



Victorian Inquiry into Climate Resilience

City of Melbourne Submission

April 2024

27 June 2024



Parliament of Victoria
LC Environment and Planning Committee
Parliament House, Spring St
EAST MELBOURNE VIC 3002

RE: VICTORIAN INQUIRY INTO CLIMATE RESILIENCE

The submission is based on endorsed Council policy and made by the management of City of Melbourne. Thank you for the opportunity to provide input into the Victorian Inquiry into Climate Resilience. We commend the Victorian Government for its commitment to building a climate-resilient Victoria and would welcome the opportunity to further support this review.

Local governments have been working at the heart of climate adaptation action for many years and the importance of this role is increasing as the impacts of climate change escalate. However, the costs of adapting cities and infrastructure for a changing climate are significant, with the City of Melbourne's Average Annual Damages to council assets from climate change hazards are projected to increase by 1,200% increase in the next 75 years.

Local governments are seeking long-term secure sources of funding to improve climate resilience. Whilst grants based initiatives like the Disaster Ready Fund have the right focus on preparedness, the funding available is limited and provides no steady stream of investment or security for longer term iterative work to be undertaken. This is an opportunity for the Victorian Government to support the critical role of local government to future proof the safety of citizens, assets and critical services.

Our key recommendations are:

1. Lead from the front

- lead as the bridge between local government and the federal government to ensure access to secure long-term funding for climate resilience reaches communities.
- lead on cross system resilience:
 - to improve communications resilience by undertaking an assessment and options analysis of alternative communication methods
 - to improve electricity resilience and develop understanding of electricity outage impacts
 - to improve road network resilience through undertaking scenario planning to identify road network vulnerabilities.
- lead on policy reform to centre resilience and enable dynamic updates to respond to current and emerging data and information. Priorities include accessible and localised multi-hazard data, urban planning and housing policy reforms.

2. Address issues of social inequality of climate risk

- work with vulnerable communities and invests in an inclusive and well-targeted social safety net, where "no one is left behind"

3. Provide direct financial support to local government

- to ensure local government access to secure long-term funding for climate resilience to prepare, prevent, respond and recover from detrimental climatic impacts.

If you would like to further discuss any aspect of this submission, please contact Tiffany Crawford or Krista Milne, Co-Directors Climate Change and City Resilience at Krista.milne@melbourne.vic.gov.au or Tiffany.crawford@melbourne.vic.gov.au.

Thank you again for the opportunity to provide this input.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Krista Milne', with a stylized flourish at the end.

Krista Milne
Co-Director, Climate Change and City Resilience

Submission

1. Introduction

The City of Melbourne's [Response to the Climate and Biodiversity Emergency 2020](#) and [Climate Change Adaptation Strategy Refresh 2017](#) outlines the organisation's priorities for achieving zero net emissions by 2040 and adapting our city to the impacts of climate change. In recognition of the serious risk to the people of Melbourne the Response commits to adapting the city to the impacts of climate change, which includes investing in ecosystem based urban forests, Integrated Water Management, green buildings, waste innovation and better pedestrian and cycling infrastructure.

The City of Melbourne has recognised and responded to the risks associated with climate change since 2009. The journey around managing our climate risk has matured over time and we now consider "failing to take appropriate and timely action on the changing climate and extreme weather events" as a key strategic risk. To manage this risk, the City of Melbourne partners with all levels of government to appropriately coordinate responses and allocate shared responsibility to climate change risks and impacts. This co-ordination is a key area that requires future investment.

2. Main risks facing Melbourne

2.1. Built environment and infrastructure

With cities and urban areas set to increase in population by approximately 40 per cent by 2050, impacts of climate change will only be more pressing if more ambitious adaptation implemented now. The City of Melbourne is growing at a significantly faster pace than other Capital Cities, with Melbourne's resident population increasing by 10.6% in the 2022-2023 financial year. Melbourne's population is predicted to grow to 8.5 million by 2030.

Recent [modelling by Natural Capital Economics](#) found that in the City of Melbourne, Average Annual Damages to council assets from climate change hazards are projected to increase from \$2 million annually to \$22-37 million by 2100 in a 'do nothing' base case scenario, this represents a 1,200% increase in the next 75 years.

The City of Melbourne faces four main climate change risks:

1. Insufficient water supply impacting on the health and maintenance of green infrastructure
2. Inundation from flooding, storm surge, sea level rise and flash flooding causing risk to life, property and infrastructure (including transport)
3. Extreme heat and heatwave impacts to health, transport and communications infrastructure and electricity demand
4. Storm events affecting emergency services, damaging buildings and assets, causing delays in transportation and interrupting economic activities

Although extreme weather events occur in a non-linear pattern—often occurring in clusters followed by periods of reprieve, their cumulative cost over time can be modelled using an Average Annual Damages calculation. Recent modelling by Natural Capital Economics found that in the City of Melbourne, Average Annual Damages to council assets from climate change hazards are projected to

increase from \$2 million annually to between \$22 million to \$37 million by 2100 in a 'do nothing' base case scenario. At the low end, this represents a 1,200 per cent increase in the next 75 years.

Water Security

We will have more prolonged and frequent periods of drought, creating water security issues – even in the city. In 2019, Melbourne had only 374 mm of rainfall, down 40 per cent from our historical average.

We saw the impacts on our world-renowned parks and gardens during the millennium drought. On average, the City of Melbourne uses 930 million litres a year to irrigate its parks and gardens – enough water to fill 370 Olympic swimming pools. If we captured just 7 per cent of the rain that collects on our roads and hard surfaces, we would have more water than we need to irrigate our parks and gardens. We need secure funding to keep our parks green and city cool through simple measures like stormwater harvesting.

The recently released [Yarra and Maribyrnong Integrated Water Management Catchment Plans](#) contain detailed action plans to improve water security, reduce water inundation and improve river health. These plans require an on-going commitment to implement the recommendations alongside financial support.

Water Inundation

Inner metropolitan areas are particularly vulnerable to the impacts of flooding due to the impervious surfaces and high densities. This was recently highlighted in the Insurance Council of Australia's November 2023 [address to the National Press Club](#) on extreme weather and climate risk. The CEO of the Insurance Council of Australia stating:

Our cities are covered in concrete. This causes 'soil sealing', which exacerbates flooding because concrete and bitumen stops water going into the ground – but as everyone knows water needs to go somewhere. Over the last 20 years, the increase in soil sealing in Australia's five biggest cities has been the main contributor to a seven per cent increase in annual expected losses from floods.

New urban renewal areas such as Arden, Macaulay and Fishermans Bend precincts in City of Melbourne will face significant flood risk. Development has commenced without the necessary flood mitigation measures being in place. One of the contributing challenges to managing flood in these inner urban renewal precincts are the Municipal Urban Stormwater Institutional Arrangements. The institutional arrangements have been designed for greenfield development rather than urban renewal development.

Extreme Heat

Heatwaves have significant economic and health impacts on the city and its community. Heatwaves are our most deadly hazard, and kills more Australians than bushfires, floods and storms combined, exacerbated by climate change. Australia's winter of 2023 was the warmest since official records began in 1910, with average daily temperatures 1.53C above the long-term average.

The heat island effect in Melbourne means it can be 4-8 degrees hotter than regional areas because the built environment is not designed to mitigate heat. During heat events we experience power outages, and disruption to transport services and outdoor events. Our streets, our footpaths and our buildings are not designed for heatwaves and will require adaptation. City of Melbourne has been taking action to combat the urban heat island effect through expanding its urban forest, integrating green infrastructure, and encouraging the private sector to do the same, however, requires more support to achieve its ambitions.

Storms

Changing climatic conditions and increased frequency and intensity of storm events are expected to put unprecedented pressure on urban infrastructure. As extreme weather events and storms become more frequent and intense, infrastructure has a higher potential for damage or failure.

Storm events such as intense rainfall, high winds and electrical storms can lead to power failures and blackouts, transport disruptions, damage to property, business disruption due to damage, and people at risk of injury.

A recent severe thunderstorm in Victoria left homes and businesses without power because of transmissions lines collapsing. On February 13, 2024, Victoria experienced 544,000 lightning strikes and wind gusts of up to 130km an hour.

An estimated 530,000 homes and businesses were left without power and CitiPower and Powercor Australia responded to more than 640 different faults, including fallen powerlines. The SES received about 2750 calls for help, mostly for downed trees and building damage.

To avoid costly reparation costs infrastructure needs to be designed to withstand the impacts of such storm events.

2.2. Impacts on people

Climate change impacts including disasters and extreme weather events are known to have disproportionate impacts on people facing physical, social, economic and environmental barriers. This includes the elderly, people with a disability, people experiencing homelessness, people living public housing and high-rise buildings, people with pre-existing health conditions. Resilient and prepared communities are more likely to withstand the negative impacts of natural disasters. Likewise, strong social capital correlates to a more effective recovery.

Community Resilience Assessments were completed in six City of Melbourne neighbourhoods (Southbank, Carlton, Kensington, North/West Melbourne, Docklands) from November 2022 to October 2023 to better understand the physical and social vulnerabilities and strengths to disasters and generate ideas to build community resilience. Key insights from these sessions included:

- our community are asking for better information on disaster risks that may impact them. The information needs to be in a prominent and trusted place and in multiple languages.
- a well-connected community is more resilient. Culturally safe, inclusive spaces are an important factor in getting to know your community.
- climate ready and safe streets provide spaces for connection as well as for refuge during extreme weather such as heatwaves, especially for those living in poor quality housing
- access to affordable and liveable housing emerged as an essential first condition to feeling safe and resilient at home. Community members experiencing homelessness, job instability and living in low quality accommodation will likely be the most impacted by disasters.

Climate change is a major public health concern because it significantly impacts the social determinants of health, ultimately affecting health equity within communities. These social determinants – factors like income, education, and access to healthcare – play a crucial role in overall health and well-being.

Climate change can have both direct and indirect health consequences:

- **Direct impacts:** Increased morbidity and mortality due to extreme weather events like heatwaves, floods, droughts, and bushfires.
- **Indirect impacts:** Changes in ecosystems, biodiversity and land use, affecting the spread of infectious diseases, as well as worsening air, food, and water quality. These factors disproportionately impact vulnerable populations who may have limited resources to adapt.

This highlights how climate change exacerbates existing health disparities and the importance of considering equity when developing solutions.

Water Inundation

During the 2022 Melbourne Floods, the information that community members relied from the State Emergency Services Local Flood Guide had inaccuracies. We suggest that any information provided to communities needs to be clearer about how flood will impact them so that they can be prepared. This includes Information about how deep and how fast flood waters are.

Extreme Heat

Of significant concern to the City of Melbourne are the health impacts that arise from rising temperatures, extreme weather events including heatwaves, flash floods and storm events, drought and air pollution. The 2014 heatwave in Victoria contributed to 167 deaths and 600 hospitalisations for dehydration, heat stroke, and other heat-related illnesses

A 2018 study found [residents of Melbourne and Adelaide were at greater risk of death during extreme heatwaves](#) than residents of Australian cities that experienced more consistent, prolonged heat, with people living in those cities having difficulty acclimatising to the jump in temperature. Between 2001 and 2015, the study found, Melbourne recorded 1,283 heatwave-related deaths — the highest figure in the country.

Anyone can suffer from a heat related illness, however the following could be more vulnerable during an extreme heat event:

- those who are aged over 65 years, especially if living alone
- people who are overweight, obese or have pre-existing medical conditions
- infants and children
- people who are experiencing homelessness or have a low income
- international residents, students and visitors
- residents in high rise apartments
- outdoor events-goers and staff
- people who work or are physically active outdoors
- sporting event participants

Local government plays an important role in reducing heat risks, including through community engagement, city greening, and the delivery of the [Municipal Public Health and Wellbeing Plan](#). There are also many other organisations that influence how heat is experienced and managed in the municipality.

According to a heat survey conducted by the Australia Council of Social Service (ACOSS) released in January 2023, low-income households are most affected by heatwaves because they lack access to energy efficient homes. Of those surveyed, 62% said they struggled to keep their homes cool during summer, and 43% said they faced a barrier to leaving their home for a cooler place. Almost 90% said the high temperatures negatively affect their health.

Our public housing towers are a heat trap and the biggest heat risk in our community. A recent survey of more than 3,000 Victorians (by Sustainability Victoria) found that during times of extreme heat, 19% of respondents had to leave their homes because it was too hot. But among public housing tenants, the share is significantly higher, with 45% having to leave their homes because it is too hot.

Storms

The 2016 thunderstorm asthma events in Melbourne resulted in the death of eight people and serious health impacts for thousands more. The unusually wet spring led to an abundance of grass pollens which, combined with a sudden cool change and thunderstorm, triggered severe asthma for thousands of people. Melbourne's health systems were stretched beyond capacity in places, with seven times the normal number of ambulance calls, and a shortage of asthma medication in some locations. This event was unexpected and highlights how new impacts can manifest any time.

3. Recommendations to prepare

3.1. Lead from the Front

Working in partnership with all levels of government

All levels of government, agencies and private developers have a role to play in ensuring a climate-resilient future for Victoria. Strong collaborative structures and programs that are supported by long term funding are needed.

Australia is now a signatory to the Coalition for High Ambition Multilevel Partnerships (CHAMP) initiative, which includes a commitment to:

- Consult with our respective subnational governments, as appropriate and applicable, to determine the avenues for subnational action to contribute to national mitigation and adaptation commitments and strategies, and their subsequent implementation and monitoring.
- Work collaboratively with our respective subnational governments to unlock and realise mitigation and adaptation action opportunities at the subnational level by involving them, as appropriate and applicable, in the review, design, enhancement, consolidation and implementation of our national commitments and strategies.
- Create inclusive institutional and informal processes to enable subnational governments to contribute to further enhancing NDCs, where applicable, ahead of COP30 in 2025, and, where available and appropriate, integrate local and territorial baseline information, targets and actions for emissions mitigation and adaptation across all sectors and industries.
- Include relevant subnational government projects (encompassing mitigation and adaptation) in climate-related investment priorities (including those directly and indirectly related to NDCs) and strive to help them secure the resources necessary from public and private financial institutions, as applicable, to begin or scale up implementation, including but not limited to supporting project preparation, pipeline development, aggregation of projects, new financial instruments or policy reform at local, national, regional and global levels as needed.

Local governments are seeking long-term secure sources of funding to improve climate resilience. Whilst grants based initiatives like the Disaster Ready Fund have the right focus on preparedness, the funding available is limited and provides no steady stream of investment or security for longer term iterative work to be undertaken. As an example, street upgrades to provide greening, shade, flood

mitigation, permeability and improved walkability, are typical of the type of iterative work cities do that is continuously underfunded.

Recommendation - Victoria lead as the bridge between local government and the federal government to ensure access to secure long-term funding for climate resilience reaches communities.

Addressing cross system interdependencies

Infrastructure networks – including transport, energy, waste and water service sectors with critical interdependencies – are at risk of failure from climate change impacts. We need to understand the extent of interdependencies and climate-related risks faced to adapt these systems.

An action identified through our Climate Change Adaptation Strategy Refresh was to complete an interdependency study for the city's assets and services. The City of Melbourne recently completed a pilot project called City Engine: Integrated Urban Systems Heat Vulnerability Analysis. This project was undertaken in partnership with the Department of Environment, Land, Water and Planning, to map interdependencies across different urban systems, define the vulnerabilities to heat, and determine the flow on effects to city users, while simultaneously developing an approach to map interdependencies and vulnerabilities to a range of climate change impacts. The key findings from the analysis are outlined in Appendix 1.

Recommendation - Victoria lead on cross system resilience:

- ***to improve communications resilience by undertaking an assessment and options analysis of alternative communication methods***
- ***to improve electricity resilience and develop understanding of electricity outage impacts***
- ***to improve road network resilience through undertaking scenario planning to identify road network vulnerabilities.***

Policy reform

Building resilience requires both a long-term strategic lens and near team agility to respond to emerging challenges. Key examples of policy reform that would improve resilience for communities include:

- **Urban Planning** – *Plan for Victoria* provides an opportunity for the state to lead in this space and integrate a strong resilience lens to urban planning. Urban Planning is our first line of defense in avoiding compounding the impacts of disasters. The Victoria Planning Provisions (VPPs) lack strength and depth, leaving individual Councils to progress suitable controls. The current system is slow and cumbersome, and changes requested by local governments and their communities often take years to be approved, if at all. Melbourne planning scheme amendments C376 and C384 have taken over two years to date. While these delays are happening new data and information on climate and community impacts have been released, meaning that proposals are rapidly out of date. Urban planning needs to be able to respond dynamically to local level data and information in the absence of leadership from the state.
- **Urban redevelopment precincts and flooding** – Greenfields policy settings are being applied to inner urban renewable precincts which exacerbates the existing flood risk profile. We will get better flood management outcomes by focusing on keeping the future communities

that will live and work in these areas resilient to flood rather than apply greenfield arrangements to inner-urban renewal precincts.

- **Data driven decision making** - To effectively address climate risk governments need to adopt a hyper-local, data-driven approach. This involves leveraging smart digital tools that integrate various datasets: environmental, social, historical, and real-time data. By analysing these combined datasets, governments can pinpoint climate vulnerabilities at different locations and scales. Data visualisation tools can then translate complex information into easy-to-understand maps, highlighting the spatial variations in climate risk. This empowers proactive measures, early warning systems and localised interventions based on the specific threats facing local areas. Victoria should invest in shared hyper-local data and base policy decisions on this data.
- **Rental and social housing policy reform** – housing quality is impacting on the resilience of our most vulnerable communities through extreme heat health impacts, energy bills, and exposure to mold and damp. Standards for rental housing should be updated to consider safety of residents during extreme weather events.
- **Affordable housing policy reform** - Victorian Government to develop an ambitious 10-year 'Homes Victoria Strategy', which should include clear, affordable housing targets and a tangible approach to achieving them, such as through the introduction of mandatory inclusionary zoning.

Recommendation: Victoria reform all policies to centre resilience and enable dynamic updates to respond to current and emerging data and information. Priorities include accessible and localised multi-hazard data, urban planning and housing policy reforms.

3.2. Actions must also be socially inclusive and equitable

Actions need to be managed to ensure the benefits are shared equitably and costs are not unduly borne by vulnerable communities. Working with those who are disproportionately impacted by climate change is essential to maintain and improve social cohesion.

Homelessness

We take a person-centred approach, supporting each person on their pathway out of homelessness. People with lived experience of homelessness inform our work. Our priority cohorts are Aboriginal peoples, young people, women, and people experiencing chronic homelessness and sleeping rough. The Victorian government can support our work achieving the following outcomes proposed in our draft Homelessness Strategy 2024-2030:

- Aboriginal peoples at risk of homelessness have access to culturally safe health, homelessness support and housing services in our city.
- Young people at risk of or experiencing homelessness are supported with prevention, intervention and housing services.
- Homelessness and health services in the City of Melbourne meet the needs of our specific homeless community.
- Our community is informed and united to create tangible and enduring change to end homelessness. Through collective community initiatives, we will reduce stigma and foster respect, empathy and understanding of homelessness.

Social and community housing

Social housing residents need safe refuges from the heat before next summer. The roll out of fans and air-conditioning units should be prioritised and ensure that every building has a cool, accessible common area. In addition, sufficient funding should be allocated to ensure that **all** social and community housing is upgraded to keep residents cool in summer, warm in winter, and free from mould with low running costs.

Community connections and knowledge

Prepared and connected communities are more likely to withstand the negative impacts of disasters and to recover faster. Strong social networks, a sense of belonging and trust enables communities to come together and support one another during challenging times.

Community identified initiatives for building resilience include:

- Local, culturally inclusive community hubs that provide neighbourhood connection and disaster resilience
- A centralised database with comprehensive information on disaster risk, response and preparedness
- Local and inclusive information and channels to support community members be better prepared for disasters
- Climate ready and safe streets with more trees to reduce and protect from urban heat, provide a sense of place and an opportunity for social connection

Recommendation: Victoria works with vulnerable communities and invests in an inclusive and well-targeted social safety net, where “no one is left behind”

3.3. Financial support is required for implementation

The Victorian Government will need to show leadership to increase adaptive capacity and resilience across all sectors. Local Government must be backed by secure, long-term funding and holistic financial analysis frameworks.

The City of Melbourne are seeking funding to support the work needed to become a resilient city representing priority areas for the city over the next 10 years. At present, we are not adequately funded to undertake these projects and the adhoc grants that are available do not allow for appropriate long-term planning and delivery pipelines.

The recently released [Yarra and Maribyrnong Integrated Water Management Catchment Plans](#) contain detailed action plans that require on-going support for implementation.

Recommendation - Victoria to ensure local government access to secure long-term funding for climate resilience to prepare, prevent, respond and recover from detrimental climatic impacts.

Greenline

A cool corridor – The Greenline Project - is seeking to transform the north bank along the Yarra River – Birrarung, to create a vibrant and connected public waterfront in the heart of the city.

- **Project value:** US\$200+ million
- **Outcomes:** US\$650 million in health, environment and economic benefits
- **Partners:** multi-level government, Traditional Custodians
- **Status:** breaking ground in 2024

Water sensitive precincts

We're adopting water sensitive practices in our growth precincts to protect our community from floods. Innovative projects such as smart water tanks, nature-based flood storage and water recycling are being developed together with other government agencies and the private sector in Fishermans Bend, Australia's largest urban renewal precinct.

- **Project value:** US\$650+ million
- **Outcomes:** various flood and drought resilience, urban ecology benefits, and precinct transformation
- **Partners:** multi-level government, water utilities, property developers
- **Status:** delivery

Shading the City

Infrastructure projects will include additional funding provided by our Canopy Uplift Program to include tree planting as part of the project.

- **Project value:** US\$350 million
- **Outcomes:** increase the canopy cover by 40% and cool our city by 4°C by 2040
- **Partners:** multi-level government, industry
- **Status:** delivery. US\$1.3 million funded to date

Urban Forest Fund

The Urban Forest Fund accelerate greening across our city, offering matched-funding grants to property owners to green their property. The annual grant program can be tailored to achieve the objectives of funding partners.

- **Project value:** US\$350 million
- **Outcomes:** US\$1.3+ billion environmental benefit
- **Partners:** commercial, residential, community, education institutions
- **Status:** delivery. We've funded 19 projects valued at more than US\$7 million

Retrofit Melbourne

Retrofit Melbourne aims to develop an industry driven mechanism to retrofit mid-tier commercial buildings. The full project is a 15-year rolling retrofit to deliver zero carbon, healthy, electrified buildings.

- **Project value:** US\$350 million
- **Outcomes:** US\$1.8 billion environmental and economic benefit
- **Partners:** industry, education institutions
- **Status:** early stage

Heat safe neighbourhoods

Creating a network of cool places and corridors that boost heat safety. Funding would support delivery of more than five alternative water systems, 20 plus heat safe streets, more than 10 public building upgrades, preparing 100 strata buildings and practical support for our community.

- **Project value:** US\$500 million
- **Outcomes:** all neighbourhoods have a drought-ready park, an extreme weather refuge and heat safe corridors for travel
- **Partners:** multi-level government, water utilities
- **Status:** from feasibility to business case

Power Melbourne

Power Melbourne will transform our fragmented energy infrastructure with a network of coordinated community batteries across the city. Accelerating the deployment of state-of-the-art technology at scale will cement Melbourne's reputation as a global centre for clean energy innovation.

- **Project value:** US\$15+ million
- **Outcomes:** reduction in 24,000 tonnes of CO2 per annum per 5,000 customers
- **Partners:** multi-level government, education institutions
- **Status:** demonstration phase



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4. Further resources

The following resources provide more detail and context to the information summarised in this submission:

- [Response to the Climate and Biodiversity Emergency 2020](#)
- [Adapting to climate change - City of Melbourne](#)
- Parliamentary Inquiry into the 2022 Flood Event Flood Inquiry - [MAY23 FMC1 AGENDA ITEM 6.2.pdf \(melbourne.vic.gov.au\)](#)
- [Affordable Housing People's Panel \(melbourne.vic.gov.au\)](#)
- [Community consultation | Community Resilience Assessment | Participate Melbourne](#)
- [Draft Homelessness Strategy 2024-2030 | Participate Melbourne](#)
- <https://www.water.vic.gov.au/our-programs/integrated-water-management/iwm-forums>