement was delivered well.

Benefit sharing

Engagement with, involvement in, and benefit from the energy transition is not currently evenly distributed across the community. This may be for a range of reasons including financial limitations, tenancy restrictions, accessibility, or because they are focused on more urgent everyday matters.

WSROC notes that some current NSW Government programs such as strata energy roll-out have had limited success in some parts of Western Sydney due to the nature of communication and program design. We recommend a stronger focus on community engagement through program design and delivery phases of energy programs. This will be critical to ensure a just and equitable transition.

Further, while community engagement in the energy transition is important, WSROC recognises that not all members of the community are in a position to contribute where the focus of discussion and engagement is on costly technology uptake. It is suggested that more work could be done to engage the community in emissions abatement including through food waste disposal, reductions in energy use, and retention of existing tree canopy.

This is particularly important as the energy transition itself is a resource and energy intensive process. There is some evidence to suggest that households increase energy use with the energy transition by consuming more energy due to reduced costs.

Recommendation:

- Fund and fast-track renewable energy projects that set a high standard for community engagement, co-design, including First Nations consultation, benefit sharing and the delivery of good biodiversity outcomes
- Ensure benefits of energy programs are shared equitably by ensure benefits go beyond landowners to all impacted residents. For example, direct funding to council-managed programs for low-income households.
- Implement processes for independent oversight. Establish public reporting and third-party audits to track delivery of promised benefits and engagement effectiveness.

4.2 First Nations people

WSROC delivers the Caring for Country Grants Program for nine Western Sydney councils. Through this program, we recognise the importance of building relationships between communities and government bodies. We recommend the Department of Planning, Housing and Infrastructure's Caring for Country Strategy as a good example of a co-design process with First Nations people. The process that the Department took in developing this Strategy was many years of consultation across Western Sydney, co-

designing it with the community. Community members had a voice and input in the development of the Strategy, which ultimately lead to more successful outcomes.

Involvement in decision making

Self-determination is critical for First Nations communities. Focusing outcomes on giving communities the ability and resources to be involved in solutions that ultimately affect them is key, especially for issues such as climate mitigation, adaptation and environmental stewardship. As mentioned above, by giving First Nations peoples a voice in the consultation process and the opportunity to achieve better outcomes for themselves and their communities should be a key incentive provided when it comes to engagement.

The best way to achieve connection and support is by having First Nation staff employed to undertake the face-to-face consultation with communities across NSW.

There is a need to undertake consultation with First Nations Communities to understand cultural knowledge and practice. This could be done with Local Lands Councils, First Nations lead organisations or local government. When working with First Nation led organisations to engage with Traditional owners, Elders and community members, to achieve better outcomes or participation from community, there is a protocol that their time and input is acknowledged, and a form of reimbursement is needed. Elders and members of the community are always the go to for consultations or input from many government organisations, industry and the wider community, it is important to remember that. Reimbursement of their time is an important acknowledgement of the value and effort of the input into consultation.

Consultation needs to be undertaken in an appropriate setting. By conducting engagement in familiar environments and in local places, First Nations people may be more willing to engage with and support Government consultation. Providing a safe and open setting, may require transportation for community members.

To achieve the best outcome, gaining firsthand information and local knowledge will inform the commission about best practices, resilience and to finding ways with community to address targets.

Housing

First Nation communities are currently not being engaged or included in sharing the benefits of the energy transition, compared to other demographics in the wider communities. They have been left out of the process and opportunities for financial independence.

In Greater Western Sydney, a large number of First Nation communities live in social housing which don't have suitable requirements such as insulation, heating or cooling for them. WSROC strongly recommends that social housing retrofit programs are implemented. Refer also to page 28 of this submission.

First Nation people are dealing with many issues that has arisen since colonisation and the policies that have followed. Health, education, racism, employment and housing are some of the issues that communities face daily. Ensuring no-one is left behind should be at the core of our energy transition.

Access to Country

Many Western Sydney indigenous communities do not have access to country; supporting Caring for Country initiatives in Western Sydney will help increase tree cover, introduction in Cultural burning, bringing back healthy country. Local Lands Councils in Western Sydney, should be given the opportunity to have renewable energy projects on their lands. This would create income for members and follow onto community. Local Lands Councils are asset rich, but do not have funds to manage their lands, this solution would help lead to self-determination and healthy country as they have funds to manage their lands the way they would like too.

Local governments can help facilitate the above actions, as most have First Nation staff who can assist identifying needs of the community and connecting these needs to state government targets. They can also provide resources such as transport, venues and local knowledge.

Recommendations:

- Use existing best practice guidance for engagement with First Nations people, for example Caring for Country or the Connecting to Country resources
- Develop, implement and scale up First Nations-led, nature-based solutions as a mechanism to rehabilitate and revitalise landscapes, increase community adaptation and emissions drawdown.
- WSROC recommends the following key steps for engaging with First Nations people:
    - Recruiting First Nation staff to help undertake consultation with First Nations Communities.
    - Undertake appropriate consultation to understand their cultural knowledge and practices that could support adaption.
    - Undertake consultations with First Nation communities in a safe and open setting.
    - Walk on Country and learn about First Nation culture in the local area.
- Invest in Caring for Country initiatives.
- Fast track social housing retrofit programs for at-risk communities. Ensure occupants benefit from energy savings through solar, battery, insulation and equipment upgrades.

4.3 Reducing sector emissions

4.3.1 Transport and freight

Transport emissions make up almost one third (around 5.8m tonnes) of Western Sydney's total emissions, with light passenger vehicles accounting for half of the transport emissions. This makes transport one of the most emission-intensive sectors in the region.

Western Sydney is highly car-dependent, in part due to the lack of suitable alternative active and public transport options.

Transport electrification

WSROC's *Western Sydney Electric Vehicle Roadmap* provides strategic direction to transition Western Sydney to electric transport.

Public charging accessibility has been identified as a major barrier in uptake of electric vehicles. While the efforts of the NSW and Australian governments on public charging infrastructure to date are to be commended, current programs will not meet the region's evolving place-based needs, particularly away from main highways at neighbourhood and street-level locations; where a substantial number of vehicles require charging.

While most EV charging happens at home, public charging facilities serve a major role in encouraging EV uptake; providing a sense of security that drivers won't run out of battery, even when making longer or unplanned trips. In addition, approximately 30% of people do not have access to charging facilities at home. This includes those who don't have a dedicated parking space, or where apartment buildings have not been retrofitted for EV. For this group, public chargers are the only way to charge their EV.

Unfortunately, Western Sydney is falling well behind the rest of the city when it comes to public charging facilities. EV chargers are heavily concentrated in the CBD and inner suburbs, while the West and South-West are home to very few chargers.[3]

It is estimated that Greater Western Sydney could see up to 371,000 EVs by 2030, based on recent projections by Deloitte[3]. This would require a significant scale-up in public charging infrastructure, with a minimum of ~37,000 chargers across the region, assuming a conservative EV-to-charger ratio of 10:1.

Achieving intra-regional connectivity becomes paramount, especially as the EV market accelerates, given the urban and population growth of Greater Western Sydney. Regions are expected to face increasing

[3] Deloitte (2025). Charging Ahead: Western Sydney's EV Future Western Sydney Economic Outlook

pressure to install publicly available chargers, ensuring accessibility for all residents. This emphasis on accessibility is crucial for fostering equity across Greater Western Sydney's diverse communities.

Recommendation:

- Address public charging black spots by implementing a coordinated roll out of charging infrastructure. Coordination between all levels of government, utilities and charging providers will provide certainty to industry, efficiencies of implementation and will prioritise equity of access for all communities. This should include access for apartment dwellers and renters through kerbside or shared infrastructure solutions.
- Recognise the Role of Local Government: The Western Sydney Electric Vehicle Roadmap 2022, developed by eight local governments under WSROC, highlights the enabling role councils can play in supporting the EV transition. It identifies barriers to uptake, such as the high capital cost of vehicles and infrastructure, while showing that EV investment is likely to deliver net benefits within the next decade.
- Build Council Capability: State government can further support councils through joint purchasing arrangements, shared financing models, and streamlined grant application processes. This will build capability and confidence in procuring and managing EV infrastructure and services.
- Incentivise Electric Vehicles (EVs). Provide targeted rebates for EVs, particularly utility vehicles and vans commonly used by tradespeople in Greater Western Sydney.

Fleet and freight

Western Sydney is experiencing significant population and economic growth, leading to a substantial increase in freight transport. The opening of the new Western Sydney International Airport in 2026 will place further pressures on freight demand. This brings a range of challenges and opportunities.

Strategies to reduce emissions and minimise other impacts such as noise pollution and traffic congestion will be critical, as will be ongoing incentivisation of low emissions vehicle uptake for fleet and freight networks.

Recommendations:

- Develop strategies around how key freight infrastructure and routes will support electrification.
- Support councils and small businesses to upgrade fleets through financial incentives.
- Offer grants for the purchase of electric or hydrogen-powered freight vehicles and invest in hydrogen refuelling and EV charging hubs at key logistics locations, like Eastern Creek.
- Encourage freight consolidation initiatives to reduce vehicle kilometres travelled.

Public and active transport

Active transport in the form of walking and cycling produces zero emissions. Walking, cycling and other forms of active travel can help people be more physically active in their daily lives and strengthens social connections.

Public transport also offers significant environmental benefits by reducing carbon emissions, air pollution, and traffic congestion compared to private vehicles.

Recommendations:

- Develop and implement key strategies to support people to walk, cycle and use public transport, with a focus on strategic routes connecting schools, shops and railway stations.
- Increase tree canopy in strategic locations to ensure active transport corridors are shaded to improve amenity and increase use, particularly in hotter months.
- Improve the frequency, reliability and integration of public transport. This includes:
    - provision of public transport stops within 400m of residences, as advised by the Australian Urban Observatory.
    - Implement bus stop designs to shelter users from heat and rain. Prioritise locations that have higher risk (considering extreme heat and lack of other public transport modes).
- Transition to Zero-Emissions Public Transport, including accelerating the rollout of electric buses across Greater Western Sydney.
- Continued support for flexible working arrangements that reduce the need for unnecessary travel – as appropriate.
- Improving proximity of housing and employment – reducing urban sprawl and increasing employment decentralisation for reduced travel times.

Waste infrastructure

Greater Sydney is facing a waste infrastructure crisis, whereby waste is hauled long distances to the few remaining and consolidated waste transfer, processing and disposal facilities across Sydney. As it currently stands, many council waste collection vehicles traverse Sydney delivering waste to the available transfer or disposal points in a limited network with constrained capacity. The NSW Government is currently finalising and ultimately will enact the Draft NSW Waste and Circular Economy Infrastructure Plan and NSW Industrial Lands Action Plan, which both seek to provide adequate waste infrastructure for a growing population, increased development and growth in business activities. These are a critical opportunity to

strategically plan and geolocate the required waste transfer, FOGO processing and waste disposal (landfill) sites to meet Sydney's waste capacity needs and reduce haulage emissions.

Recommendation:

- Build waste infrastructure in strategic locations to reduce waste haulage distances.

4.3.2 Agriculture and land

Agriculture

WSROC recommends ongoing support to farmers in Western Sydney and around NSW for carbon storage in soils. Education and incentivisation of the retention of ground covers and decreasing reliance on fertilisers, such as lime and urea, greatly improve the health of soils.

In addition, we recommend more investment in organic fertilisers, such as FOGO by-products and compost. Farmers in Western Sydney have a great opportunity to access these forms of fertilisers, due to their location and support from local government.

More support and opportunities for farmers to learn about regenerative agriculture practices such as holistic grazing, multi-species ground covers, using products such as seaweed to reduce emissions from stock, increasing biodiversity on farms and healthier resilience landscapes. Farmers also rely heavily on fossil fuels in food production; there should be financial support for producers to transition to electric powered machinery.

There are currently incentives such as Australian Carbon Credit, Natural Capital that are designed for farmers to help manage their soil carbon, but there is still resistance around from farming communities. Education is the key for farmers to take up the opportunities, as ultimately their farm will benefit.

Agricultural studies in all levels of education should include the basics of regenerative agriculture and offering more detailed units for students who want to pursue this path. Investment is also required for curriculum development as it is currently left up to private providers to deliver and design such as Mulloon Institute, Holistic management, Soil for life. Due to the expense and time that farmers may incur to participate in these courses, subsidies could be provided to incentivise participation, attracting experienced farmers and producers as much as young students.

Recommendation:

- Improve education and incentivisation programs for farmers to increase carbon storage and regenerative farming practices

Land sector

Based on figure 6 which has been included in the Consultation Paper section for Land, it can be identified that the biggest contributor to emissions for this section is estimated to be deforestation, which has been the trend since 2005. While identified as the primary contributor, the papers confirm that due to changes in estimation and calculations uncertainties, it is difficult to ascertain the exact figure of emissions produced and captured. Further information provided in the Net Zero Commission 2024 Annual Report identifies that the primary cause of deforestation for this section is primary producers.

Notwithstanding some level of uncertainty, current evidence is strong enough for NSW to focus more strongly on overall reduction in deforestation, including primary clearing and 'reclearing' of vegetation, in particular native vegetation. This policy decision, should aim to reduce vegetation clearing from all sources, including primary producers, government corporations and other contributors. These policies would not only increase the carbon sink capabilities of existing forest, but to a further extent, also improve soils as a carbon sink and reduce overall emissions.

To effectively include the reduction of clearing and reclearing in states climate change policy and emissions profile, resources should be given to increase education and awareness. As well as raising awareness, the government can also consider incentivising the retention and enhancement of vegetation on the property of primary producers and other landholders.

Recommendation:

- Implement education and incentive programs to reduce deforestation, including primary clearing and 'reclearing' of vegetation, in particular native vegetation.

First Nation people's knowledge and practice

Caring for Country programs create an opportunity for first nations people to take a lead role in protecting and restoring country. In Western Sydney where we have one of the highest populations of First Nations people in Australia, there is limited availability of opportunities and funding for such programs. Further Government investment into programs that actively utilise first nations people and their knowledge to restore and work on country should be undertaken. This could be done in partnership with Local Lands Councils, local governments and First Nations led organisations. As mentioned previously, a key issue within first nations communities in Western Sydney is the lack of access to Country for spiritual connection and continuing Caring for Country practices. By providing more funding and investment programs, communities could take the opportunity to be leading role on Country, healing Country and pass knowledge onto younger generations.

Sydney is surrounded by National Parks and world heritage areas, if the aim is to have resilience in our existing carbon stock, one way to help maintain that is by using cultural burning fire practices. Cultural burning is a low intensity cool burn that reduces fire loads and keeps country healthy. Due to its low temperatures, it also will not reduce the soil carbon levels stored in the soil and will reduce the amount of carbon released from burning of vegetation.

These actions, if taken up by State Government, would aid in the development and establishment of key programs to increase carbon sink and storage throughout NSW, which actively use First Nations communities and knowledge.

Recommendation:

- Invest in Caring for Country initiatives to increase carbon sink and storage throughout NSW

Waste sector: reinvestment of the Waste Levy

The Waste Levy is a tax charged for depositing waste to landfill. The levy was established in 1971 with the purpose of diverting waste from landfill and encouraging recycling. However, in recent years only a small proportion of the levy is used for this purpose, with the majority absorbed in consolidated revenue. Diverting certain types of waste from landfill reduces emissions, but opportunity to do so is constrained by sector limitations that remain unfunded. There is an urgent need for more of the Waste Levy to be invested in the waste sector to improve local infrastructure and processing capacity (such as reducing haulage and transport and diverting organic waste from landfill), improving waste avoidance via community education, and investing in new resource recovery methods which all contribute to community and sector emissions. Examples include:

- ***Short term: Food Organics Garden Organics (FOGO)***

  In the short term, increased Waste Levy investment could be used to expand support for reducing household food waste emissions via the NSW FOGO rollout. While councils work to divert organic waste from landfill via the introduction of kerbside food organics garden organics (FOGO) services, there is both a costly burden on ratepayers and there is a huge behavioural shift required to prevent and manage food waste generation. Some councils are eligible to secure Australian Carbon Credit Units for the introduction of FOGO services, however this process is limited and cumbersome and most councils find it not worthwhile applying. The FOGO grants provided by NSW Government fails to provide suitable financial support for the significant financial impost placed on ratepayers, nor does it address any of the process or systemic barriers to achieving community participation and yield of high emissions reductions. Most councils will receive limited support to contribute to waste and emissions reduction targets, yet councils are the necessary

body to deliver the reductions in household waste emissions required. Greater funding could be invested in:

  - amending planning controls to enable food waste collection in apartments.
  - Addressing contamination to produce compost suitable for land application and of a quality that builds suitable markets for reuse.
  - Securing suitably located land for transfer (consolidation) of organic waste, and/or processing of organic waste into compost, to ensure transport of waste to processing facilities does not create more emissions than those abated through processing.

- ***Medium term: Waste infrastructure investment***

Sydney is facing a waste crisis with waste transfer and disposal facility capacity filling up, and failure to plan or construct new facilities. Further, pressures from residential development and competing industrial land uses has placed pressure on the operation of existing waste facilities. Failure to strategically plan waste and circular economy infrastructure will result in haulage of waste from households, businesses and construction operations to disposal points at increasing distances from the point of generation within Sydney. Additionally, there is no resilience capacity built into the waste haulage system. Recently, a significant rain event resulted in many western Sydney councils' waste collection fleets needing to travel multiple times a day to the central coast to dispose of waste at the next closest landfill with capacity. Without strategic assessment of where waste is taken for disposal and investment in facilities in suitable locations, emissions from waste freight will likely rise at a time where great efforts are being made to reduce waste disposal emissions.

Stream	Status	Market detail
Residual waste	Medium-term	Putrescible landfill dedicated to Greater Sydney exhausts in 2038, while any new facilities are likely to require transfer outside of Sydney
Commingled recycling	Long-term	Supply and demand for capacity are matched, but three proposed recycling facilities will ensure sufficient capacity for +15 years
Organics (FOGO/FO)	Short-term	Up to one million tonnes per annum of new advanced organics processing capacity needed to service Greater Sydney by 2030
Clean up	Short-term	Non-putrescible landfill dedicated to Greater Sydney exhausts in 2028 (excluding Queensland transfer).

FIGURE 1. GREATER SYDNEY WASTE INFRASTRUCTURE STATUS. REPRINTED FROM WESTERN SYDNEY REGIONAL WASTE AND SUSTAINABLE MATERIALS STRATEGY - P.24

- ***Medium term: Product stewardship schemes:*** Council efforts to improve recycling and circularity are being hampered by product designs that do not consider safe, sustainable disposal. To date,

voluntary, industry-led schemes have made slow or little progress. Mandatory stewardship schemes with adequate oversight and compliance mechanisms are necessary to improve outcomes. This is particularly important for dangerous products including those with embedded batteries which cause damage to council property as well as community safety issues. At present councils across NSW are left to deal with a range of products that were never designed to be recovered, and are impacting material recoverability. WSROC encourages state advocacy to the federal government to introduce new and improve existing product stewardship schemes that would support greater material efficiency.

Recommendation:

- Re-invest the Waste Levy in the waste sector to improve local infrastructure and processing capacity (such as reducing haulage and transport and diverting organic waste from landfill), improving waste avoidance via community education, and investing in new resource recovery methods which all contribute to community and sector emissions.

4.3.3 Property and housing sector

Circular economy and embodied emissions beyond use of recycled content

There is great opportunity to reduce material consumption and embodied energy by greater adoption of the NSW Government's Circular Design Guidelines for the Built Environment. Much of the NSW Government's focus on circular economy outcomes has traditionally focused on integration of recycling content into procurement and purchasing. More efforts need to be made to prioritise modular design, material reuse, low carbon alternative materials, and suitable end of life management of resources.

Recommendation:

- Facilitate greater adoption of the NSW Government's Circular Design Guidelines for the Built Environment

Solar and battery programs for strata in low-uptake regions

While several programs and incentives exist to introduce solar and batteries for apartment buildings, there are markedly different uptake levels across NSW. Strata government buildings have particular challenges around complex approval processes, navigating the legal framework of strata management, securing agreement from multiple stakeholders, and ensuring equitable access to charging solutions.

Uptake of incentives and rebate schemes have been particularly low in Western Sydney. WSROC recommends that the NSW government works with local government to inform appropriate programs for

our region. Consideration should be given to include support for assessments, applications, purchase and installation.

Recommendation:

- Develop and roll out dedicated place-based rebate and incentive schemes for strata buildings in regions of traditionally low uptake.

Cool Suburbs: heat resilient rating and assessment tool

Cool Suburbs NSW is an evidence-based resilience rating and assessment tool for urban development across all NSW climate zones. Cool Suburbs NSW is a clear first step towards building industry's capacity to deliver homes and suburbs for our changing climate as it as provides clear, evidence-based guidance which builds capacity and allows users to test new and innovative approaches.

The development of Cool Suburbs NSW has been co-designed with industry and government stakeholders. The guidance is evidence-based and developed in consultation with a science panel (Western Sydney University, University of NSW, UNSW, Monash University, Melbourne University).

Cool Suburbs is considered an important tool in promoting and celebrating new and innovative design solutions by the private and public sector.

To date, Cool Suburbs has been used (amongst others) to inform several master planned communities, councils' DCP clauses and Green Building Council's Green Star Communities v2 (heat resilience credit).

Cool Suburbs was released September 2024 (coolsuburbs.au).

Further investment in Cool Suburbs will be required to support ongoing development, maintenance and dissemination of the tool. In addition, there is an opportunity to strengthen the tool's governance arrangements to ensure clear pathways for future integration into mandated planning and design requirements. WSROC would welcome discussions about suitable governance arrangements and appropriate 'home' for the tool.

Recommendations:

- Invest in ongoing maintenance and updates of Cool Suburbs
- Explore suitable 'home' for the tool to facilitate increased uptake, and ultimately integrate Cool Suburbs into mandated planning and design requirements.

Update state planning controls to address heat

Heat kills more Australians than fire, floods, and storms combined. Our growing cities contribute to the problem of heat, as adding more concrete, steel and bitumen to the urban environment increases the

urban heat island effect. However, Sydney's growth also provides significant opportunities to embed climate resilience in urban change. Delays in addressing this issue will not only miss opportunities for widescale heat resilient design, but lock-in significant future costs for government, industry and communities, including increased energy use (leading to pressures to the energy grid), costs to the health system, as well as costly future retrofits.

Considered planning and urban design controls are a critical lever to creating cooler, healthier and more liveable urban environments in the face of a changing climate. However, there are presently no mandated requirements for addressing heat in the NSW planning framework except in a small number of council LEPs and DCPs.

The lack of system-wide guidance and controls limits on ground application because:

- A significant proportion of new development is approved through state planning pathways.
- A lack of state directive leaves councils open to legislative challenges creating delays.
- A patchwork of locally-led heat controls across Sydney creates uncertainty for industry.
- Without mandated requirements most developers will not prioritise heat.
- Councils with less resourcing, capacity or political will are less able to implement changes.

Given the complex nature of the NSW planning system, it is important that heat is addressed across the hierarchy of planning instruments (state and local) to ensure heat is addressed at the building scale, as well as the urban design and precinct scale. Legislative change will be critical, as current reliance on guidance and a fractured approach to regulation, is resulting in hot, energy-hungry homes and suburbs that do not support community health and wellbeing.

WSROC worked with councils across Greater Sydney to identify critical changes across the planning system. These are included in the Briefing Paper "Heat and the planning system: A case for change in NSW".

Adopt appropriate heat risk mitigation and adaptation measures into relevant state and local strategic planning controls while allowing local authorities to respond to local risk and community needs.

Recommendation:

- Ensure heat risk mitigation and adaptation measures are adopted into strategic state and local planning controls and land-use overlays by implementing recommendations outlined in WSROC's "Heat and the planning system: A case for change in NSW" to inform changes to the NSW planning system to address heat risk.

Revise energy efficiency standards outlined in NSW BASIX and NatHERs

Australia and NSW have minimum energy efficiency standards (thermal comfort standards) for new buildings that seek to reduce the operational energy required for heating and cooling. In 2022, WSROC

partnered with UNSW to understand the thermal performance of BASIX-compliant Western Sydney homes under future climate scenarios (climate zone 28). Future Proofing Residential Development in Western Sydney (2021) aimed to understand whether today's housing standards are future-ready. Four housing types (free standing and apartment blocks) were modelled under 2020, 2030, 2050 and 2017 heatwave scenarios.

The study found that:

- Dwellings are currently designed for a historical climate which does not represent today's conditions, or those we will experience in future.
- BASIX-compliant homes became thermally unsafe when tested in '2017 heatwave' conditions.
- Homes that were modified to perform better in future, failed to meet today's NSW BASIX standards – therefore they are not allowed to be built, despite using less energy in a 2020 climate.
- 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.

The study recommends that NSW BASIX standards should be revised to:

1. **Test energy efficiency of homes and buildings against current and future climate conditions.** NSW BASIX uses outdated climate files (i.e. that represent a pre-2010 climate) that represent a far cooler climate than we experience today or expect in future. This has significant implications for the energy efficiency of dwellings in real-world conditions.

   In the last few decades, Western Sydney's climate has changed from one that demands more heating, to one that requires more cooling. As a result, outdated climate files encourage home designs that are efficient to heat – increasing summer cooling demand. In turn, the higher BASIX rating a home achieves, the more efficient to heat it becomes. This discrepancy is expected to increase as our climate warms.

   Today's homes will be in place for decades to come. Homes that will perform well in a 2050 climate (through simple modifications to eaves, shading and glazing) are currently not allowed to be built as they fail NSW BASIX. This is despite the fact that they use significantly less energy than a 'compliant' home when modelled using a 2020 (current) climate file.

   To reduce energy use, emissions, and cost-of-living, we must begin designing homes for their expected lifecycle**.** This means testing the performance in current and future climate scenarios. If we fail to do this, we will face significant retrofit costs in future.

2. **Test the performance of new homes and buildings in no-energy/free-run scenarios**

   Current BASIX and NatHERs standards test the thermal performance of a proposed building with the air-conditioning available. When BASIX-compliant homes are tested without air-conditioning (free-run mode) they failed to meet thermal comfort standards, and in some cases were unsafe. The assumption of energy availability – regardless of source – is problematic from an equity perspective, but also 'locks-in' households to higher energy usage than they would otherwise need. Other OECD countries including the UK and Canada test their home's capacity to maintain reasonable temperatures without heating or cooling – this is considered essential for energy efficiency, but also thermal safety.

Recommendation:

- Implement the recommendations outlined in Future Proofing Residential Development in Western Sydney (2021) to ensure homes are energy efficient and thermally safe.

Prioritise passive design

In the context of the energy transition, there is a tendency to focus on big ticket technological solutions such as batteries and solar. While these measures are an important pathway for achieving NSW's Net Zero goal, they also have significant upfront costs and installation challenges that create barriers for access.

WSROC urges the NSW Government to also consider 'low-tech' no- energy options for home adaptation that have been shown to have a significant impact for building thermal performance and may be more accessible for a wider range of households and businesses. Examples include external window shades and sealing gaps.

Recommendations:

- Ensure home design prioritises passive design for climate change, including orientation, shading, reducing gaps, etc.

Social housing

The majority of social housing does not have suitable requirements such as insulation, heating or cooling. Social housing households have low incomes, spend disproportionately more of their income on energy, and are at higher risk of experiencing financial stress.

It is noted that In Western Sydney a large proportion of First Nations people live in social housing. We also note that First Nations and low-income communities will be heavily impacted by climate change, exacerbating existing challenges. Concerns about energy costs can lead to households going without heating or cooling, or forego food or medication, putting their health and lives at risk.

Improving the design and performance of social housing is important as it:

- Improves health and wellbeing
- Reduces utility bills
- Reduces carbon emissions
- Creates employment opportunities
- Improves social equity.

WSROC urges the implementation of social housing retrofit programs at scale. These should be implemented within a contracted time period to improve energy efficiency and thermal performance. Programs should include solar and battery, insulation, shading, installation of fans and air conditioning. Energy rebates for at risk communities, particularly during hot or cold weather periods are also critical.

Recommendation:

- Fast track social housing retrofit programs for energy efficiency and thermal performance

Rentals

Rental tenants are more likely to live in low energy efficiency homes, have limited abilities to make alterations, and may have less capacity to pay for energy bills and other services to keep themselves safe.

Research has found that that because of inefficient appliances and a lack of weatherproofing, renters pay an average of 8% more in energy bills than homeowners in like-for-like homes, and indoor temperatures regularly exceed well beyond minimum World Health Organisation standards for healthy homes.

Measures such as insulation, window coverings, sealing doors and windows and providing decent heating and cooling systems are critical to lower energy bills and improve the occupant's health and wellbeing.

Recommendation:

- Develop evidence-based recommendations for enforceable, minimum energy efficiency and thermal performance standards for rental accommodation, supported by a program of retrofit incentives targeting areas of greatest risk.

New builds

The importance of emplacing minimum standards for new development cannot be overstated. In many areas of construction and housing new and innovative practice is most often applied in high-income areas or high-value developments where a price premium can be gained from green credentials. To ensure equitable access to the transition in the new-build context, consistent minimum standards are required.

Recommendation

- Formalise climate resilient design into the NSW planning system

Retrofits

Approximately 94% of Greater Sydney's 2027 housing stock is already built. As such, the thermal performance and climate resilience of most housing stock is most likely to be improved through ongoing design upgrades over time.

However, there is often a discrepancy in uptake of transition programs such as solar upgrades or batteries across different parts of the city. There are often a range of factors involved including household income, understanding and trust of government, time-resourcing to research the issue, social license and strata arrangements.

Recommendation:

- Codesign with the community a range of awareness and education initiatives, coupled with incentives and rebates as appropriate, to improve household knowledge and confidence in making climate resilient choices for their home and garden.

4.4 Measurement and monitoring the Net Zero transition

As mentioned previously, standardised reporting and data will be critical to allow NSW to monitor its transition to Net Zero.

Recommendation:

That consideration is given to the following data:

- **Track Emissions by Sector:** Monitor progress in electricity, transport, buildings, waste, and land sectors. Use local-level tools like https://snapshotclimate.com.au/ or the Resilient Sydney data Platform.
- **Key Metrics:**
    - EV sales by LGA
    - Number of rooftop solar systems
    - % of buildings retrofitted
    - Energy costs for low-income households
    - Waste diversion, market processing capacity, transport emissions and methane capture
- **Benchmark Against Other States:** Compare NSW progress nationally and globally to identify gaps and strengths.

- **Establish Minimum Climate Disclosure Standards for Local Government:** Identify baseline climate disclosure and reporting standards that can be applied to local governments. This would support the development of consistent nation/state-wide guidance on climate risk disclosure, reporting, and risk management - aligned with emerging national and international frameworks (e.g. ASRS, TCFD).
- **Track community impact:** Ensure there is better visibility of community impacts for net zero transition. Metrics to consider include
    - Green job growth and training uptake
    - Public health outcomes linked to cleaner air
    - First Nations participation
    - Heat mitigation (e.g. tree canopy cover)
- **Tree retention:** Maintenance of existing canopy/vegetation – planting new trees is only a net gain if old canopy is maintained.
- **Urban Heat Island effect**: While there is significant focus on the performance of individual buildings, modelled outputs fail to consider the contribution of broader urban environments to a building's requirements for heating and cooling. Regardless of energy efficiency, identical homes placed in two different locations would have very different energy usage based on surrounding urban heat island conditions. Greater data must be provided in climate resilience and energy efficiency of buildings within the context of their location and surroundings.

5. Adaptation

As outlined in section 4, adaptation is particularly critical for Western Sydney due to the rapid acceleration of climate change in our region.

5.1 Adapting to the impacts of climate change

WSROC understands 'resilience' as the ability to survive and thrive in a warming climate and extreme events.

While much focus is given to the impacts of an increase in average temperatures, more focus needs to be given to extremes – which will become more common in future. For example, as outlined on page 27. NSW homes are currently designed for average climate conditions, and electrification and other transitions are understood in the context of average climate increases. There are currently no mechanisms to understand the capacity of homes to support occupant safety in extreme temperatures (hot or cold) or no-energy scenarios – without this, we cannot describe our housing stock as resilient.

At present, there is a very static approach to planning and design thresholds for new housing, infrastructure and services. There is a need to improve how we are designing new assets for future time horizons.

Connected, shared knowledge, shared responsibility and shared solutions

As the frequency, duration and severity of climate impacts and natural disasters increase, traditional approaches to managing these impacts (often centralised and top-down) are becoming less feasible. A resilient NSW requires more organisations and people involved in decision-making, planning and response to climate events. This means a greater cross-sectoral collaboration, greater appreciation and use of local knowledge, but also more transparency around risk data and other capabilities that could support those outside government to take action.

While there is much talk about collaboration and co-design, certain parts of Government are doing this better than others. There is a need to formalise inter-departmental, inter-sectoral, and multi-level engagements to break down knowledge silos and deliver more informed policy and project outcomes.

Recommendation:

- Establish formal inter-departmental, inter-sectoral, and multi-level collaborations for adaptation and mitigation efforts in NSW
- Use future climate scenarios for planning and design

Opportunities

Lastly, during development of the Heat Smart City Plan, our industry stakeholders identified the need to harness the economic potential of Australia, NSW, and Sydney's global reputation for 'doing heat' well. In addition to addressing the negative impacts of a warming climate, resilience includes harnessing opportunities to develop, market and export new skills, technologies and solutions to the rest of the world. This might include heat resilient building products, technologies or social/behavioural solutions.

Recommendation:

- Consider establishing an innovation network and fund to spearhead climate mitigation and adaptation opportunities

NARCliM

NARCliM is a valuable and powerful dataset, however improving use of NarCliM data for adaptation and planning requires greater focus on education, skills building and communication – both within government and with other partners including councils, industry and the community sector.

Recommendation:

- Work with potential NARCLiM users to develop training as well as improve how information is made available, to increase use and uptake. Ensuring different levels/layers of information are available to support users of different skill levels.

5.2 Adapting to extreme heat and heatwave

At a very basic level, what's required in terms of preparedness, adaptation and response to extreme heat should be similar to more established climate hazards. As such NSW agencies should consider heat in all relevant policies and processes under which they consider flood, fire or storm. This includes both capital works and operations.

Heat Smart City Plan

As the Commission is aware, WSROC and Resilient Sydney have led the development of a Greater Sydney Heat Smart City Plan; a multi-sector plan for heat mitigation, adaptation and response across NSW. The Plan identifies 40 actions for implementation to increase resilience to heat.

The City Plan was developed with the Greater Sydney Heat Taskforce, a collaboration of federal, state, and local government, as well as academia and industry and the community sector representatives.

WSROC would welcome collaboration with the Commission to use the Heat Smart City Plan as a blue-print for assessing the breadth and scope of what is needed to address extreme heat events in NSW. We would further welcome the Commission's support for cross agency implementation of Heat Smart City plan recommendations.

Recommendation:

- Support the implementation of the Heat Smart City Plan actions to address heat

Extreme heat: Definitions and measurement

In assessing NSW's preparation for extreme heat (and humidity), it is important that all state agencies are defining and measuring extreme heat risks accurately. WSROC has found that there is a tendency to conflate issues such as climate change, urban heat, and extreme heat in policy and practice. See the Heat Smart City Plan for further information.

Conflating these issues is problematic because each element of heat risk is driven by different phenomenon, and they each require different solutions.

For example, in the past, tree-planting has been used as a state government metric for addressing extreme heat. While WSROC strongly supports tree planting and greening initiatives for urban heat mitigation and climate adaptation, it should be noted that:

- **Trees are an ineffective response to extreme heat.** While trees are effective at carbon draw-down and mitigating urban heat under normal circumstances, trees' capacity to cool via evapotranspiration 'switches off' in extreme temperatures as trees enter survival mode. Sydney's hottest areas including the Hawkesbury and lower Blue Mountains are also some of the leafiest regions of Sydney. This is demonstrated with Bureau of Meteorology data as well as place-based studies from Western Sydney University who found that Penrith's hottest locations were in the forested areas of north-west Penrith.
- **Focus on tree canopy metrics has distorted the perception of effective heat adaptation and response measures.** Placing the burden of heat adaptation almost solely on local government, draws attention away from other mechanisms that must be implemented at the state level.

Recommendation:

- Ensure common understanding of heat across domains, differentiating between climate change, urban heat, and extreme heat in policy and practice. Ensure consistency in definitions and measurements.

[End]