

INQUIRY INTO CLIMATE RESILIENCE

Organisation: Macedon Ranges Shire Council

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Parliament of Victoria
Legislative Council Committees
Via email: climateresilience@parliament.vic.gov.au

To whom it may concern

Re: Victorian inquiry into climate resilience

Thank you for the opportunity to make this written submission to the Parliamentary Inquiry into climate resilience in Victoria in addition to our attendance at the hearing on 3 December 2024.

Macedon Ranges is known for expansive native forests, thriving food and wine industries and natural attractions such as Hanging Rock and Mount Macedon. Climate change is already having an effect on each of these values in some way.

Under climate change, Macedon Ranges Shire's environment will become increasingly warmer and drier. Infrastructure will need to withstand three times as many days above 38 degrees annually by 2040, while experiencing fewer frosts. Annual rainfall totals are likely to decline however, a warmer climate is expected to bring more heavy rainfall events¹.

The bushfires seasons will become longer with Macedon Ranges Shire's bushfire season predicted to extend by up to six weeks with the season extending into late April by 2050.

The events of February 1983 are never too far from resident's minds, where wildfires destroyed the townships of Macedon and Mount Macedon as well as over 20,000 hectares of vegetation. More recent fires – February 2014 (Gisborne South and Mickleham), October 2015 (Lancefield-Cobaw), and January 2016 (Edgecombe) – have resulted in the loss of homes along with significant numbers of stock, outbuildings, and fencing.

Councils are on the front line preparing and responding to the impacts of climate change on our communities and natural and built environment. Our shire continues to recover from multiple weather events that impacted local communities in recent years including the 2021 windstorm, 2022 rainfall/flood events and early 2024 storms.

¹ Clarke JM, Grose M, Thatcher M, Round V & Heady C. 2019. Loddon Campaspe Climate Projections 2019. CSIRO, Melbourne Australia

Our team have been actively involved in relief and recovery efforts related directly to these events, with a particular consideration of the long-term recovery for residents who have had the unfortunate compounding experience of multiple events across a short period of time.

Insurance along with the Commonwealth Disaster Recovery Funding Arrangement (DRFA) are the two funding streams Council is reliant on in extreme weather events. Both are subject to a strict qualification criteria and exclusions which do not fully protect Council from the financial burden caused by climate change. The Macedon Ranges Shire has been impacted by 22 severe weather events that have qualified for Disaster Recovery Funding Arrangements (DRFA) in the past 10 years.

These events do not include the smaller weather events, as unless the emergency is very large, relief and recovery management happen at the local level and is led and paid for by Council. Such works, including the repair and maintenance of infrastructure, clearing of debris and drains, waste disposal, pothole patching, and road grading, result in significant unbudgeted expenditure. In fact, extreme weather events attributed to climate change are the largest financial burden for Council.

The storm damage sustained in mid-2021 resulted in Macedon Ranges Shire Council incurring \$21 million in associated expenditure. It has taken nearly three years to process all claims arising from this single event, and significant costs in excess of \$5.6 million have been borne by Council that were not able to be claimed.

There are significant barriers to accessing funds for betterment of damaged assets and infrastructure following disaster events. Under current DRFA, councils are funded to return assets and infrastructure to their pre-disaster state. Resilience improvements are often not funded, or only partially funded through the DRFA, with councils generally required to pay for additional upgrades themselves should they wish to build back better. The urgency with which essential infrastructure needs to be reinstated further limits opportunities to budget for and allocate funding to build back better.

The ability of Victorian councils to keep up with regular asset maintenance and renewal, and to invest in upgrades for climate resilience, is severely hampered by resource and funding constraints. These pressures are compounded by the impacts of rate capping, rising inflation, labour shortages, and higher construction and maintenance costs. Budgets are further strained from responding to successive climate-related disaster events.

Uncertainty about the future impacts of climate change make it difficult to plan for future servicing infrastructure, such as power, water supply, stormwater and sewerage requirements. At present, all drains and retarding basins are constructed to meet today's climate requirements. We are not modelling future climate scenarios and there is a risk that the infrastructure that is being delivered today is not being designed to adequately accommodate future flows, putting many communities at risk. Including future climate projections and flood modelling infrastructure design will in turn increase the cost for construction and ongoing maintenance.

Climate change is also one of the most serious threats to our natural, historic and Aboriginal heritage. As such, preparing for how climate change will impact the heritage of the Macedon Ranges Shire is a key objective of the recently adopted *Macedon Ranges Heritage Strategy 2024-2034*² and its accompanying action plan.

Macedon Ranges Shire Council declared a Climate Emergency in December 2021³ and has a plan to reach zero net emissions by 2030⁴. Council understands its responsibility to take strong action on climate change and supports residents across the shire to do the same.

Council's priorities include transitioning to post-carbon energy and transport alternatives and advocating for the introduction of Environmentally Sustainable Design (ESD) policy into the planning scheme. Many of these targets are contingent on leadership from the State Government to provide the planning and legislative framework to enable our townships to be built with future climate a central consideration for future communities.

Our following written submission to this inquiry is framed around each of the six terms of reference. Our key recommendations are:

1. Ensure locals governments have access to secure long-term funding to prepare for and recover from climate impacts.
2. Support a consistent approach to proactive 'build back better' funding responses to emergency events for Victorian councils.
3. Incorporate Environmentally Sustainable Design (ESD) policy into the planning system along with the most recent and localised flood and climate modelling.

It is essential that all levels of government share responsibility in this space and strive for best-practice rather than meeting minimum standards when it comes to planning future-proof communities.

Thank you once again for the opportunity to participate.

Yours sincerely

Bernie O'Sullivan
Chief Executive Officer

² Macedon Ranges Shire Council, [Heritage Study 2024-2034](#)

³ Macedon Ranges Shire Council, [Climate Emergency Plan](#)

⁴ Macedon Ranges Shire Council, [Counting Down to Zero Net Emissions for Council Operations Plan](#)

Responses to Terms of Reference

(a) the main risks facing Victoria's built environment and infrastructure from climate change and the impact these will have on the people of Victoria

Flooding

Climate change poses significant challenges to the urban environment, affecting both flood risks and stormwater pollution, threatening communities, infrastructure, property, and the natural environment across the Macedon Ranges Shire. Rainfall events in the Macedon Ranges are set to increase major and minor flow paths and increase the extent and depth of flooding across the shire.

The provision of effective urban stormwater management is one of the most pivotal challenges for councils with events increasing in frequency and intensity. Stormwater flows under climate change predictions will be beyond the capacity of the existing drainage networks to cope with and will require upgrading resulting in a substantial financial cost. If these upgrades are not accounted for, communities will be subject to a higher occurrence of flooding events. The ongoing maintenance of drainage infrastructure is also predicted to increase.

Traditional stormwater management has focused narrowly on drainage, with the approach of constructing drainage channels to divert flows away from populated areas into natural waterways. Our drains and retarding basins are constructed to meet today's climate requirements, and we are not modelling future climate scenarios when designing new infrastructure. There is a very real risk that the infrastructure that is being delivered today is not being designed to adequately accommodate future flows and conditions. Intensifying urban development, aging infrastructure and an accumulation of under-investment in stormwater management is further stretching the ability of local government to manage stormwater effectively.

Urban exposure to flooding has increased over the past few decades and water quality is deteriorating due to excessive nutrient loadings delivered through urban stormwater into our natural waterways. Waterways are further impacted from erosion during heavy rainfall events which can undermine built structures and strip the banks of soil and vegetation.

Roads

The floods of October 2022 had a significant impact on the region's road network and maintenance program. Responding to immediate repairs after rainfall events is putting increasing strain on the delivery of regular maintenance regimes. Road conditions continue to deteriorate, compounded by successive events, becoming increasingly hazardous for drivers and causing damage to vehicles.

Heritage

Climate change is one of the most serious threats to our natural, historic and Aboriginal heritage. As such, preparing for how climate change will impact the heritage of the Macedon Ranges Shire is a key objective of the recently adopted *Macedon Ranges Heritage Strategy 2024-2034* and its accompanying action plan.

Macedon Ranges Shire's heritage is highly vulnerable to climatic events and disasters, for instance, through years of neglect or poor maintenance. There is a lack of understanding and recognition that retaining the embedded energy we have in the existing built and natural environment is sustainable.

The heritage Kyneton Windmill Bridge on Kyneton-Metcalf Road was lost in the flood events of October 2022. This was covered by insurance and will be repaired in the next financial year. The state listed Kyneton Mechanics Institute was severely impacted by the January 2022 flood event and is currently being repaired with a Heritage Victoria grant.

Council is aware that we need to start preparing and futureproofing our heritage assets for future climate conditions and events as well as managing impacts to heritage during and after disasters. This comes at an enormous cost and resourcing burden for each council to tackle individually.

We would like to see some assistance at the state level (i.e. through Heritage Victoria, Department of Energy, Environment and Climate Action, Department of Transport and Planning, First Peoples - State Relations) in combating these challenges and helping councils to share costs and resources. This could be through the development of heritage and climate change design guidelines for the state, heritage and climate change planning practice notes and training. One suggestion is the development of a heritage climate change program for the World Heritage Victorian Goldfields area that involves and is shared across 13 local governments and 11 Registered Aboriginal Parties involved in the bid.

Recommendations

1. Ensure local governments have access to secure long-term funding to prepare built infrastructure for climate impacts.
2. Develop shared resources for managing heritage assets and places.

(b) how the Victorian Government is preparing for and mitigating the impacts of climate change on our built environment and infrastructure

Stormwater drainage networks play a key role in effectively managing runoff and minimising flooding in town centres, but they have typically been designed on historical climate data which assumes climatic stationarity. It is imperative that urban stormwater management strategies adapt to climatic conditions different to historical norms.

Macedon Ranges Shire Council delivered an Integrated Water Management Plan for the southern portion of the shire in April 2020 and is currently delivering a separate Integrated Water Management Plan for the northern region of the shire. This plan will identify whole of water cycle solutions for the towns of Woodend, Kyneton, Tylden and Malmsbury to ensure sustainable development in the region. Unfortunately, Water Sensitive Urban Design (WSUD) and Environmentally Sustainable Design (ESD) solutions are only applicable in some instances and are not mandated.

The Victorian planning system can play a key role in leading change in this space by promoting urban design to mitigate the impacts of climate change. For example, providing more permeable surfaces and vegetation cover to increase the natural capacity of the urban form to mitigate runoff and flood related risk.

In recent years there has been a gradual shift in community objectives and expectations related to climate resilience, community liveability related to public open space provision, and the ecological health of our water catchments. This in turn has prompted greater consideration of how different approaches to stormwater management, as part of an integrated water cycle management approach, could be used to achieve these community objectives.

As with integrated water management and environmentally sustainable design in the Victorian planning provisions, the Building Code does not adequately allow for innovation in preparing our built environment for the impacts of future climate condition and no appetite or incentive for the building industry to exceed minimum standards within the Building Code. This disproportionately affects the more vulnerable members of our communities such as those that are more susceptible to heat-related illness and increasing utility costs. Addressing these issues through the building and construction system is imperative, as, even if better standards are introduced into the planning scheme, many new builds do not require a planning permit to be built.

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Case Study – Lancefield Kindergarten

This new kindergarten is currently being built by the Department of Education and managed by the Victorian School Building Authority. The original designs were in accordance with minimum standards of the Building Code. Despite Macedon Ranges Shire Council arguing for higher building standards in this build and the application of its [Sustainable Buildings Policy](#), there was no obligation for the Victorian School Building Authority to apply Council's policy, partly because at the time, the building was intended to be State Government owned and operated. Council requested glazing and extra insulation which costed Council an additional \$135,000 - \$150,000 in a cost shift from state to local government to fund ESD even though there is policy directive at state level. Council has now assumed responsibility for the building including ongoing maintenance and utilities.

Key points:

- Council's standards for sustainable buildings are higher than those in the Building Code.
- There is a disconnect between State Government departments in delivering on climate adaptation policy.
- The State Government needs to adequately resource design and construction of public use buildings to remain functional and comfortable for people to use under future climate scenarios.
- The State Government needs to set the bar for building climate resilient buildings.

⁵ Macedon Ranges Shire Council, [Sustainable Buildings Policy](#), September 2021

Recommendations

3. Raise the standard of design and construction of new buildings and developments and incentivise climate-sensitive design.
4. Investigate financial assistance to upgrade power infrastructure to support the transition to renewable energy and electric vehicles.

Case Study – Electric Vehicle Charging

A recent Institute for Sensible Transport report (October 2024) commissioned by Central Victorian Greenhouse Alliance (CVGA) looked at a Public Electric Vehicle (EV) charging framework and implementation plan for Macedon Ranges Shire.

The report estimates the total amount of public charging that is expected to meet future EV usage levels in 2030 across the shire.

It expects that EV ownership is expected to grow 47-fold between now and 2030 amongst shire residents, however the largest need for EV charging across Macedon Ranges Shire will be for public charging.

Their report estimates that EV charging in the public realm will need to increase from 1,127 kWh currently to 53,238 kWh by 2030 to meet the projected EV usage.

The forecast amount of charge that will be required by 2030 is beyond what can reasonably be supplied from the current and future sites supplied and proposed by Macedon Ranges Shire Council.

The report found that the process that local government must follow to determine the cost of electricity upgrades is costly and time consuming and the cost of providing the projected number of public charging stations is beyond the role and capacity of local government alone.

Councils will need support from the Victorian and Federal Governments to help fund and implement the charging infrastructure required.

To achieve the level of charging network development required to meet the zero-emissions target of the State Government, a streamlined and less costly process will be required for local governments and the Charge Point Operator (i.e. – Evie, ChargeFox) sector.

We encourage the State Government to push for amendments to state planning policies to incorporate EV charging infrastructure in private car parks and new builds.

Power supply constraints and pressure for carparking were reasons why proposed charging stations at Malmsbury Town Hall and Riddells Creek were removed from the project.

We also encourage co-contribution from the power sector and other levels of government in upgrading power supply to support increasing demand for charging infrastructure in a transition to renewable energy. This is largely proponent funded currently, acting as a barrier in upscaling local renewable energy solutions.

(c) the barriers facing Victoria in upgrading infrastructure to become more resilient to the impacts of climate change, including barriers in rebuilding or retrofitting infrastructure, including but not limited to, issues relating to insurance and barriers faced by local government.

Emergency relief and recovery

Extreme weather events attributed to climate change are the largest financial burden for Council resulting in significant unbudgeted expenditure.

The storm damage sustained in mid-2021 resulted in Macedon Ranges Shire Council incurring \$21 million in associated expenditure. It has taken nearly three years to process all claims arising from this single event, and significant costs more than \$5.6 million have been borne by Council that were not able to be claimed.

Insurance along with the Commonwealth Disaster Recovery Funding Arrangement (DRFA) are the two schemes Council is heavily reliant on in extreme weather events.

Both schemes are subject to a strict qualification criteria and exclusions which do not fully protect Council from the financial burden caused by climate change. Many have required a co-contribution of funds, which places intense economic pressure on councils, who are often already stretched for resources and money. Additionally, acquittal processes are demanding and resource intensive, taking staff away from important recovery activities and impacting the overall recovery process.

Impacts on Council outside of the assistance streams include hidden costs that are harder to quantify such as staff overtime and turnover due to peak workloads, higher processing costs and delays, internal investigation costs following asset failure, supply and contractor shortages and delayed business as usual services and works that need to be delayed due to the emergency response. There is also a huge administration burden with an extensive pre-approval process to navigate prior to receiving authorisation for works to commence.

There are significant barriers to access funds for betterment of damaged assets and infrastructure following disaster events. Under current Disaster Recovery and Funding Arrangements (DRFA), councils are funded to return assets and infrastructure to their pre-disaster state. Resilience improvements are often not funded, or only partially funded through the DRFA, with councils generally required to pay for additional upgrades themselves should they wish to build back better. The urgency with which essential infrastructure needs to be reinstated further limits opportunities to budget for and allocate funding to build back better.

The ability of Victorian councils to keep up with regular asset maintenance and renewal, and to invest in upgrades for climate resilience, is severely hampered by resource and funding constraints.

These pressures are compounded by the impacts of rate capping, rising inflation, labour shortages, and higher construction and maintenance costs. Budgets are further strained from responding to successive climate-related disaster events.

In addition to damage sustained to insured assets, insurance experts predict climate change impacts to Council's public liability insurance portfolio in the form of claims against Council due to flood, tree damage, trips and falls caused by sudden lift in footpaths and roads, damage to road surfaces.

Recommendations

5. Enhance support to enable Victorian councils to 'build-back-better' and reinstate more resilient infrastructure.

(d) the adequacy of the current Victorian planning system as it relates to its adaptation to, preparation for, and mitigation of climate change impacts

There is no clear legislative link between the Climate Change Act 2017 and the Planning and Environment Act 1987 and there is currently no specific reference to climate change in the Planning and Environment Act 1987. And whilst it could be argued that the objectives of planning in Victoria within the Act do embrace this issue in a broader and more indirect way, the question should be asked as to whether climate change considerations should be made more explicit.

The influence of the Planning and Environment Act in relation to day-to-day decision making is largely felt through Planning Schemes which in essence controls land use and development outcomes within a municipal district.

Whilst one of the identified purposes of the Planning Scheme is '*to support responses to climate change*', there is a clear level of disconnect between the planning system and climate action. Whilst the Planning Scheme does include a number of high-level policy statements regarding climate change, these lack clear direction and an ability for decision-makers to implement such policies on a day-to-day basis and in any meaningful way. It is also acknowledged that much of the climate related policy sits within a number of large and complex policy documents (i.e. Victoria's Climate Change Strategy) which are required to be 'considered as relevant', which often results in poor and inconsistent application of such policy.

The inclusion of clearer and more explicit content in the Planning Scheme is a critical step in allowing climate change adaptation and mitigation to be considered by decision-makers. Its application is frequently the primary influence on outcomes relating to land use and development but is reliant on having appropriate permit triggers in place.

Statutory Planners and other decision-makers need specific content in Planning Schemes to support them in delivering climate responsive outcomes such as overlays which create permit triggers. The current system is slow and cumbersome, and changes to the Scheme requested by local governments and their communities often take years to be approved, if at all, through delays in planning scheme amendments.

The current planning system generally seeks to avoid planning permit triggers and streamline the planning process with a strong reliance on the building system to deliver appropriate building outcomes. However, the Building Code of Australia is largely framed around minimum standards and does not necessarily support best practice, especially in response to future climate and adaptation. Not adequately building new housing stock to withstand future hazards conditions will affect the safety, affordability and comfort of future residents and is likely to disproportionately affect the most vulnerable members of the community.

Failing to include, as part of legislative obligations, robust and comprehensive references to climate change and clear policy direction within the Planning System will compromise support for climate action. Plan for Victoria provides an opportunity for the state to lead in this space and make climate resilience a key consideration in urban planning across the state.

Urban planning needs to be able to respond dynamically to local level data and information, and in the absence of leadership from the state, local councils must go this alone. If there is no reference in the scheme, the ability to deliver particular outcomes is compromised and inconsistent and relies more heavily on individual decision-making and capacity. Many local councils have already applied local planning policies that encourage performance beyond state planning standards and policies to include ESD and Water Sensitive Urban Design.

Macedon Ranges Shire Council supports CASBE's lodgement of a planning scheme amendment with the State Government back in 2022 to introduce planning policy that elevates sustainability requirements for new buildings and encourages a move towards net zero carbon development. We urge the Victorian Government to authorise the Elevating ESD Targets Amendment as soon as possible to enable councils to lead in transitioning to a climate resilient built environment.

Flood Mapping

Catchment Management Authorities update flood mapping, and it is the responsibility of Council to progress planning scheme amendments to translate the flood mapping into planning scheme controls. To improve this process, the State Government should provide ongoing funding for the implementation of planning scheme amendments to update planning controls for flooding and the implementation process should be limited to 20(4) Ministerial Amendments. This will speed up the changes and potentially depoliticise the issue at a local municipal level. We strongly recommend a streamlined pathway for the introduction of new flood data into the Planning Scheme.

Green Infrastructure and biodiversity

There is a tension between strategic work to protect and enhance vegetation (which is an action that contributes to both mitigation of and adaptation to climate change) and bushfire controls in the Planning Scheme, which are given primacy over all other considerations.

Due to the combined effects of shading and evapotranspiration, trees have the potential to cool urban microclimates and help mitigate urban heat, reduce thermal discomfort and help create comfortable outdoor spaces for people. As our population is becoming ever more urbanised these services will be increasingly vital to the quality of life in urban areas. However, increased vegetation within the urban landscape has its own risks, particularly where communities are extremely vulnerable to the effects of bushfire. Although the threat from fire cannot be totally eradicated from the urban interface, several methods have been adopted to reduce the risk of fire to human settlements including land-use planning provisions, building controls and fuel reduction activities that frequently result in the indiscriminate clearing of trees and vegetation.

In response to recommendations from the 2009 Victorian Bushfires Royal Commission the Victorian Planning Provisions (VPP) were amended (VC83) to strengthen community resilience to bushfire. Together with the introduction of a Bushfire Management Overlay (BMO) the primary purpose of these changes was to prioritise human life over other planning criteria. In order to create defensible space around human settlements, the provisions enable permit exemptions for vegetation removal. These blanket planning policies and exemptions fail to address the complexities and traits of the vegetation itself and the role that vegetation plays in manipulating fire behaviour but also in making urban areas more liveable.

Council's Biodiversity Strategy 2018⁶ recommends the expansion of Vegetation Protection Overlays within the Macedon Ranges Planning Scheme however this was met with resistance from Department of Transport and Planning (DTP) and the Country Fire Authority (CFA) as any increase in vegetation in the landscape is considered to increase bushfire risk.

Advice from DTP and CFA suggests there should not be vegetation that creates a 'wicking effect' into urban areas, excluding native tree planting and understory planting in streetscapes and open spaces that can also provide biodiversity and habitat corridors. Concern has also been raised with use of screening vegetation to reduce the visual impact of built form in significant landscape areas via the application of planning controls such as the Significant Landscape Overlay.

⁶ Macedon Ranges Shire Council, [Biodiversity Strategy 2018](#)

Despite efforts of internal officers to work together on achieving the best outcomes in new subdivisions, they are hamstrung with only a 5 percent open space contribution and a public realm in greenfield developments that does not enable the establishment of canopy trees and adequate green and blue infrastructure to achieve meaningful ecosystem services (i.e. minimum road reserve widths that only allow for small or medium trees and tree planting is inhibited by on street parking and offsets from utility installations).

Local governments have little capacity to implement alternative strategies and designs in this space as the Planning Scheme does not have requirements that embed mitigation factors into urban environments. Examples include mandatory carparking for commercial developments, however the provision of canopy trees, landscaping or WSUD are all 'nice to haves' that require local policy integration and negotiation to achieve.

Recommendations

6. Introduce a streamlined pathway for the timely introduction of the latest flood data into the Planning Scheme.
7. Incorporate Environmentally Sustainable Design (ESD) policy into the planning system.
8. Improve the Precinct Structure Planning Guidelines, setting the benchmark for all greenfield planning in Victoria.

Case Study – Amess Road Precinct Structure Plan

The Amess Road precinct is approximately 130 hectares in Riddells Creek. The land was rezoned from Rural Living Zone to Urban Growth Zone (UGZ) in 2017.

In order for this precinct to be developed, a Precinct Structure Plan (PSP) needs to be prepared.

A proponent-led PSP was developed for Council's consideration throughout 2022 and 2023 culminating in a proposed planning scheme amendment being tabled for endorsement at the April 2023 Planning Delegated Committee Meeting, where Council resolved not to support the proposal based on a community petition being submitted containing 1,231 signatures.

The Amess Road Precinct Structure Plan was then submitted by the developer to the Victorian Government's Development Facilitation Program (DFP).

The proposed development was accepted into the DFP and has now been referred to by the Minister for Planning to the Priority Projects Standing Advisory Committee.

Riddells Creek Planning Group have provided a written response to this inquiry regarding the Amess Road development. Their analysis reveals the lack of attention plans for this development show towards addressing climate adaptation and resilience.

They have raised:

- Poor consideration of bushfire risk and road network to allow for emergency egress.
- Poorly sighted development to enable active and public transport. The development is a good 30-minute walk from the town centre and there is no coordination with the local bus network.
- Inadequate stormwater infrastructure with the amount of impervious surfaces greatly underestimated which will be exacerbated by future climate predictions.

Ultimately, there is nothing in the existing Planning Scheme obliging the developer to adopt best practice climate adaptation principles in this new precinct despite strong community resistance.

(e) what more could be done to better prepare Victoria's built environment and infrastructure, and therefore the community, for future climate disaster events

Urban infrastructure urgently requires adaptation, and local governments need assistance to do this. Options like more regular maintenance, opting for more robust and sustainable construction materials or requiring development to deliver infrastructure projects that meet or exceed best practice are currently out of reach of most local governments but can deliver real benefits and future savings.

The proactive adaption of infrastructure to climate change is a fast-growing industry and opens new economic opportunities. By promoting public and private investment in climate-resilient infrastructure through policy and planning mechanisms, these economic benefits can be realised rather than undergoing the higher cost associated with rebuilding after extreme weather events have hit.

State and Federal Government agencies are primarily responsible for developing climate transition policies and guidelines, as well as providing limited financial aid to help support local government. A lot more needs to be done in the implementation of relevant action plans, economic assessments and stakeholder participation and engagement. The enhancement of cost-share mechanisms among different levels of stakeholders and government authorities to face and prepare for climate change impacts would also assist in achieving a more effective climate response.

(f) whether further inquiries or investigation may be needed into other aspects of climate change adaptation and climate disaster preparedness in Victoria, noting that climate change will have far-reaching impacts on all aspects of Victorian life, including but not limited to biodiversity, human health, primary production, industry, emergency services and more, and that while these areas may overlap with the matters covered in this inquiry, they may also warrant further investigation in their own inquiries.

Victoria is already experiencing changes in average temperature, shifts in the seasons and increasing frequency of extreme weather events impacting on agriculture, tourism and local economies. The longer adaptation efforts are put off, the more difficult and expensive responding to climate change will be.

Climate change is impacting human health in many ways such as death and illness from increasingly frequent extreme weather events including heatwaves, storms and floods, the disruption of food systems, increases disease and mental health issues. Climate change is also helping the H5N1 bird flu virus spread and evolve⁷. (Should an incursion of Bird Flu emerge in wild bird populations, councils will be responsible for the disposal of dead wild birds including securing land and resources to run the operation).

According to the World Health Organisation⁸, climate change is undermining many of the social determinants for good health, such as livelihoods, equality and access to health care and social support structures. These climate-sensitive health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, displaced persons, older populations, and those with underlying health conditions. We also know that there is a greater risk of women experiencing family violence in times of emergencies⁹.

The climate emergency and biodiversity decline are intrinsically linked, and climate adaptation and mitigation measures must include nature-based solutions that benefit both people and the natural environment.

⁷ Leal Filho, W.; Ternova, L.; Parasnis, S.A.; Kovaleva, M.; Nagy, G.J. Climate Change and Zoonoses: A Review of Concepts, Definitions, and Bibliometrics. *Int. J. Environ. Res. Public Health* **2022**, *19*, 893. <https://doi.org/10.3390/ijerph19020893>

⁸ <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>

⁹ <https://www.1800respect.org.au/violence-times-disaster>