

Melbourne's
Climate Journey
Discussion Paper



Preparing a
Regional Climate Change
Adaptation Strategy
for Greater Melbourne

2020





MINISTER'S FOREWORD

Adapting to a changing climate is one of the most significant challenges we face together as a community. On behalf of the Victorian Government, I am pleased to provide the foreword for this important discussion paper.

This preliminary piece of work is to inform the preparation of a Climate Change Adaptation Strategy for Greater Melbourne. The content has been developed by a community stakeholder committee and is now available for your feedback. I am proud that the Victorian Government has embedded the idea of 'Community at the Centre' by providing resources for this work.

I am also proud that Victoria is leading the way to meet the challenges of climate change by enshrining our Victorian Renewable Energy Targets (VRET) into law: 25 per cent by 2020, rising to 40 per cent by 2025 and 50 per cent by 2030.

However, Victoria is already experiencing climate change impacts and further changes

are inevitable. Our challenge is to support the global effort by continuing to reduce our greenhouse gas emissions while preparing locally for the many and varied impacts a changing climate will bring.

Regional climate change adaptation strategies, driven and owned by local people, will help to ensure that we consider new opportunities that arise, support our most vulnerable communities, and avoid the disruption and costs of delayed action.

I hope you will be inspired to share what matters to you in your neighbourhood, by contributing your views via the EngageVic site.

The Hon. Lily D'Ambrosio MP
Minister for Energy, Environment
and Climate Change

“...VICTORIA IS LEADING THE WAY TO MEET THE CHALLENGES OF CLIMATE CHANGE BY ENSHRINING OUR VICTORIAN RENEWABLE ENERGY TARGETS (VRET) INTO LAW: 25 PER CENT BY 2020, RISING TO 40 PER CENT BY 2025 AND 50 PER CENT BY 2030.



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MELBOURNE'S CLIMATE JOURNEY

Overview

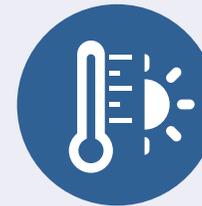
Over the past summer, people across Greater Melbourne have experienced first-hand the impacts of extreme hot weather and bushfires. We have experienced dust storms, hailstorms and heavy rainfall events resulting in flash-flooding. These are climate change impacts that will affect all aspects of our economy, our society and our environment. The consequence of extreme weather is particularly severe for the most vulnerable members of our community.

Finding ways to cope with extreme weather impacts and other consequences of climate change is generally referred to as 'Adaptation'. 'Mitigation' refers to finding ways to reduce our emissions. Both approaches are important.

Greater Melbourne climate projections



CONTINUING RISING DAILY TEMPERATURES



MORE FREQUENT AND LONGER HEATWAVES



RISING SEA LEVELS WITH INCREASED RISK OF COASTAL EROSION AND INUNDATION



EXTREME RAINFALL EVENTS EXPECTED TO BECOME MORE INTENSE



RAINFALL EXPECTED TO CONTINUE TO DECLINE IN WINTER AND SPRING

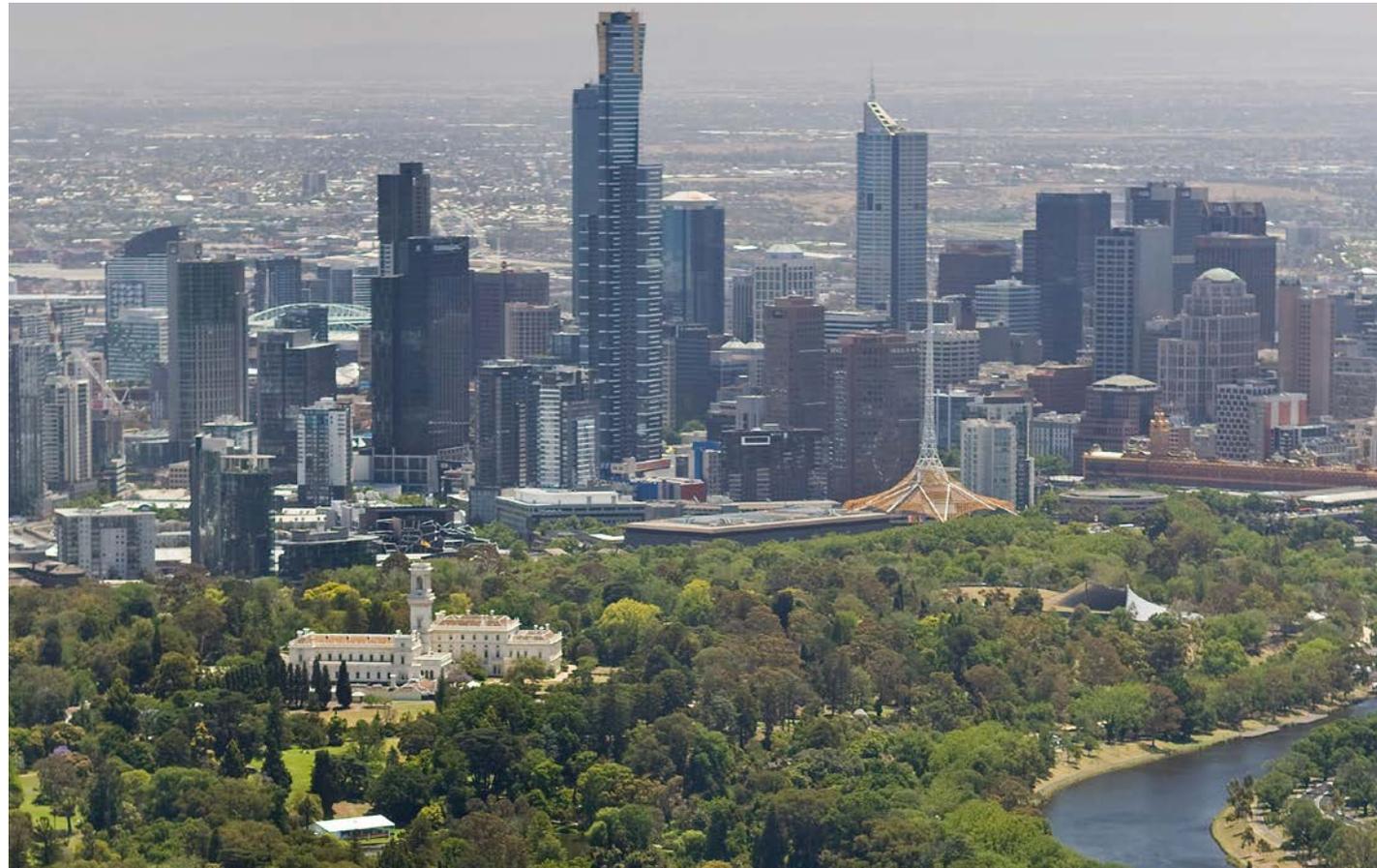


THE FIRE SEASON IS LONGER AND NUMBER OF VERY HIGH FIRE DANGER DAYS IN SPRING IS INCREASING

Preparing our industries, communities and environments to be able to cope with climate shocks makes good sense. It supports our most vulnerable groups and could reduce future costs.

The Victorian Government has provided funding for the local development of six regional Climate Change Adaptation Strategies across Victoria. These strategies will provide an opportunity to identify and prioritise actions for the next five years. The strategies will be regional because our communities know best what the main issues and concerns are at a local level. These regional strategies will align with seven key sector adaptation plans that are also being delivered in Victoria.

We all have views of what can and should be done to support our communities and businesses to cope better before, during and after extreme weather events. Preparing an adaptation strategy for our region will be an opportunity to explore and prioritise these ideas.



This Discussion Paper is the first step, kicking off our approach to developing a strategy for Greater Melbourne. We've set up a Stakeholder Committee with Executive Officers from each of our four Greenhouse Alliances, a member representing Resilient Melbourne and a small DELWP support team.

We are considering the impact of current circumstances on our region and are modifying our projects and engagement to ensure this important climate change adaptation work can continue and people can still get involved.

You can contribute to the development of our region's Climate Change Adaptation Strategy by considering the questions posed in this Discussion Paper, contacting us with your ideas (email climatechangemelbourne@delwp.vic.gov.au), signing up for our Newsletter or joining one of the virtual forums that we are planning.

What is this project?

Together with our key stakeholders, including local government, community groups, agencies and authorities, DELWP is supporting the development of a Regional Climate Change Adaptation Strategy (the strategy) for Greater Melbourne. This is part of a shift towards identifying regional issues and adaptation needs in a more strategic way. Six Victorian Regional Climate Change Adaptation Strategies will complement the seven sector plans being delivered as a requirement of the *Climate Change Act 2017*.

These strategies will be developed to cover a five-year period and provide long-term frameworks to enable adaptation action in Victoria's regions. They will focus on challenges that can be best met at a regional level, rather than a local or state-wide level. Delivery plans will be produced yearly to set out priorities.



Preparing ourselves for change

Climate change is affecting us all in many ways. While transitioning to new forms of less polluting energy, we also need to make significant adjustments to how we build resilience into infrastructure, how we do business, how we keep ourselves safe and how we behave as a society.

We will find it harder and more costly to adapt if we do not find ways to discuss some of these challenges and work toward solutions now.

Australasian Fire and Emergency Service Authorities Council (AFAC) noted in its 2018 Discussion Paper on Climate Change and the Emergency Management Sector:



THE INCREASING FREQUENCY AND SEVERITY OF EXTREME WEATHER EVENTS... PROLONGED HEATWAVES, STORM AND FLOODS AND INCREASING BUSHFIRE WEATHER – ARE ONGOING CONCERNS FOR AFAC AND ITS MEMBERS...



Victoria's Climate Change Adaptation Plan (2017-2020) outlines its shared vision for a thriving natural environment, and a healthy, prosperous, safe and vibrant place. By taking action now, our ecosystems, economy and communities will be better positioned to meet the challenges ahead.

If you are interested in how society addresses the challenges ahead, please get in touch.

What regional impacts are we expecting?

Climate projections for Greater Melbourne indicate that temperatures will continue to increase, with less frosts, rainfall will continue to decline, and we can expect more extreme weather events including bush fire weather and heavy rainfall events. Sea levels are expected to continue rising.

Specific climate change impacts we are already experiencing in our region include:

- » More frequent and longer heat-waves can impact human health and built infrastructure. More bushfire weather with increased severity and frequency of grass fires.



- » More heavy rainfall events resulting in flash flooding that will impact and disrupt businesses and commuters, with flow on effects for tourism and the economy
- » Extreme weather events including severe storms that will impact people, businesses and built infrastructure
- » Poor air quality associated with increased severity and duration of bushfires and worsening air pollution levels associated with a hotter climate
- » Ongoing sea level rise with associated coastal erosion and coastal flooding that will impact natural areas, as well as private and public assets including surf life-saving clubs, jetties and roads.

Vulnerability to climate change impacts, such as extreme heat, is exacerbated in relatively disadvantaged communities. Important factors which constrain a person's ability to be informed, understand and take action on climate change in parts of our region include:

- » low literacy levels and poor English skills,
- » low income levels and unemployment,

- » high-density housing, low home ownership and high rental and public housing tenancy.

The Victorian Government's 'Cooling and Greening Melbourne Interactive Map' project, released in July 2019, shows the interaction between vegetation cover, urban heat and social vulnerability. [link here](#)

This Discussion Paper

Adapting to a changing climate is a complex and challenging process for the residents, businesses and industries in our region. There is no right or wrong way to consider the issues. We know we need to do it because that's good business and it makes sense to prepare our communities, especially to find ways to support our most vulnerable groups.

There has also been a lot of work done already, Examples include, Greater Melbourne Snapshot, Resilient Melbourne project and local government plans. After careful consideration with some of our partners we agreed to develop this Discussion Paper as a way of highlighting key issues and to use it as a tool to support the development of a draft strategy for the Greater Melbourne area.



Climate change is striking harder and more rapidly than many expected. The last five years are on track to be the warmest on record, natural disasters are becoming more intense and more frequent, and last year witnessed unprecedented extreme weather throughout the world.

ALARMINGLY, GLOBAL TEMPERATURES ARE ON TRACK TO INCREASE BY AT LEAST 3°C TOWARDS THE END OF THE CENTURY—TWICE WHAT CLIMATE EXPERTS HAVE WARNED IS THE LIMIT TO AVOID THE MOST SEVERE ECONOMIC, SOCIAL AND ENVIRONMENTAL CONSEQUENCES.



World Economic Forum, Global Risks Report 2020

We have examined other strategies and plans, and spoken with peak bodies and stakeholder groups. We have collated issues for our region and summarised priorities and opportunities for future investment.

Your input will ensure the strategy meets your needs and those of the community across the Greater Melbourne region. We are considering the impacts that coronavirus (COVID-19) is having across our region at this time and modifying our projects and engagement to ensure that people can still get involved.

We will use this Discussion Paper to feed into the next steps: targeted workshops for the important sectors in our region and engagement options for our communities. We will use digital meetings and forums to provide our Stakeholder Committee with information that will result in:

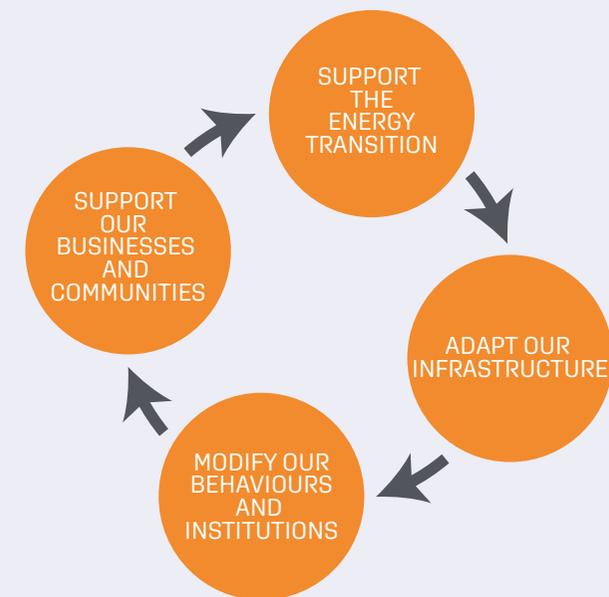
- » shared understanding of the valued places, institutions, people and assets in our region
- » shared understanding of the exposure of those values to climate hazards

- » the identification of priorities and actions to protect those values
- » the development of a 5-year strategy plan to outline the future we prefer for our region, and how to get there

Complexities of adaptation

When we look at our region and our society through a climate change lens, a social lens and an economic lens, it is clear that issues relating to mitigation, the renewable energy transition and our adaptation to extreme weather all intersect. For example, planting street trees and other greenery in urban areas can provide shade and cooling, reduce energy use in homes and absorb carbon. Careful design of drainage and water storage options can provide water for irrigation while also assisting in managing stormwater during heavy rainfall events. Installing solar panels and increasing the energy efficiency of housing can reduce energy demand on hot days and reduce the risk of blackouts.

Adaptation is complex



We need to consider economic implications, infrastructure resilience and social resilience in decision-making for our region.

Many of our region's small and large businesses identify energy costs and transport as key issues for them. Vulnerable households and culturally and linguistically diverse communities may have restricted capacity to adapt and could be at risk during extreme weather. They will need information and other resources to respond to extreme climatic events.

A feature of our region's housing stock is that older suburbs often have a larger proportion of energy-inefficient houses, while growth areas often have a high proportion of high energy-use housing.

We will find it difficult to do business in a low carbon economy if we have not considered both mitigation and adaptation aspects of climate change.

From the National Climate Change Adaptation Research Facility (NCCARF) website [link here](#)



THERE ARE TWO MAIN CATEGORIES OF HUMAN RESPONSES TO CLIMATE CHANGE: MITIGATION AND ADAPTATION. BOTH TYPES OF RESPONSE HELP TO REDUCE THE RISKS OF CLIMATE CHANGE.

MITIGATION INVOLVES ACTIONS THAT ARE INTENDED TO REDUCE THE MAGNITUDE OF OUR CONTRIBUTION TO CLIMATE CHANGE. IT INCLUDES STRATEGIES TO REDUCE GREENHOUSE GAS SOURCES AND EMISSIONS AND ENHANCE GREENHOUSE GAS SINKS.

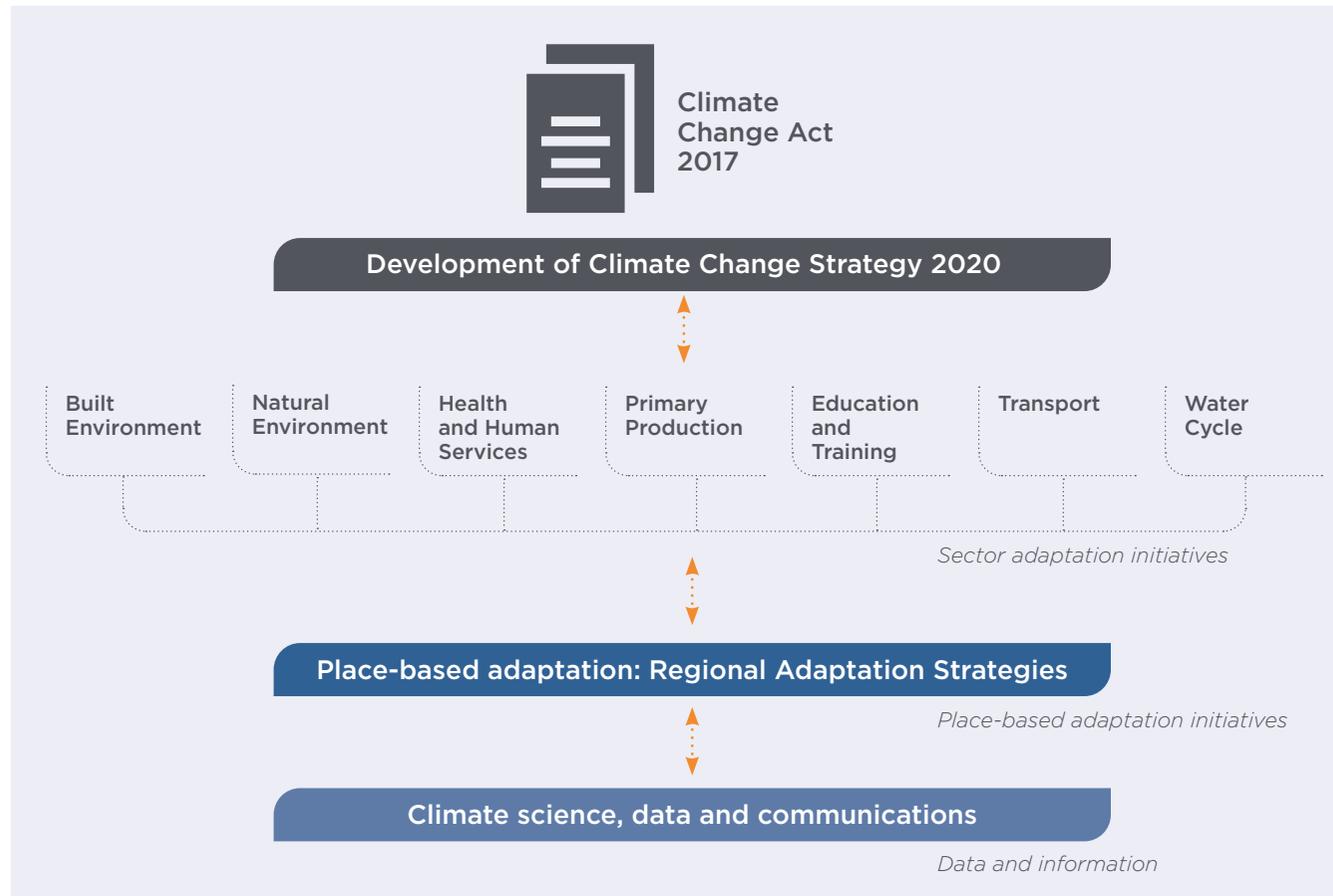
ADAPTATION CONSISTS OF ACTIONS UNDERTAKEN TO REDUCE THE ADVERSE CONSEQUENCES OF CLIMATE CHANGE, AS WELL AS TO HARNESS ANY BENEFICIAL OPPORTUNITIES. ADAPTATION ACTIONS AIM TO REDUCE THE IMPACTS OF CLIMATE STRESSES ON HUMAN AND NATURAL SYSTEMS.



Coordinating regional approaches with sector-based approaches

Seven sector plans are currently being developed in parallel to six regional strategies. The sector plans will be state-wide, and regional plans will be place-based. Our region includes Melbourne city and its fringes, and it will have different issues to other regions in Victoria.

This diagram shows how sector and regional plans are informed by climate information and engagement. These plans and strategies will in turn inform the new state-wide Climate Change Strategy as required under the *Climate Change Act 2017*.

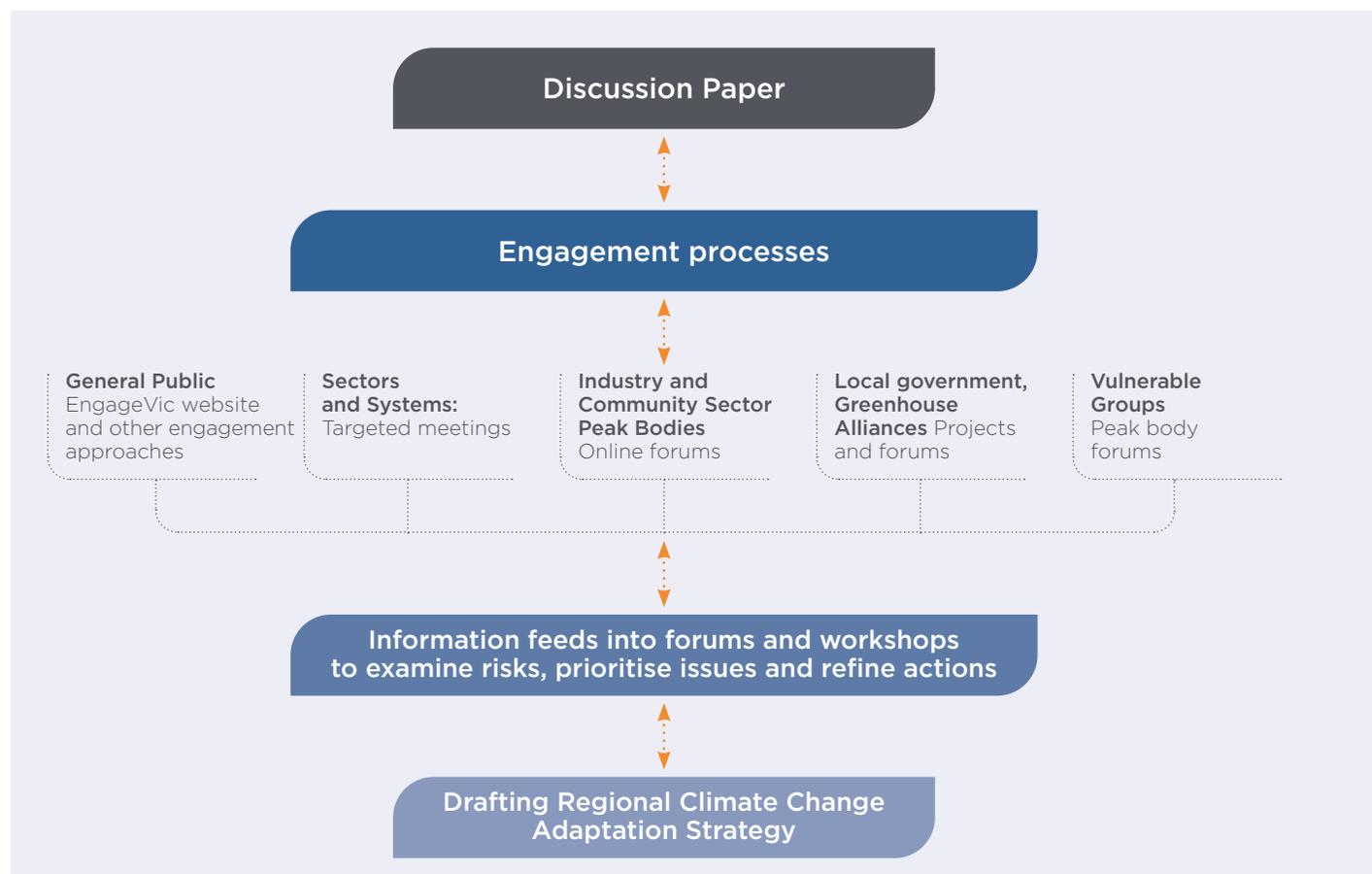


Ways you can engage

We are considering the impacts that coronavirus (COVID-19) is having across our region at this time and modifying our projects and engagement to ensure this important climate change adaptation work can continue and people can still get involved.

The content of the strategy will be informed by targeted sector and industry online forums, local government scenario planning sessions, online community engagement options and peak body workshops. Ideas will be tested with community sessions and surveys.

YOU CAN GET INVOLVED NOW BY GOING TO THE ENGAGEVIC SITE, LOOKING AT THE MAP OF OUR REGION AND CONSIDERING PLACES AND VALUES THAT ARE IMPORTANT TO YOU. LET US KNOW WHAT THEY ARE AND WHY YOU ARE WORRIED THEY MIGHT BE AT RISK FROM EXTREME WEATHER.



What has informed the process to date?

This is a rapidly evolving space and new reports and information relating to climate change adaptation, emissions reduction and growing investment opportunities are constantly being developed. We will remain flexible and incorporate new ideas where possible.

The following work has informed this Discussion Paper and our process:

- » A gap analysis study carried out in collaboration with Victorian Greenhouse Alliances provided the background: an overview of what was happening already in our region, and identification of some gaps in knowledge and work. [link here](#)
- » Interviews with key sectors within the region to identify issues of importance

- » Meetings with key organisations to identify what was happening already and what major issues were being faced
- » Review of existing high-level documents and processes¹
- » Review of local government climate change adaptation strategies and other plans (e.g. heatwave plans)
- » Examination of the types of DELWP climate change adaptation grant funding applications (3CA and Virtual Centre for Climate Change innovation) in the region over the past 2–3 years
- » Review of existing apps and other systems that support people in our region during weather extremes (e.g. Vic Emergency App, Heat Health Alert, Melbourne Pollen Count and Forecast)

¹ For Example, Resilient Melbourne Strategy 2016, Plan Melbourne 2017–2050, Melbourne Water Flood Management Strategy Port Phillip and Westernport 2015





OUR REGIONAL CONTEXT

What is our region?

This Discussion Paper is focussed on the Greater Melbourne region that encompasses the Melbourne CBD, outer suburbs and growth corridors, Port Phillip and Western Port Bays, Mornington Peninsula, the Yarra Ranges, the Dandenong Ranges and the Western Grasslands. It includes thirty-one local government areas and French Island.

Each strategy coordination team will ensure that any complementary or overlapping issues that are identified between regions can be addressed.



What's unique about our region in relation to climate change impacts?

The Greater Melbourne region has certain characteristics that set it apart from other regions in Victoria.

- » The region has a large population, high numbers of vulnerable² people and a large ageing population. It also has a growing population density and is culturally diverse.
- » As a large city we have high resource and energy demands, as well as a rapidly growing built environment with associated infrastructure needs.
- » Geographically our region is diverse: we have coastlines that are natural as well as built up, volcanic plains and grasslands in the west, forests and woodlands on the eastern fringes, agricultural

lands, rivers, creeks and two bays, as well as some areas of state and national parks.

- » Some climate change challenges are increased by our large urban area. For example, our region has less green space per person than other regions with significant pressures on our parks and natural areas. Built up areas exacerbate flash flooding and intensify the urban heat island effect.

To explore the relationship between vegetation cover and the urban heat island effect, DELWP has collaborated with RMIT, CSIRO and the Clean Air and Urban Landscapes Hub to map and analyse vegetation, land use and urban heat across Melbourne³. Recent social research in Victoria revealed that healthcare professionals are worried that people living in poor quality housing without efficient heating or cooling are 'extremely vulnerable' to climate change health impacts⁴.

² We define vulnerable people as those with chronic illnesses, the very old and the very young, people from lower socio-economic groups, new migrants whose first language is not English, people who are homeless.

³ <https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/plan-melbourne/cooling-greening-melbourne/mapping-and-analysis-of-vegetation,-heat-and-land-use>

⁴ Linking Climate Change and Health Impacts (Feb 2020) Sustainability Victoria



AS CLIMATE CHANGE INTENSIFIES, CITIES ARE PARTICULARLY VULNERABLE TO IMPACTS SUCH AS HEAT STRESS AND CAN PLAY A KEY ROLE IN REDUCING EMISSIONS LOCALLY AND GLOBALLY



*United in Science report 2019,
World Health Organisation*



- » Our region contains a high percentage of the state's jobs (expected to reach 80% by 2046). It's the centre for much of our state-wide infrastructure and many of our state and national businesses.
- » The Greater Melbourne area is serviced by all five electricity distributors (Distribution Network Service Providers). We are in a unique position for these networks to potentially coordinate activities or initiatives, that could be scaled up elsewhere in Victoria.
- » Greater Melbourne is a transport centre and hub for our state.
- » Our region is a major population centre and a place many other people visit. As the state's capital city, we have:
 - a large number of high-level strategic directions, guiding documents, plans and strategies. This situation can sometimes provide challenges about which issues carry

more importance. Our preliminary work has identified that this can lead to confusion about responsibilities on the ground.

- a role in helping the rest of Victoria to adapt. For example, the city and surrounds play a role in providing services, resources and shelter in emergencies.
- a large number of institutions, authorities and groups, including 31 local government authorities, four water authorities (Melbourne Water, Yarra Valley Water, City West Water and South East Water), the Port Phillip and Westernport Catchment Management Authority, numerous schools, tertiary institutes and many Melbourne-wide and local community groups
- many small businesses as well as national and international businesses
- major transport hubs; including airports, seaports and train and bus stations

LOCAL SCALE PROJECTIONS ARE NOW AVAILABLE FOR OUR REGION. THE PROJECTIONS TELL US THAT MAXIMUM AND MINIMUM DAILY TEMPERATURES WILL CONTINUE TO INCREASE, THAT RAINFALL IS EXPECTED TO CONTINUE TO DECLINE, PARTICULARLY IN WINTER AND SPRING, AND THAT EXTREME RAINFALL EVENTS ARE EXPECTED TO BECOME MORE INTENSE [LINK HERE](#)

- » Despite our population density, the Greater Melbourne region supplies significant amounts of agricultural and horticultural products for the state and beyond
- » We have a broad range of capacities and varying resources for adaptation across our region



What do you think is at risk from climate change impacts in our region? Should it be tackled at a local, regional or state-wide level?

Perceptions about climate change and its potential impacts are shifting

A recent report by Sustainability Victoria⁵ highlighted that 81 percent of people living in Greater Melbourne are concerned about Climate Change and 80 percent of Victorians agree that severe weather events such as heatwaves are due to the influence of climate change. The report highlighted that people in Melbourne were particularly concerned about air pollution and the effects of drought.

The 2019-2020 summer has resulted in significant impacts from extreme heat, including bushfires and dust storms. Bushfire smoke from East Gippsland has had significant impacts on our city and other areas around Victoria and also on Sydney, New Zealand and Tasmania.



⁵ <https://www.sustainability.vic.gov.au/About-us/Research/Victorians-perceptions-of-climate-change>

Councils are beginning to express serious concerns about the consequences of back to back disasters and the challenges during those events and in the recovery phases. The compounding effects of resource demands due to lengthening fire seasons are emerging. Some councils in our region have questioned if the impacts of mass evacuations on their communities (for example in response to flood events) have been fully considered⁶. Identification of the responsible agencies and the supply of adequate resources in these situations are also of concern.

What are the different levels of decision-making or planning?

The introduction to this paper outlined the types of weather impacts expected in our region. How our society copes with climate extremes

is in part determined by the characteristics and behaviours of our people, as well as our infrastructure, our institutions, the health of our natural environment and our general preparedness.

To address the complexities around how climate change is impacting on our society we need to consider how our current decision-making and institutions support us. In our Greater Melbourne region we have state, federal and international rules, regulations and policies that apply, as well as local government level policies, approaches and decision-making processes.

WHAT WILL BE THE IMPACTS OF MAJOR EVENTS SUCH AS FLOODS OR FIRES ON OUR COMMUNITIES?
WHAT WILL BE THE CONSEQUENCES OF BACK-TO-BACK DISASTERS?



THE SEVENTEEN UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS PROVIDE A COMMON OVERARCHING FRAMEWORK TO DELIVER COMMUNITY WELLBEING AND A MORE SUSTAINABLE FUTURE FOR ALL PEOPLE OF THE WORLD.

GOAL 13: TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS [LINK HERE](#)



The Victorian Government supports the objectives of the United Nations Sustainable Development Goals and is committed to ensuring that initiatives align with the SDG targets.



⁶ Notes from discussions at SECCCA Regional Forum in August 2019.

Many regional climate change plans and approaches already exist, although boundaries and jurisdictions differ. The private sector industries and businesses all have their own approaches to prioritising and acting on issues.

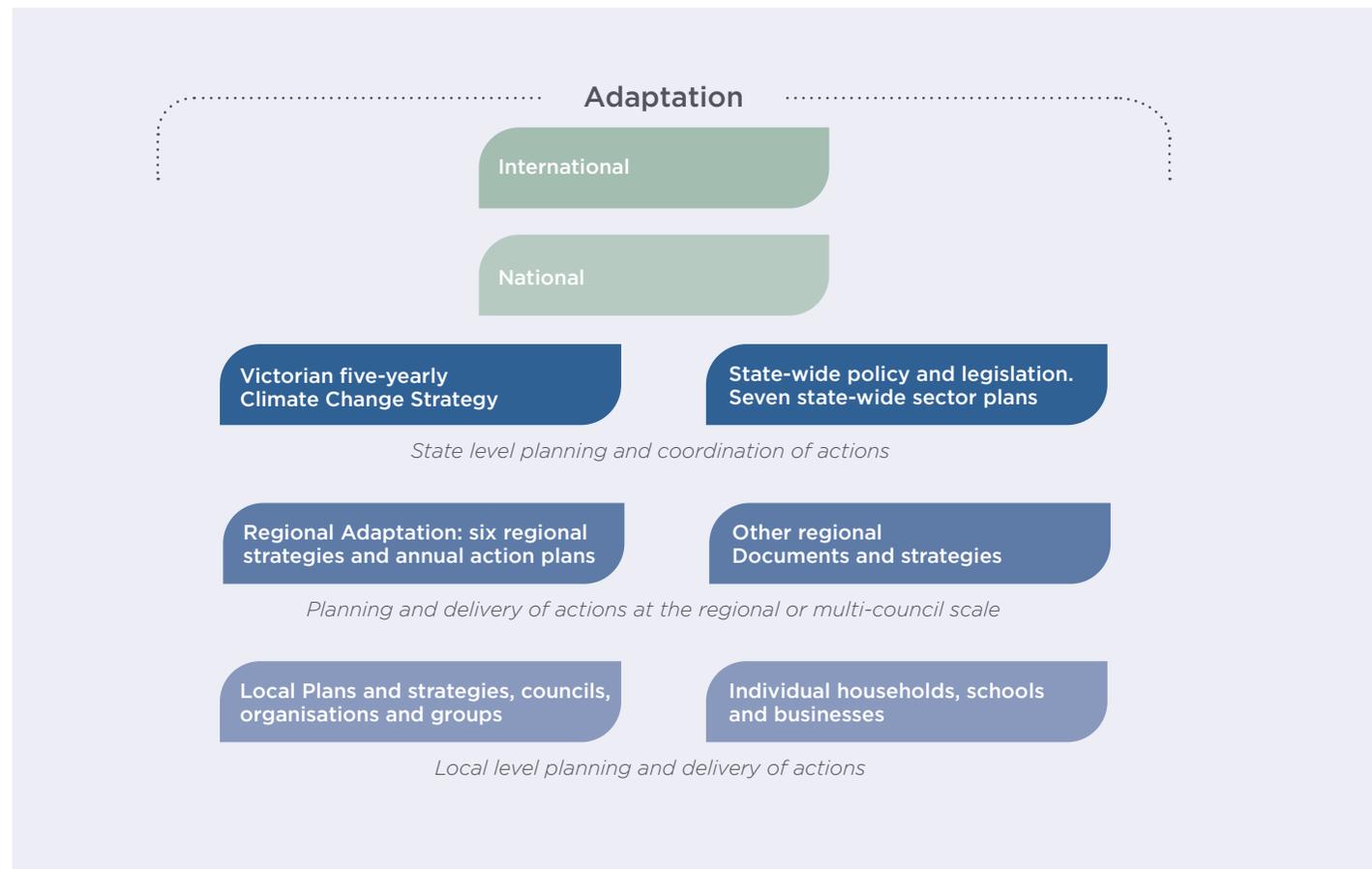
Individuals, community groups and schools also make decisions. The diagram shows the different layers of decision-making.



Are you aware of any other significant pieces of work, projects or studies with region-wide implications?



Do you know of any barriers for you to act on climate change at work, at home or in your community?





PREPARING THE STRATEGY

Our approach

A small Regional Adaptation Stakeholder Committee (the Committee) has been established to support the process of preparing the strategy for Greater Melbourne. The Committee is made up of representatives of our region's key stakeholders including:

- » Western Alliance for Greenhouse Action (WAGA)
- » Northern Alliance for Greenhouse Action (NAGA)
- » Eastern Alliance for Greenhouse Action (EAGA)
- » South East Councils Climate Change Alliance (SECCCA)
- » Resilient Melbourne project.

The Committee will deliver a set of projects and a number of forums. These will feed into the development of our strategy through a process facilitated by a small DELWP project team.

The Committee will design a series of forums and sessions for our region's peak groups to:

- » Develop a shared understanding of the impacts of climate change on various groups in our region
- » Agree on goals and a vision for our region
- » Explore plausible futures and identify important regional elements that need to be protected, transitioned or transformed
- » Identify and prioritise key issues and actions

OUR REGIONAL STRATEGY WILL HAVE TWO HIGH-LEVEL COMPONENTS:

- DELIVERING ADAPTATION ACTION PROJECTS, AND
- A PROCESS TO SHARE INFORMATION AND IDENTIFY PRIORITIES FOR OUR REGION.

THESE TWO COMPONENTS ARE INTERTWINED AND WILL INFORM EACH OTHER.

Our philosophy

- » Engaging – to ensure we can hear from as many groups as possible
- » Listening – to hear what key concerns and potential solutions are
- » Prioritising – our most vulnerable people and groups
- » Considering – Sustainable Development Goals as a framework
- » Building on – Resilient Melbourne Strategy and other significant, existing Climate Change Adaptation Strategies in our region
- » Scaling up what is already working well

What do we want to achieve?

- » Identify regional-scale climate change adaptation priorities for Greater Melbourne for the next five years.

- » Agree on priority projects in our Yearly Delivery Plans.
- » Link, empower and connect key stakeholder and industry groups in Greater Melbourne and its rural fringe.
- » Catalyse and align approaches for action and collaboration, so we can be efficient with our resources.
- » Demonstrate and trial innovative adaptation problem-solving approaches in our way of working with our stakeholders and communities.
- » Maintain momentum for adaptation and positive action.

Consider this

Are you aware of a community group that could contribute to this project or might have valuable ideas to share?





SCOPING AND FRAMING THE STRATEGY

The scope of the strategy is to explore regionally specific issues only. Any issues better addressed at a state level will be fed into the development of the state-wide Climate Change Strategy (which will include both mitigation and adaptation issues) and the Systems/Sector Plan development process.

There are several ways to frame the regional strategy:

Geographical area

We could consider issues of importance by geographical area in Greater Melbourne:

- » Urban, coastal, green wedges
- » Inner suburbs, middle suburbs, outer suburbs

Climate change impacts

We could look at what adaptation means in our region by focusing on the climate change impacts, such as:

- » Urban heat
- » Flash-flooding
- » Coastal flooding
- » Bushfires
- » Extreme storm events

Key sectors that could be significantly affected by climate change or can help our communities to adapt, as noted in Victoria's Climate Change Adaptation plan 2017-2020:

FROM 2020, ADAPTATION ACTION PLANS WILL BE DEVELOPED EVERY FIVE YEARS FOR CORE SYSTEMS, INCLUDING HEALTH AND HUMAN SERVICES, NATURAL ENVIRONMENT, BUILT ENVIRONMENT, WATER CYCLE, PRIMARY PRODUCTION AND TRANSPORT...THESE SYSTEMS, OR SECTORS, ARE THE AREAS OF POLICY AND ECONOMIC ACTIVITY THAT ARE MOST RELEVANT TO CLIMATE CHANGE ADAPTATION.

Vulnerable groups

We could examine the effects of climate change on vulnerable groups in our region, such as:

- » Increasingly ageing population
- » Young people in larger numbers in growth areas
- » Those with chronic health issues or mental illness
- » People who are renting or have mortgage stress
- » People whose first language is not English and new migrants
- » Transient communities such as international students and tourists
- » People that are homeless or experiencing other socio-economic disadvantage

Impacts on systems

We could identify priorities by examining the impacts on systems operating within our region:

- » Infrastructure
- » Institutions
- » Social systems
- » Ecosystems



What do you think is a good way to frame climate change issues and solutions in our region?





PRIORITIES FOR OUR REGION

We have identified eleven priority areas for our region and want to test them with you. We recognise that these will need continual review as risks and impacts change.



Information that is easy to interpret, timely and targeted

Service deliverers and local governments have told us they can have difficulty interpreting climate change information. They may have insufficient resources to access and use up-to-date data to provide services for their communities.

Consider this

What would help you to better adapt to climate change? What would stop you from acting?

Information may need to be framed specifically for use before, during and after emergencies.

Scenarios and tools are required to assist decision-making. We know there are trusted sources that communicate messages more effectively and can be used to share information.

We have heard that early warning information services are needed to underpin decision-making. Groups and businesses want to know how they can examine their exposure to climate risk, and many are aware that they are required to use the most up-to-date information in their decision-making in order to meet their legal obligations.

Information needs to support frank, realistic and robust discussions about options.

Climate Communicators – the Monash Climate Change Communication Research Hub's flagship program – partners with television weather presenters to include climate information in their weather segments.

BY AVOIDING ADVOCACY AND LETTING THE FACTS SPEAK FOR THEMSELVES, CLIMATE COMMUNICATORS EXAMINES CITY-LEVEL CLIMATE TRENDS TO HELP AUDIENCES UNDERSTAND THE LOCAL IMPLICATIONS OF A GLOBAL PHENOMENON.



Promoting holistic responses

There is a need to look at the whole system when dealing with complex problems and changing situations. Regional sector or industry forums could assist with capacity building.

There are many organisations either working directly or indirectly on climate change adaptation. We have heard that there is a need for support to help them understand the long-term risks and work together on solutions, including sharing adaptation planning methodologies and embedding adaptation work across organisations.



Building climate and social resilience directly in our communities

There is evidence that strongly connected communities have higher resilience and lower vulnerability. Social resilience determines how successfully people cope with unanticipated events and how quickly they recover from shocks. Building social resilience requires investment. New types of institutions may be needed to support and build resilience.



Do we need any new types of institutions to support social and climate resilience in our region? What could they be, and why?

A useful description of climate resilience is



THE ABILITY TO ANTICIPATE, PREPARE FOR, AND RESPOND TO HAZARDOUS EVENTS, TRENDS, OR DISTURBANCES RELATED TO CLIMATE. IMPROVING CLIMATE RESILIENCE INVOLVES ASSESSING HOW CLIMATE CHANGE WILL CREATE NEW, OR ALTER CURRENT, CLIMATE-RELATED RISKS, AND TAKING STEPS TO BETTER COPE WITH THESE RISKS.



7 Centre for Climate and Energy Solutions: <https://www.c2es.org/content/climate-resilience-overview/>

Earlier work identified a need to build understanding of climate change adaptation issues amongst communities in Greater Melbourne, as well as sharing information about possible solutions and how they could work in our region. Different parts of our region have different information needs, for example growth areas will face different challenges from the dense city centre or the green fringe.

Individuals may also need help to interpret this information in a way that is relevant to them.

Consider this

What social trends and behaviours could change as we adjust to more frequent extreme weather events?

This is a particular challenge for our region, with its large transient population and high number of residents for whom English is not their first language.

The need for more training, awareness and support for people to develop leadership skills in this area was emphasised. There is an opportunity to build on initiatives like the 'How Well Are We Adapting' online monitoring tool and programs such as Earthwatch's 'Climate Resilient Communities'.



Strengthening the resilience of our built environment and precincts

Across our region large amounts of new infrastructure including housing, roads and facilities are continually being constructed. We need to make sure they are being designed to be resilient to current and future climate extremes. For example, by ensuring our buildings and infrastructure can function in higher

Earthwatch works with all levels of government in Australia – from local councils, to state park authorities and land managers, as well as federal and state portfolios like education, environment, science and innovation, and meteorology.

EARTHWATCH HAS A NATURE-BASED CITIZEN SCIENCE PROGRAM – CLIMATE RESILIENT COMMUNITIES PROGRAM, WHICH SUPPORTS HIGH-QUALITY LEARNING AROUND LOCAL CLIMATE IMPACTS, ALONG WITH ADAPTATION AND MITIGATION STRATEGIES FOR LOCAL CLIMATE ACTION. [LINK HERE](#)

temperatures, and that the transport network can continue to transition, both to changing weather and to a carbon constrained economy.

One of the ways to reduce the impact of extreme heat in urban areas is to incorporate more green infrastructure such as street trees, green walls and green roofs. Living plants can contribute to cooling urban environments as well as providing some health and wellbeing benefits.

How are Victorian councils responding to climate change impacts on local parks and sports fields?

Hobsons Bay City Council, Maribyrnong City Council, Wyndham City Council, Brimbank City Council, Melton City Council and Glen Eira City Council reported programs to upgrade their active sports fields to warm season grasses that are better suited to a warmer climate and require reduced watering. [link here](#)

The Virtual Centre for Climate Change Innovation funded a number of innovative projects in our region.

INDOOR AIR QUALITY PROJECT

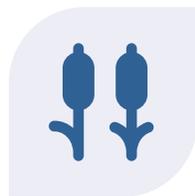
AIMS TO ENHANCE AIR QUALITY FOR OUR VULNERABLE POPULATION THROUGH THE APPLICATION OF FRESH FILTERED AIR VENTILATION. THE PROJECT IS AIMED AT IMPROVING THE WELL-BEING AND EDUCATIONAL OUTCOMES OF YOUNG CHILDREN AND QUALITY OF LIFE AND RESILIENCE OF OLDER AUSTRALIANS, ASSISTING IN CLIMATE CHANGE ADAPTATION.

FLOOD-SENSITIVE ROADS PROJECT

WILL EXPLORE THE IMPLEMENTATION OF SELF-SENSING FLOOD RESILIENT SMART ROADS THAT AUTOMATICALLY RECOGNISE THE AMOUNT OF WATER ON THE ROAD SURFACE AND ALERT AUTHORITIES AND EMERGENCY SERVICES IN REAL TIME ABOUT THE MAGNITUDE AND EXACT LOCATION OF THE FLOODING. THIS WILL SUPPORT THE QUICK INITIATION OF CONTINGENCY PLANS.

New greening and cooling guidelines have just been released⁸ and there are a number of cooling and greening projects underway. In another example, a Hobsons Bay community consultation project entitled 'Cool Streets' has just been completed and is aimed at increasing community acceptance of more greening in streets.

DELWP has recently commissioned the 'Cooling and Greening Melbourne Interactive Map' that identifies areas of high heat vulnerability⁹, and may be used to prioritise areas for greening. A new portfolio within the Department of Jobs, Precincts and Regions is called Priority Precincts and is tasked with identifying geographic areas of opportunity to support jobs and housing growth, while building on Melbourne's legacy of distinctiveness, liveability and sustainability.



Protecting our natural environment and providing people with access to nature

Our region has many different groups and authorities involved in managing and restoring native vegetation and other natural assets such as wetlands, rivers and parks. Many natural areas that remain in our region are under pressure due to overuse and are being further stressed by a range of factors including weather extremes. Frequently, natural areas with differing managers adjoin each other, adding complexity to decision-making.

A comprehensive regional approach to managing these assets could help prioritise action and allocate appropriate resources.

MELBOURNE'S OPEN SPACE STRATEGY IS CONSIDERING THE IMPACTS OF CLIMATE CHANGE AS WELL AS THE LINKS BETWEEN ACCESS TO GREEN SPACES AND MENTAL HEALTH...NEW PARKS ARE PLANNED AS PART OF ITS IMPLEMENTATION.

GROUPS LIKE GREENING AUSTRALIA AND TRUST FOR NATURE NOTE THAT RESTORING HABITATS MAY NEED TO CONSIDER THE FUTURE CLIMATE; SOURCING AND SELECTING SPECIES FOR PLANTINGS THAT ARE MORE RESILIENT TO EXPECTED WEATHER EXTREMES.

⁸ <https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/plan-melbourne/cooling-greening-melbourne/trees-for-cooler-and-greener-streetscapes>

⁹ <https://www.planning.vic.gov.au/policy-and-strategy/planning-for-melbourne/plan-melbourne/cooling-greening-melbourne/cooling-and-greening-melbourne-interactive-map>

Forests in our region are also under threat from weather extremes. Native forest managers are considering how to use climate projections to inform their management approaches, and how adaptation principles can be integrated into their decision-making.

Increasing urbanisation within our region has led to reduced access to nature for residents with impacts on mental and physical health as well as cultural impacts. Tree canopy cover varies significantly across our region. While some areas in the east are losing urban canopy cover, it is increasing in Melbourne's west, due to initiatives such as Greening the West and Rivers of the West.

A priority action identified in Melbourne's Resilience Strategy was the development of an Urban Forest Strategy for Melbourne. The strategy - *Living Melbourne - Our Metropolitan Urban Forest*¹⁰ - outlines six actions to support the protection and enhancement of the city's forest.



Protecting our most vulnerable people

A recent international report shows that the overall risk of climate-related illness or death is increasing¹¹, and it's clear that in our region some people are more vulnerable than others. The Climate Change Adaptation Snapshot identified many different groups of vulnerable people across Greater Melbourne. We have heard that the aged, the very young, people with a disability or chronic health conditions, the socially isolated, homeless, new migrants and visitors are disproportionately more vulnerable to the effects of weather extremes.

DURING THE DEVELOPMENT OF THE STRATEGY THE REGIONAL ADAPTATION STAKEHOLDER COMMITTEE WILL TEST 'ADAPTATION PATHWAYS' AS A METHOD TO EXPLORE INTERRELATED IMPACTS AND SOLUTIONS. THIS PROJECT WILL EXAMINE HOW STAKEHOLDERS CAN WORK COLLABORATIVELY ON PARTICIPATORY, SCENARIO-PLANNING EXERCISES TO EXPLORE ADAPTATION PATHWAYS OR OPTIONS.

¹⁰ https://resilientmelbourne.com.au/wp-content/uploads/2019/05/LivingMelbourne_Strategy_online.pdf

¹¹ United in Science, World Meteorological Organisation (2019) https://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/United_in_Science_ReportFINAL_0.pdf?XqjGOyszsU_sx2vOehOWpCOkm9RdC_gN

These people may all find it difficult to access or interpret timely and relevant information about what to do in extreme weather conditions that result in heat waves, bushfires or flash-flooding. Our key stakeholders agree that we need to address inequality and assist those living in disadvantaged areas.

Consider this

There are many excellent local community projects that may need help to scale up. How could they be helped to do this?

‘South East Hot Spots’ is a project¹² initiated by Lord Mayors Charitable Foundation and being delivered by enliven in Greater Dandenong and IPC Health in Brimbank. With the increasing frequency and intensity of extreme weather events, Hot Spots provides funding to health

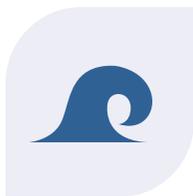
and community organisations to proactively support their communities. This project works with vulnerable communities across the south-east suburbs to improve their understanding of the health impacts of heatwaves and support them better to respond to this climate change impact.

A comprehensive vulnerability analysis across all sectors could inform the actions we should take. In relation to heat we can also learn from existing projects such as the Hume Heatwave Help program, Cooler Communities and Banksia Gardens, and build on work such as the City of Melbourne Homelessness Heat Plan. Other relevant work includes Sustainability Victoria’s Healthy Homes¹³ project that retrofits homes of disadvantaged people with complex health needs. This work focuses on improving energy efficiency, with the goal of improving indoor air temperatures – another example of mitigation and adaptation outcomes merging together.

SUSTAINABILITY VICTORIA'S HEALTHY HOMES PROJECT DELIVERS HOME RETROFITS FOR DISADVANTAGED PEOPLE WITH COMPLEX HEALTH NEEDS. THIS WORK FOCUSES ON IMPROVING ENERGY EFFICIENCY, WITH THE GOAL OF IMPROVING INDOOR AIR TEMPERATURES.

¹² <https://www.lmcf.org.au/our-impact/healthy-resilient-communities/hot-spots-initiative>

¹³ <https://www.sustainability.vic.gov.au/Grants-and-funding/Victorian-Healthy-Homes-Program>



Addressing complexities around coastal adaptation

Greater Melbourne has more than 600 kilometres of coast, including Port Phillip Bay and Westernport. Many people live and holiday near the coast. Research has demonstrated a strong and important link between the quality of the coastal environment and the quality of life for a great number of Victorians. It's a very dynamic part of the landscape in our region, and we know that extreme weather events, increased wave action, storm surges and sea level rise will alter sand movements and increase erosion rates. These areas will continue to change.

We also know that, combined with population pressures, catchment degradation and ageing infrastructure, the impacts on our coastline will escalate in coming years¹⁴. Current work is

examining which areas around Port Phillip Bay are most vulnerable¹⁵, and Victoria's new Marine and Coastal Act has been established to help protect our marine and coastal environments.

In the context of increasing change in an already dynamic space, we need to explore ways of having constructive discussions about the future of some of the more at-risk coastal areas, what we want to protect most, and who will pay. There are issues around the role of insurance, legal arrangements and potential disaster relief or assistance. As a region we must have difficult conversations about the range of scenarios that are possible for some of these areas, consider the options available, and plan what we will do in the case of a range of future impacts.

Consider this

Options for protecting assets on our coastline range from protective works to planned retreat. How can we have these important discussions?

INCREASING AREAS OF MANGROVES IN SOME AREAS MAY BE AN OPTION THAT CAN PROVIDE SOME LEVELS OF PROTECTION FROM STORM SURGES.

INFORMATION SOURCES LIKE 'COASTADAPT' [LINK HERE](#) IDENTIFY A RANGE OF PLANNING, ENGINEERING, ENVIRONMENTAL AND SOCIAL OPTIONS FOR COASTAL ADAPTATION – WHAT MIGHT THESE LOOK LIKE IN PRACTICE?

¹⁴ Extract from Bay Blueprint, prepared by the Association of Bayside Municipalities.

¹⁵ A Coastal Hazard Assessment for Port Phillip Bay is currently underway and is being led by DELWP.



Supporting and protecting agriculture in Melbourne's fringes

Although our region has a large urban component, it produces 23 percent of Victoria's vegetables, seven percent of Victoria's fruit (including 96 percent of its berry fruits), 59 percent of the state's chicken meat and over a third of its eggs¹⁶. Parts of our region are significant for particular crops, as a result of their climate, soil, and other conditions. For example, the Yarra Valley produces 78 percent of Victoria's strawberries and Koo Wee Rup grows over 90 percent of Australia's asparagus.

Urban development pressure presents a major threat to Melbourne's food bowl, both in terms of the land available to agriculture, as well as the economic contribution of agriculture in this region.

With a future population of 7 million people, combined with loss of land, agricultural output is modelled to fall by \$32 million. The growing population, combined with the loss of agricultural land, is projected to drive up food prices. A project outlined in 'Plan Melbourne 2017-2050' is exploring the protection of strategic agricultural land and green wedges to secure a range of social, environmental and economic values for the future.

While agriculture and rural land can be a key contributor to climate pollution, it can also play a major role in addressing the issue. Current discussions about the agriculture sector are focused around ongoing farming transitions across Victoria. This could include adjusting crops to changing environmental conditions, capturing carbon in soils, as well as supporting potential changes in people's diets and nutritional demands.



¹⁶ Sheridan J., Larsen, K. and Carey, R. (2015) Melbourne's foodbowl: Now and at seven million. Victorian Eco-Innovation Lab, The University of Melbourne. pp.3-11.



Protecting and managing our water supply

Melbourne's population is continuing to grow while rainfall continues to steadily decline. Run-off and river and creek flows have also fallen. Melbourne's western catchments have experienced large declines in streamflow since 1997¹⁷.

To facilitate collaboration in water management planning across organisations, sectors and disciplines, Integrated Water Management Forums (IWMF) have been established. In Greater Melbourne an IWMF has been established for each of the major waterway catchments. The forums are designed to facilitate collaboration in water management, develop a shared vision for water management that includes identification and

prioritisation of projects, deliver multiple benefits to the community and to achieve strategic outcomes related to liveability and resilience.

Melbourne Water provides water supply and sewage management services to three retail water corporations¹⁸ in our Greater Melbourne region. Melbourne Water has been developing Urban Water Strategies and running various scenarios¹⁹ to understand how to ensure we continue to have a reliable water supply for our homes, our environment, our parklands, industries and agriculture.

Improved urban design in new developments such as including green infrastructure and stormwater capture can support this aim. Behavioural adjustments in water use will also be important.

POPULATION GROWTH VICTORIA'S POPULATION IS PROJECTED TO REACH 10.1 MILLION BY MID-CENTURY

That's a lot of extra people who all need access to water



CLIMATE CHANGE WILL MEAN VICTORIA BECOMES DRIER OVER THE LONG-TERM

That means more extreme events including droughts, floods and heatwaves



LESS WATER BY 2065 STREAMFLOWS TO SOME OF OUR CATCHMENTS COULD REDUCE BY AROUND 50 PER CENT PER YEAR

This means less available water in our storages.

Adapted from Water for Victoria

¹⁷ Water for Victoria. VicWACI.

¹⁸ City West, South-East and Yarra Valley

¹⁹ For example, Water for a future-thriving Melbourne, Melbourne's Water Outlook 2020





Responding to emergencies: before, during and after

With our region's growing population and with a large number of Melbourne's vulnerable population located in the urban fringe, emergency management for extreme weather events such as bushfires has been identified as a key issue for us. Current work has a strong focus on community resilience.

Emergency Management Victoria has identified building community and social resilience as a key part of its approach. Their Victorian Emergency Management Strategic Action Plan Update outlines state-wide strategic priorities, with corresponding actions, to guide 'all communities, all emergencies' reform and supports Victoria in achieving its vision of safer and more resilient communities.

EMERGENCY MANAGEMENT VICTORIA: MY COMMUNITY PORTAL

EMERGENCY MANAGEMENT VICTORIA (EMV) IS COLLABORATING WITH OTHERS TO SUPPORT COMMUNITY BASED EMERGENCY MANAGEMENT THROUGH MY COMMUNITY PORTAL, LAUNCHED IN MARCH 2019.

A COMMUNITY-BASED APPROACH TO EMERGENCY MANAGEMENT WAS INTRODUCED IN 2016 TO SUPPORT PEOPLE TO BUILD SAFER AND MORE RESILIENT COMMUNITIES. THE APPROACH RELIES ON COMMUNITY EXPERTISE AND LOCAL KNOWLEDGE TO ENHANCE LOCAL DECISION MAKING. A KEY STRATEGY IS TO PROVIDE LOCALISED, RELIABLE AND UP TO DATE INFORMATION, WHICH WILL BE AVAILABLE THROUGH THE PORTAL. [LINK HERE](#)

STAKEHOLDERS IN GREATER MELBOURNE HAVE TOLD US THAT THEY VALUE COMMUNITY-BASED RESILIENCE AND CLIMATE READINESS TOOLS LIKE THIS.

In 2018 EMV contributed to the preparation of a national discussion paper, titled Climate Change and the Emergency Management Sector²⁰. The discussion paper reviews the risks and impacts facing the emergency management sector associated with climate change. These include physical risks (such as weather and ocean hazards, consequences of ecosystem changes, coincident and cascading events), as well as transition risks driven by broader changes in society, and the legal risks arising from a failure to act.

A recent report into emergency volunteering²¹ identified a widening gap between expectations and capacities of community sector organisations in emergency management. We need more discussions about how to support communities to be 'recovery ready' in their own way.

The 2019–20 summer highlighted that the range of emergency and health impacts associated with drought and extreme heat can include dust storms,

Consider this

How can we minimise impacts from extreme events? How can we better support community approaches where we know they are working well?

more widespread and severe bushfires, as well as significant bushfire smoke impacts on urban centres and regional areas. Local communities in many parts of our state suffered not only from immediate damaging impacts of bushfires but also on-going economic impacts through, for example, the loss of tourism. In response to the severe bushfire season experienced during summer 2019–2020 the Victorian Government has established a new agency to work with local communities affected by bushfires. Bushfire Recovery Victoria is offering a range of programs and initiatives to support communities, businesses, farmers, organisations and individuals.



²⁰ <https://www.emv.vic.gov.au/news/afac-discussion-paper-released>

²¹ Emergency volunteering 2030: views from the community sector (2019) RMIT University & Bushfire and Natural hazards CRC



Transitioning to a carbon-constrained and climate-resilient economy: energy, small business and investing in the transformation

While this Discussion Paper is focused on the adaptation aspects of climate change, rather than mitigation (or draw-down), there are a number of issues that cross over and should be considered. Our region is a large energy consumer, with large numbers of small businesses, so the economic ramifications of a transition could be significant. A guided and supported transition could be transformational.

Consider this

How can we ensure that our region is poised to take advantage of opportunities as we move to a more carbon-constrained economy?

Matters relating to energy

Socio-economic transformation of the energy sector has been identified as one of the most urgent concerns in a recent document prepared by the world's leading climate science organisations. As our region transitions to a more carbon-constrained environment we will need to consider innovative ways of addressing our energy needs. Opportunities include new renewable and energy efficiency technologies, energy demand management, smart technology, and developing new financial models for funding and generating income from renewable energy.

In our region, solar farms are beginning to be built in the metropolitan area, meaning there will be large-scale energy facilities located close to the city. As we transition there will be many questions to consider. For example: what planning is required for our region as it transitions to clean energy, how do we build social resilience during this transition, and how do we consider new and emerging



infrastructure needs. We can work together to ensure the gaps between winners and losers is not exacerbated in the energy transition. There are issues to consider around equity and energy security, particularly on days of extreme weather and heat events.

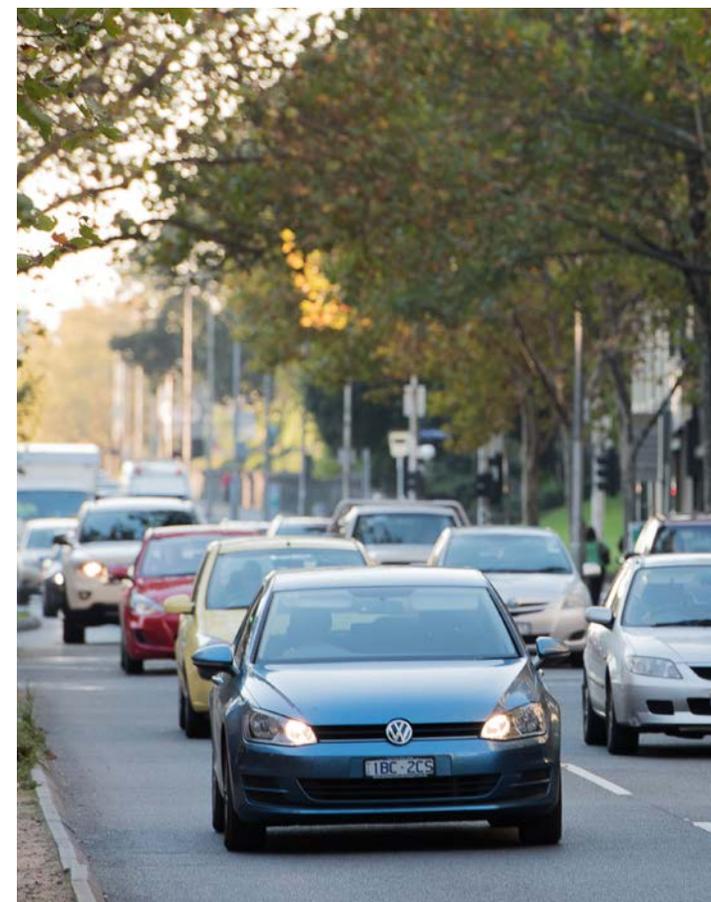
In developing our strategy, we may have the opportunity to actively engage with energy networks and regulators, as well as urban planners and explore opportunities for the two sectors to work together.

A number of sectors other than the energy sector will be transformed as we move toward a net-zero emissions future. For example, this change will have significant impacts on transport, water and other infrastructure development in our region.

Supporting small businesses to adapt to climate change

Climate change is bringing with it both challenges and opportunities for small businesses. In our region it will be a priority to ensure we can have a flourishing economy in an environment that is carbon-constrained, and that our small businesses can cope with weather events that are more extreme and less predictable. Greater Melbourne has a high number of small to medium-size enterprises (SMEs) that provide jobs in the region.

Small business are very vulnerable to sudden changes, and we are seeing that the pandemic we are experiencing this year has impacted many small businesses across the region. They will need support to re-establish and recover and this could also be the case after major climate events.



Most local governments in our region deliver programs, events, networking and other support for small businesses in their municipalities. Some have 'buy local' programs in place to help drive local employment opportunities and contribute to the local economy. Business Victoria runs workshops for participants to start, run and grow their businesses. Support for small businesses will require continued attention as our society continues to transition.



How can we support businesses that may struggle with the transition to a more carbon-constrained economy?

Facilitating adaptation investment for our region

Our region is the economic centre of Victoria, and we will need to provide opportunities for solutions-driven conversations to take place in an open and collaborative way. Public and private investment will be essential to ensure our infrastructure and our institutions are resilient to the broad impacts of ongoing climate change. There is a strong desire to invest in the low carbon transition, and transitioning has been identified as a way to boost jobs and increase economic growth²².

Related to this transition, the Victorian Government has developed a circular economy policy and action plan for Victoria to help minimise waste and make the most of our resources. Shifting to a more circular economy will respond to global recycling market challenges and can grow the economy, increase jobs and reduce impacts on the environment.

OUR REGION IS THE ECONOMIC CENTRE OF VICTORIA, AND WE WILL NEED TO PROVIDE OPPORTUNITIES FOR SOLUTIONS-DRIVEN CONVERSATIONS TO TAKE PLACE IN AN OPEN AND COLLABORATIVE WAY.



THE OPPORTUNITY

REBUILD STRONGER AND CLEANER' A CORONAVIRUS ECONOMIC RECOVERY COULD BE A SUPERB OPPORTUNITY TO EASE THE TRANSITION TO CLEANER ENERGY AND SUSTAINABLE BUSINESSES [LINK HERE](#)



²² United in Science, World Meteorological Organisation (2019). https://public.wmo.int/en/resources/united_in_science

In another example, the emerging sharing economy is a way of exchanging information through mobile and digital media. It is delivering new services across our region and includes non-commercial as well as commercial companies that contribute significantly to our economy.

Consider this

To adapt successfully, our region will need material improvements such as retrofits, new resilient infrastructure and more living green infrastructure. How can we guide investment to transition and transform our city?

?

Can you add to this list of priorities? Do you disagree with anything identified in this Discussion Paper?

The term ‘Green Infrastructure’ refers to urban vegetation including street trees, green roofs and green walls. Green infrastructure can be strategically used to help manage heat and make cities more comfortable for people.

Green Factor is a green infrastructure assessment tool designed by City of Melbourne and developed to help with designing and constructing new buildings that are environmentally friendly and include green infrastructure.

At present, it’s primary use is to help new developments in Melbourne to get the most benefits from their green designs. Eventually, the tool will also be used to ensure new planning applications comply with future planning policy requirements around climate action. [link here](#)





NEXT STEPS

In compiling this Discussion Paper our Regional Climate Change Stakeholder Committee has examined many documents and sources that relate to Greater Melbourne. We have also met with a selection of stakeholder groups and asked them about work they have done that could be important for informing the strategy.

We heard that a number of our key stakeholder groups were interested in:

- » Ways of supporting agencies to work well together at place – before, during and after extreme weather events
- » Ways for public, private and not-for-profit sectors to work more closely together for region-wide benefits

We will explore these issues and continue to engage with you as we develop this strategy.

...WE ARE IMPLEMENTING, TESTING AND SHARING TOOLS AND APPROACHES TO EXPLORE HOW WE CAN ADAPT TO CLIMATE CHANGE IN GREATER MELBOURNE.

WE WANT TO BUILD ON WHAT HAS COME BEFORE, AND FOR THIS REASON WE WILL PROGRESS WITH A NUMBER OF ACTIONS AS PART OF OUR STRATEGY DEVELOPMENT OVER THE NEXT YEAR...



Delivering adaptation action

As part of the strategy development, we are implementing, testing and sharing tools and approaches to explore how we can adapt to climate change in Greater Melbourne.

We want to build on what has come before, and for this reason we will progress with these actions as part of our strategy development over the next year:

- » Designing and implementing regional risk and issue prioritisation processes – critical evaluation of our most vulnerable people, places and infrastructure through workshops and forums
- » Art as an engagement tool to explore heat and urban cooling – exploring creative ways of engaging on the climate change adaptation issue of urban heat in our city to share a positive adaptation message
- » Collation and assessment of climate ready approaches for local government
- » Green infrastructure as a way to manage urban heat – climate change will make the urban areas of Melbourne hotter, with impacts on human health. We are testing and demonstrating how green walls and other green infrastructure can reduce local heat
- » Climate resilient service delivery – this project is working with local government to address ways to resolve service delivery problems through systems and design thinking. Using a tool called ‘How Well Are We Adapting’, a small selection of scenarios will be critically explored
- » Coastal adaptation scenario planning – this project will test ways of having difficult discussions by using scenario planning tools such as ‘pathways’ approaches to explore multiple futures
- » Adaptation Investment Options – exploratory research to identify and scope opportunities for the region
- » Vulnerability assessment of council assets, projects will examine ways to assess vulnerability of
 - buildings, roads and drainage infrastructure
 - emergency relief centres.
- » A ‘City Engine’ project to look at key urban systems that are vulnerable to heat
- » Exploring vulnerability with community and business sectors
- » Development of a 5-year Regional Communications and Engagement Strategy – to ensure the people who need to know can be reached in a meaningful and appropriate way
- » A training and capacity building project for local government in the Melbourne area

The learnings from these projects, together with your thoughts, ideas and concerns will inform the development of the strategy.



HOW WE WILL WORK WITH YOU

A strategy for our region will identify the challenges that require a collaborative approach. We want to work with you to identify issues that you are concerned about.

Why be involved?

By being part of this process, you will have the opportunity to:

- » Inform state government priorities
- » Highlight regional challenges from your organisation or group's perspective
- » Raise the profile of key issues/concerns that relate to your community or industry
- » Identify collaboration opportunities, where we can share the investment and achieve more

Ways to be involved

You can contribute to the development of our region's strategy by:

- » using the EngageVic platform to
 - pin a place on the map that you are concerned about, and answering the drop-down questions about it
 - answer the quick questions alongside this paper
 - » considering the more detailed thoughts and ideas in this Discussion Paper
 - » contacting us by email to
 - send us your ideas
 - sign up to our Newsletter
 - participate in a virtual forum or engagement session
- at climatechangemelbourne@delwp.vic.gov.au

WE KNOW IT WILL BE CHALLENGING TO DEVELOP AN ADAPTATION STRATEGY FOR A REGION THAT INCLUDES A LARGE CAPITAL CITY. THIS DISCUSSION PAPER IS A STARTING POINT.

WE WANT TO HEAR

WHAT YOUR KEY CLIMATE CHANGE CONCERNS ARE AND WHICH ISSUES YOU THINK SHOULD BE ELEVATED.



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Environment,
Land, Water
and Planning