



THE CITY OF  
GREATER GEELONG

# CLIMATE CHANGE RESPONSE PLAN

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DRAFT

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## ACKNOWLEDGEMENTS

**The City of Greater Geelong recognises the rich Aboriginal heritage of this country and acknowledges the Wadawurrung People as the Traditional Owners of the land. We pay respect to their elders, past, present and future. We also acknowledge all other Aboriginal and Torres Strait Islander People who are part of the Greater Geelong community today.**

This plan been developed in consultation with community groups, businesses and agencies from across the municipality. We would like to acknowledge the many individuals and organisations whose enthusiasm, commitment and contributions helped shape the plan.

COMMUNITY GROUPS AND NON-GOVERNMENT ORGANISATIONS	BUSINESSES AND PEAK BODIES	GOVERNMENT AGENCIES
100% Clean Bellarine	Geelong Chamber of Commerce	Barwon Coast Committee of Management
Active Geelong	Geelong Port	Barwon Water
Australian Parents for Climate Action	Godfrey Hirst	Corangamite Catchment Management Authority
Bellarine Bayside Committee of Management	Viva Energy	Our councillors and employees
Bellarine Catchment Network	Wadawurrung	Deakin University
Bellarine Landcare		Department of Health and Human Services
Centre for Climate Safety		Department of Environment, Land, Water and Planning
Diversitat		Kardinia Park Stadium Trust
Friends of the Ocean Grove Nature Reserve		Sport & Recreation Victoria
Geelong Environment Council		Sustainability Advisory Committee
Geelong Field Naturalists Club		Sustainability Victoria
Geelong Sustainability		The Gordon
Geelong Youth Council		
Ocean Grove Coastcare		
Ocean Grove Community Association		
Public Transport Users Association - Geelong		
Transition Streets Geelong		
Trust for Nature		

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# Mayor's message

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The Mayor's message will be prepared once the community engagement process for the draft document is complete.

# Executive summary

**At the City of Greater Geelong, we acknowledge the changing climate is a global emergency and, as a local government, we have a significant role to play in accelerating a municipal-wide response to the situation.**

The past decade has highlighted the unprecedented scale, intensity and frequency of extreme weather events associated with climate change. We know we are likely to experience an increase in these risks across our region.

A critical shift is occurring across communities, businesses and governments worldwide. Climate change is no longer a potential future threat, but rather a global emergency in need of urgent action. While we can't predict how climate change responses will develop globally, we must do our part to reduce emissions and prepare for climate impacts.

Climate change is not solely an environmental issue. It has implications for every aspect of how we live – our social systems, economic systems and the natural systems upon which we all depend. We need to act quickly, decisively and collaboratively to make a difference.

As part of the development of this plan, we have been talking to the community and other key stakeholders about climate change. The environment and climate change are a significant priority for residents and stakeholders and they're looking to us for leadership on these issues. The overwhelming message is that we need a coordinated and collective response that is underpinned by an ambitious, municipal-wide emissions reduction target.

## HOW THIS FITS WITH OUR EXISTING WORK



**Figure 1: Our environment and sustainability planning framework**

This plan fits within a much broader framework of strategic planning at the City. As with all plans, it has been guided by the community's long-term vision, established in 2017:

*By 2047, Greater Geelong will be internationally recognised as a clever and creative city-region that is forward looking, enterprising and adaptive, and cares for its people and environment.*

Figure 1 shows how the plan fits within the current framework we're using to guide our response to climate and environment issues. It is a key deliverable of both the *Sustainability Framework 2020* and the *City of Greater Geelong Environment Strategy 2020–30*.

## OUR CLIMATE CHANGE RESPONSE PLAN 2021–30 (DRAFT)

*By 2035, the Greater Geelong community will achieve net zero community emissions and increased resilience to climate change impacts through a coordinated and collective response from the community led by the City.*

The proposed plan (see Figure 2, page 7) aligns closely with Goal 1 of the *City of Greater Geelong Environment Strategy 2020–30*, as well as our *Sustainability Framework 2020*.

While the plan is designed to guide our organisation's response to climate change over the next 10 years, we strongly encourage individuals and organisations to use it as a road map for guiding their individual and collective responses. We cannot achieve the targets and actions set out in this plan by ourselves; the community must play an active role.

<b>Clever and creative vision</b>	By 2047, Greater Geelong will be internationally recognised as a clever and creative city-region that is forward looking, enterprising and adaptive and cares for its people and environment.						
<b>Goal</b>	Become a zero-emissions, climate-ready city and region.						
<b>Key success factor</b>	A coordinated and collective response from the whole community						
<b>Targets</b>	<b>Mitigation target</b> Achieve net zero community emissions by 2035				<b>Adaptation target</b> Become a climate-ready municipality, with increased resilience to current and future climate risks		
<b>Principles</b>	<b>Principle 1</b> Support an empowered and active community	<b>Principle 2</b> Increase energy efficiency and renewable energy production	<b>Principle 3</b> Switch to sustainable transport and cleaner fuels	<b>Principle 4</b> Reduce non-energy emissions and increase carbon storage	<b>Principle 5</b> Increase awareness and understanding of climate change impacts	<b>Principle 6</b> Build climate action into decision-making	<b>Principle 7</b> Increase collaborative climate change responses
<b>Focus Areas</b>	<b>1.1</b> <i>Community awareness, education and capacity building</i>	<b>2.1</b> <i>Improve energy efficiency in existing buildings, facilities and infrastructure</i>	<b>3.1</b> <i>Prioritise the development of sustainable transport infrastructure and services</i>	<b>4.1</b> <i>Reduce waste and recover waste energy</i>	<b>5.1</b> <i>Improve local climate risk knowledge</i>	<b>6.1</b> <i>Embed climate thinking in our decisions</i>	<b>7.1</b> <i>Build networks and partnerships for adaptation pathways</i>
	<b>1.2</b> <i>Governance and accountability</i>	<b>2.2</b> <i>Optimise energy efficiency in new buildings, facilities and infrastructure</i>	<b>3.2</b> <i>Transition the regional fleet to zero-emission power sources</i>	<b>4.2</b> <i>Support establishment of regional drawdown solutions</i>		<b>6.2</b> <i>Corporate climate risk management and disclosure</i>	<b>7.2</b> <i>Collaborate in areas of emerging climate risk</i>
	<b>1.3</b> <i>Resources and investment focus</i>	<b>2.3</b> <i>Increase renewable energy use</i>	<i>*There is a list of actions below each focus area with identified lead/support roles and anticipated costs (see page 22 onwards).</i>				

Figure 2 Overview of the *City of Greater Geelong Climate Response Plan 2021–30 (draft)*

### How we're changing the way we do business

As an organisation, our operational emissions come from buildings and facilities, vehicle fleet and municipal waste. These emissions peaked in 2015–16 and have been declining since. This is due to the switching of electricity sources to renewable sources, capture and use of methane from landfill, building efficiency improvements and onsite renewable

energy from solar photovoltaic (PV) generation. In 2019-20, emissions from our operations were 36,780 tonnes CO<sub>2</sub>-e, which is just over one per cent of the total community emissions profile.

To support the community-wide mitigation target, we have committed to the following:

- All City-managed operations to reach net zero emissions by 2025.
- 100 per cent renewable electricity supply used for all City-owned and operated buildings, and streetlights by 2021.
- 95 per cent of Drysdale Landfill methane gas emissions recovered and used for energy production by 2025.
- All City-owned light fleet vehicles powered by zero-emission power sources by 2027.
- Undertake an assessment of our gas-using infrastructure by 2022.

## **Funding**

While many of the proposed actions in the plan are already funded, there are others that will not be possible without additional resources. While we aim to fund some actions as part of future annual budgets, we will actively work with our partners to pursue other funding opportunities.

An innovative new funding model that we are implementing is the community climate action partnership fund. This will be used to support climate action delivered by volunteers and not-for-profit groups in the community and create a sustainable economic model for delivering this plan.

## **Evaluation**

On 22 June 2021, our Council endorsed a series of Sustainability Performance Indicators and Targets that will be reported on annually, including a carbon reduction target.

The timing of this draft plan has prevented us from aligning these indicators and targets with the actions proposed in this plan. However, we will address this in the final version of the plan so the community can see how local actions are contributing to the global effort.

## **Review**

Although the plan is intended to guide our climate response until 2030, it will be reviewed in 2024. This review will help us reflect emerging priorities, take advantage of newly identified opportunities and keep pace with the rapid changes that are happening in the climate change arena.



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# Introduction

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**Climate change is already having an impact on our region. While everyone has a role to play in combating climate change – individually and collectively – leadership is needed to create a coordinated and collaborative approach.**

At the City of Greater Geelong, we acknowledge the changing climate is a global emergency and, as a local government, we have a significant role to play in accelerating a municipal-wide response.

This plan includes actions we all need to implement to achieve net zero community emissions by 2035. It builds on the work we have been doing since 2006 to address this significant challenge. The focus of the plan is to rapidly reduce emissions and adapt to climate change risks through collective effort.

Community attention on climate change is growing. To harness this interest, the region needs a holistic plan that demonstrates how everyone – the City, residents, businesses and organisations – can work together to make a local impact on this global challenge. To become a platform for collaborative action, the plan must be broadly understood, accepted and supported.

Many individuals, organisations and businesses in our community are already doing everything they can to achieve better climate outcomes for our community. By providing further support and improving collaboration, we aim to increase the collective impact of each contribution and share vital knowledge for the benefit of all.

# Our climate emergency

**Our region is facing a drier, warmer future. We need to better understand the risks and work out ways to secure a more sustainable future.**

Our everyday activities are contributing to rising atmospheric greenhouse gas emissions that are warming the planet at an unprecedented rate. If emissions continue to increase at the current rate, global warming is likely to reach 1.5°C above pre-industrial levels as soon as 2030.

A warming planet has a significant impact on a range of climate variables. Some of the climate changes we are experiencing now include:

- temperature rise
- variations in rainfall intensity and frequency
- sea level rise and
- stronger wind patterns.

The local effects of these climatic changes were noticeable almost a decade ago when we prepared our first climate change adaption strategy in 2011. With the region already warmer and drier – a climate trend likely to continue<sup>1</sup> – these effects could become much worse.

By the 2050s, some predictions suggest Geelong's climate will be more like the current climate of Shepparton<sup>2</sup>. The frequency of extreme weather events, such as droughts, bushfires, heavy rain, storms and heatwaves, are also expected to increase (see Figure 3).

**Figure 3 Climate projections for the Barwon Region<sup>2</sup>**

Temperature	<ul style="list-style-type: none"><li>• Maximum and minimum daily temperatures will continue to increase</li><li>• By the 2030s, increases in daily maximum temperature of 0.8 to 1.5°C are expected</li></ul>
Rainfall	<ul style="list-style-type: none"><li>• Rainfall is expected to decline in winter, spring and autumn</li><li>• Extreme rainfall events are expected to become more intense and variable</li></ul>
Sea level	<ul style="list-style-type: none"><li>• Sea levels are expected to continue rising by 4mm per year</li></ul>
Fire danger	<ul style="list-style-type: none"><li>• High fire danger days are projected to increase to 9 days per year</li></ul>

<sup>1</sup> DELWP (2015) Climate-ready Victoria: Barwon South West

<sup>2</sup> Clarke JM, Grose M, Thatcher M, Round V & Heady C. 2019. Barwon Climate Projections 2019. CSIRO, Melbourne Australia

## WHAT THIS MEANS FOR OUR REGION

Climate change risk is determined by climate change impacts, likelihood and consequences. Global warming caused by human activity in the past two centuries, is likely to persist for centuries to come.

Simultaneously, increasing population growth and the cumulative impact of other threats to our natural environment will intensify the consequences of climate change impacts. Consequently, the region's exposure to climate risk is increasing (see box inset).

*Unless we can urgently reduce emissions to zero and draw down the carbon already in the atmosphere, the climate risks we face will increase.*

## COMMUNITY EMISSIONS PROFILE

Greenhouse gas emissions are caused by human activities associated with the extensive burning of fossil fuels for energy and heat, together with industrial processes, waste, land clearing and agriculture.

Our Community Emissions Profile includes all greenhouse gas emissions resulting from the actions of people, businesses and organisations in the City of Greater Geelong municipality, but does not include emissions associated with consumption of goods and services – for example, food and air travel.

For the 2019 calendar year, the community emissions profile for the municipality was estimated to be 3,232,000 tonnes CO<sub>2</sub>-e<sup>3</sup> (see Figure 4). The primary community emission sources included:

- Electricity – 60 per cent
- Transport – 21 per cent
- Gas – 15 per cent
- Waste – 3 per cent
- Agriculture – 1 per cent.

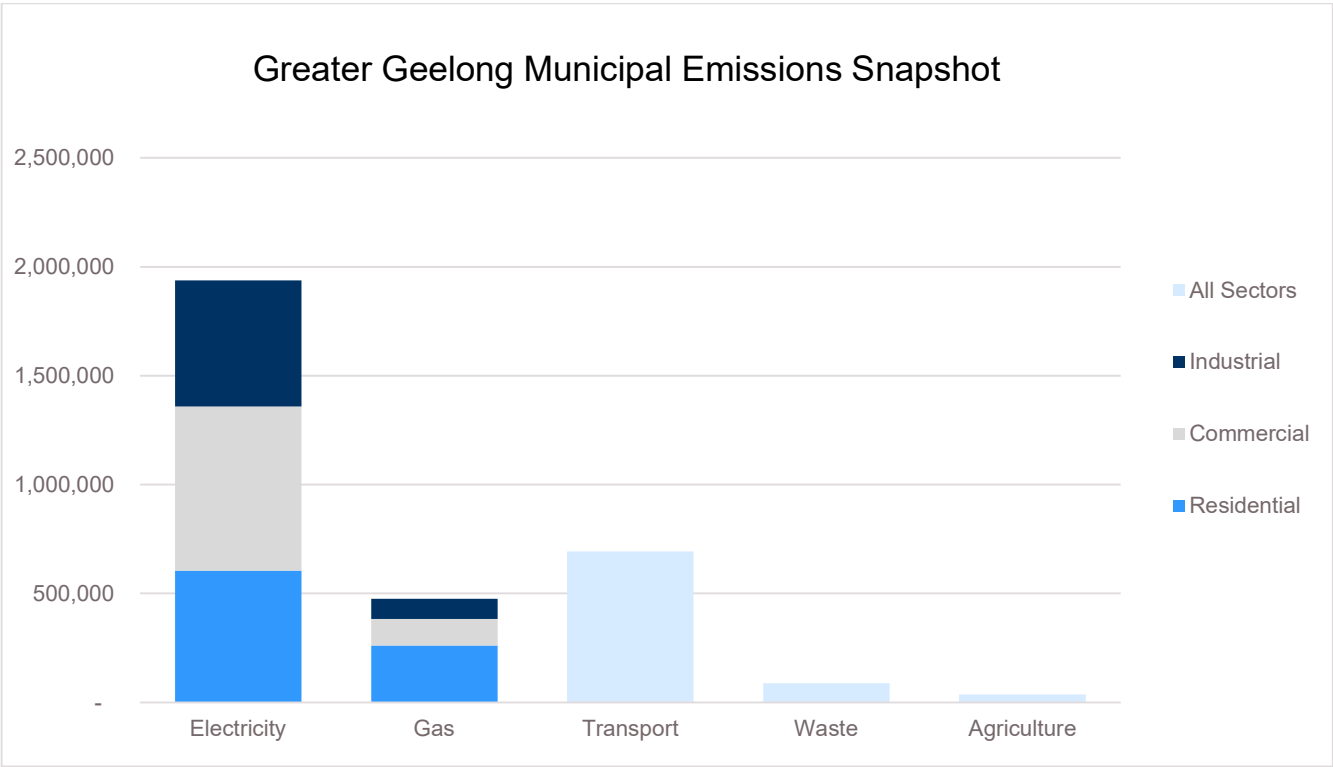
As an organisation, our operational emissions come from buildings and facilities, vehicle fleet and municipal waste. These emissions peaked in 2015–16 and have been declining since. This is due to the switching of electricity sources to renewable sources, capture and use of methane from landfill, building efficiency improvements and onsite renewable energy from solar photovoltaic (PV) generation. In 2019-20, emissions from our operations were 36,780 tonnes CO<sub>2</sub>-e, which is just over one per cent of the total community emissions profile.

## CRITICAL RISKS TO OUR REGION POSED BY CLIMATE CHANGE

- Sea level rise and higher-intensity coastal storms likely to damage natural and constructed coastal assets
- More frequent intense rainfall events resulting in increased stormwater run-off and greater stress on natural and built infrastructure such as wetlands, drains, pipes and roads
- Greater pressure on municipal emergency management due to stronger wind patterns and inundation of residential areas
- More severe droughts impacting water security, agriculture, bushfire risk and emergency response costs
- More hot days and heatwaves decreasing outdoor activity and increasing mortality, especially in vulnerable groups
- More frequent disruptions to transport routes and higher costs for repairing damage to road infrastructure
- More pressure on accessible green open spaces for heat refuge and recreational services
- Sustained economic disruptions from extreme events (i.e. fire, flood, storms, heatwaves)

<sup>3</sup> Beyond Zero Emissions and Ironbark Sustainability, Snapshot – community climate tool (accessed 17 June 2021)

Figure 4 City of Greater Geelong community emissions profile 2019<sup>4</sup>



4 Beyond Zero Emissions and Ironbark Sustainability, [Snapshot – community climate tool](#) (accessed 17 June 2021)

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# Responding to the emergency

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The climate emergency is a complex problem for us all. It has complicated global impacts and a cumulative cause beyond the control of any person, group, organisation or country. There is also varying degrees of understanding about the threat, as well as views on how it should be addressed.

Across the Greater Geelong municipality, there has generally been strong community support for action on climate change, but low levels of coordinated action at scale.

Across the world, and in our region, activism is growing. In 2016, the Geelong-based community group Climate Safety was instrumental in the now worldwide 'Climate Emergency Declaration' movement. In 2019, a coalition of local activist groups banded together to lobby Council to declare a climate emergency.

The 2018 International Panel on Climate Change indicates we only have until 2030 to reach an emissions target that keeps global warming to less than 1.5 degrees Celsius. The overwhelming message from community groups, businesses and other organisations is that the time for debate is over. We need to act urgently and extensively as a municipal community to be part of the solution to the climate crisis.

**Figure 5 North Geelong, Corio Bay**



## HOW WE CAN RESPOND

There is no single answer that will help us achieve the scale of change we need over the next decade. It will take many approaches across many sectors, however there are two primary ways we can respond (see Figure 6):

## Reducing emissions

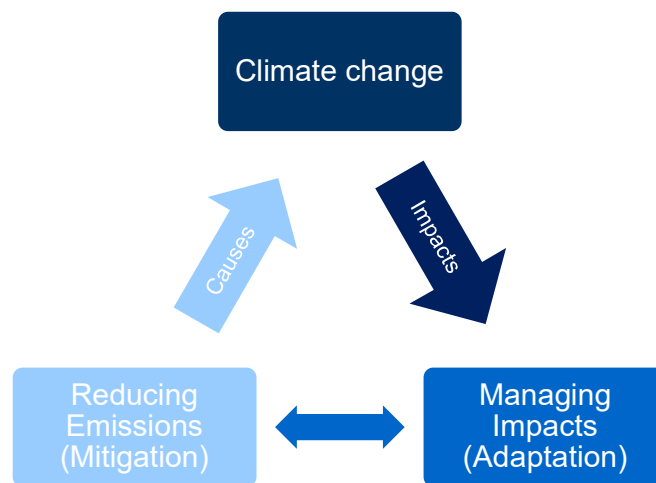
Also called *mitigation*, this refers to any action addressing the underlying cause of climate change – namely, greenhouse gas emissions. Examples include improving energy efficiency, increasing availability and use of renewable electricity, using electric vehicles, diverting organics from landfill and carbon offsets.

## Managing impacts

Also called *adaptation*, these are the actions we can take to prepare for current and projected climate impacts. Examples include planning and designing new urban infrastructure to cope with extreme weather, planning overlays that minimise future risk to properties and establishing emergency management planning and policies.

These responses can be mutually beneficial. For example, an energy-efficient building not only uses less energy – reducing emissions and saving money – but it also improves thermal comfort during extreme heat events.

**Figure 6 Climate change responses**



## WHO IS RESPONSIBLE?

While much of what shapes climate change in the region is determined by global and national forces, there's still a lot we can influence and control. As individuals, we can change our patterns of consumption and lifestyles. As groups and organisations, we can increase renewable energy use and maximise energy efficiency.

Of course, there is only so much any individual, group and organisation acting alone can achieve. We need collective action, as well as individual responses, at all scales.

## Our role

As a local government, we play a variety of roles when it comes to reducing emissions and managing the impacts of climate change. These include:

**Leading and supporting** a collaborative, municipal-wide response

**Reducing** operational emissions caused by:

- vehicle fleet, gas heating, municipal waste breakdown and third-party activities
- grid-sourced electricity used for our buildings, depots, community, leisure and sporting facilities

**Planning** to manage current and future climate-related risks

**Administering** the planning scheme and assessing development applications

**Delivering** community infrastructure and services that are climate ready

**Building awareness** of climate change and preparedness within the community



**Representing** the needs and values of local communities

**Collaborating** with other stakeholders to develop appropriate adaptation responses

**Supporting** community climate action efforts either:

- directly through community education, regional capacity building or financial in-kind support or
- indirectly through facilitating, coordinating, collaborating, investing and advocacy

**Figure 7 City of Greater Geelong Coastal Adaptation Program Team Leader, Ralph Roob, attending to an artificial shellfish reef designed to minimise beach erosion**



### **The role of business**

An effective municipal climate response is not possible without support from the business sector. While many companies in the region are already operating more sustainably, others need help to make significant change.

Supporting a lower-carbon economy helps business to lower costs and build positive brand associations. However, the lack of collaboration between individual businesses minimises the collective impact of change. Government organisations and business alliances are well placed to help address this.

### **The role of community organisations**

We are fortunate to have so many community-based groups driving climate action in our region. These groups are the activists, innovators and early adopters in our regional climate emergency response. Most contribute their time, expertise and energy to addressing climate action in a voluntary capacity.

By drawing on their members' knowledge, skills and experience, these groups drive specific climate action initiatives such as awareness and educational outreach programs and sustainable group procurement. Most groups are calling for better coordination to help drive the quantum shift in societal norms needed to address the climate emergency. All groups will play a critical role in reaching out to a broader community audience.

### **The role of residents**

With a population of more than 250,000, empowering residents to take individual and collective climate action is a critical element of a municipal response to climate change. While many local residents are already acting, some need additional help – whether that's better access to information and advice, or direct support to implement more sustainable ways of living.

# About this plan

**We identified climate change as a global emergency in 2020 when our Council adopted the Sustainability Framework.**

We committed to adopting and implementing a climate change response plan that would build on the significant body of work that started for our organisation in 1996 – when we first identified climate change as an issue.

This plan fits within a much broader framework of strategic planning at the City. As with all plans, it is guided by the community's long-term vision that was established in 2017:

*By 2047, Greater Geelong will be internationally recognised as a clever and creative city-region that is forward looking, enterprising and adaptive, and cares for its people and environment.*

Figure 8 shows how the plan fits within the current framework we're using to guide our response to climate and environment issues. It is a key deliverable of both the *Sustainability Framework 2020* and the *City of Greater Geelong Environment Strategy 2020–30*.

## OUR ENVIRONMENT STRATEGY 2020–30

The City's Environment Strategy 2020-2030 defines five key goals:

**Goal 1:** Become a zero-emission, climate-ready city and region

**Goal 2:** Create greener community spaces

**Goal 3:** Contribute to a circular economy by reducing waste

**Goal 4:** Protect, enhance and restore our region's biodiversity

**Goal 5:** Achieve better integrated water management through planning and design

This plan aligns most closely with the first goal of our Environment Strategy 2020–30, with some minor adjustments to accommodate what we heard during the community engagement process.



**Figure 8 Environment and sustainability planning framework**



## HOW WE ENGAGED

The engagement conducted for this plan built on what we already knew from previous engagements. We sought input from community groups, residents, agencies and businesses as part of a four-stage engagement process (Figure 9), which aligned with the approach outlined in the *Zero Carbon Communities Guide 2020*.

This draft plan being released for community feedback signals that we have reached the final step in Stage 3 of the engagement process.

Stage 1 – Understanding the issues Apr to Sep 20	Stage 2 – Co-designing the solutions Dec 20 to Feb 21	Stage 3 – Develop the plan Mar to Jun 21	Stage 4 – Endorse the plan Jul to Oct 21
<ul style="list-style-type: none"> <li>Conducted 21 employee workshops</li> <li>Online individual discussions with 24 groups representing community, business and agencies.</li> </ul>	<ul style="list-style-type: none"> <li>Launched online engagement</li> <li>Facilitated 6 community co-design workshops</li> <li>General community forum</li> <li>Engaged with stakeholders and organisations</li> </ul>	<ul style="list-style-type: none"> <li>Facilitated a community forum, councillor workshop and interviews with 10 key community businesses and organisations.</li> <li>Facilitated workshops with the Community Sustainability Advisory Committee</li> <li>Reviewed the engagement outcomes from our council planning process</li> <li>Draft plan developed</li> <li>Release plan for feedback from the broader community</li> </ul>	<ul style="list-style-type: none"> <li>Review feedback received</li> <li>Incorporate changes into the plan</li> <li>Formal endorsement of the plan by Council</li> <li>Ongoing collaboration using the plan as a shared platform for community action</li> </ul>

**Figure 9 Community engagement schedule**

### What we heard

The key themes that came out of the engagement process were concerned with:

- leadership, advocacy and support
- coordination, collaboration and governance
- raising awareness
- utilising and building regional capacity
- embedding climate action in decisions
- climate change mitigation
- climate change adaptation.

The extensive feedback we received has been embedded throughout the plan. To see the full stakeholder consultation report, visit [www.yoursay.geelongaustralia.com.au/CCRP](http://www.yoursay.geelongaustralia.com.au/CCRP)



Figure 10 Climate Rally 2019 (Photo credit: Centre for Climate Safety)

***'The community is interested in  
being energy efficient and  
using renewables; they just  
need some help.'***

*Workshop participant*

# Our climate change response plan

<b>Clever and creative vision</b>	By 2047, Greater Geelong will be internationally recognised as a clever and creative city-region that is forward looking, enterprising and adaptive and cares for its people and environment.						
<b>Goal</b>	Become a zero-emissions, climate-ready city and region.						
<b>Key success factor</b>	A coordinated and collective response from the whole community						
<b>Targets</b>	<b>Mitigation target</b> Achieve net zero community emissions by 2035				<b>Adaptation target</b> Become a climate-ready municipality, with increased resilience to current and future climate risks		
<b>Principles</b>	<b>Principle 1</b> Support an empowered and active community	<b>Principle 2</b> Increase energy efficiency and renewable energy production	<b>Principle 3</b> Switch to sustainable transport and cleaner fuels	<b>Principle 4</b> Reduce non-energy emissions and increase carbon storage	<b>Principle 5</b> Increase awareness and understanding of climate change impacts	<b>Principle 6</b> Build climate action into decision-making	<b>Principle 7</b> Increase collaborative climate change responses
<b>Focus Areas</b>	<b>1.1</b> <i>Community awareness, education and capacity building</i>	<b>2.1</b> <i>Improve energy efficiency in existing buildings, facilities and infrastructure</i>	<b>3.1</b> <i>Prioritise the development of sustainable transport infrastructure and services</i>	<b>4.1</b> <i>Reduce waste and recover waste energy</i>	<b>5.1</b> <i>Improve local climate risk knowledge</i>	<b>6.1</b> <i>Embed climate thinking in our decisions</i>	<b>7.1</b> <i>Build networks and partnerships for adaptation pathways</i>
	<b>1.2</b> <i>Governance and accountability</i>	<b>2.2</b> <i>Optimise energy efficiency in new buildings, facilities and infrastructure</i>	<b>3.2</b> <i>Transition the regional fleet to zero-emission power sources</i>	<b>4.2</b> <i>Support establishment of regional drawdown solutions</i>		<b>6.2</b> <i>Corporate climate risk management and disclosure</i>	<b>7.2</b> <i>Collaborate in areas of emerging climate risk</i>
	<b>1.3</b> <i>Resources and investment focus</i>	<b>2.3</b> <i>Increase renewable energy use</i>	<i>*There is a list of actions below each focus area with identified lead/support roles and anticipated costs (see page 22 onwards).</i>				

**Figure 11 Overview of the City of Greater Geelong Climate Response Plan 2021–30**

**By 2035, the Greater Geelong community will achieve net zero community emissions and increased resilience to climate change impacts through a coordinated and collective response from the community led by the City.**

We all need to do our part to reduce emissions and prepare for climate impacts, even though we cannot predict how climate change responses will develop at broader scales. While our plan (see Figure 11) is designed to guide our organisation's response to climate change over the next 10 years, we strongly encourage individuals and organisations to use it as a road map for guiding their individual and collective responses. We cannot achieve the targets and actions set out in this plan by ourselves; community must play an active role.

## **OUR ORGANISATIONAL TARGETS**

To support the community mitigation target, we have also committed to achieving the following organisational targets:

- All City-managed operations to reach net zero emissions by 2025.
- 100 per cent renewable electricity supply used for all City-owned and operated buildings, and streetlights by 2021.
- 95 per cent of Drysdale Landfill methane gas emissions recovered and used for energy production by 2025.
- All City-owned light fleet vehicles powered by zero-emission power sources by 2027.
- Undertake an assessment of our gas-using infrastructure by 2022.



**Figure 12: A beach recovery project on the Bellarine Peninsula is an example of an adaptation response**





**Figure 13 Solar PV array on Leisurelink Waurn Ponds is an example of a mitigation response**

## **FUNDING**

While many of the proposed actions in the plan are already funded, there are others that will not be possible without additional resources. While we aim to fund some actions as part of future annual council budgets, we will actively work with our partners to pursue other funding opportunities for others.

An innovative new funding model that we are implementing is the community climate action partnership fund. This will be used to support climate action delivered by volunteers and not-for-profit groups in the community and create a sustainable economic model for delivering this plan (see Focus Area 1.3).

## **EVALUATION**

On 22 June 2021, our Council endorsed a series of Sustainability Performance Indicators and Targets that will be reported on annually, including a carbon reduction target.

The timing of this draft plan has prevented us from aligning these indicators and targets with the actions proposed in this plan. However, we will address in the final version of the plan so the community can see how local actions are contributing to the global effort.

## **REVIEW**

Although the plan is intended to guide our climate response until 2030, it will be reviewed in 2024. This review will help us reflect emerging priorities, take advantage of newly identified opportunities and keep pace with the rapid changes that are happening in the climate change arena.

# Principle 1: Support an empowered and active community

A fundamental challenge for large-scale, collective action is the wide spectrum of attitudes towards climate action in the community. While some people are highly aware, engaged and mobilised, others have low awareness and little motivation to get involved at this stage.

We need a collaborative, coordinated approach to building community awareness about climate change. This approach will use existing community knowledge and skills, as well as local networks. Such an approach will help address the issue of misinformation in the climate debate by giving the community a trusted local source of climate information.

Awareness building and education should be based on science. It is also important to link climate action with more intrinsic benefits such as stronger community cohesion, improved health and wellbeing and personal satisfaction. We need to help people feel they can be part of the solution.

## FOCUS AREA 1.1 COMMUNITY AWARENESS, EDUCATION AND CAPACITY BUILDING

There are many inspiring local case studies and stories of individuals and communities acting on climate change, but there is limited local recognition of these efforts. We need a community awareness program that highlights positive stories to support a better outlook for those who feel concerned about the climate situation. Positive stories also have the potential to stimulate engagement with the problem and show that action does not have to be difficult.

Community-based networks can help share information, build action clusters and galvanise local community efforts. Local 'climate action mobilisers' are critical activators within their networks and sectors. There is a need to grow our pool of potential climate change champions through support and capacity building.

Ref	Action	Lead	Support	Cost*
1.1.1	Develop an awareness campaign by 2023 that will provide a municipal-scale knowledge network for local climate risks, impacts and responses, and share appropriate information with the community about climate change.	City	DELWP	Low**
1.1.2	Develop and implement a collaborative community awareness program for climate action, leveraging the capacity available in the region by 2023.	City	Community	Med**
1.1.3	Partner with climate action mobilisers to help support community efforts to reduce emissions and adapt to climate impacts by 2022.	City	Community	Med
1.1.4	Assess the region's capabilities and skills in climate action and develop a 'regional knowledge base' to help the community share locally available information and resources by 2023.	City	Community	Low**
1.1.5	Support community involvement in citizen science programs to collect climate-change-related data by 2022.	City		Low
1.1.6	Identify and work with members of the community who possess specialist technical skills and knowledge to strengthen decision making by 2022.	City		Low
1.1.7	Work in partnership with community groups, businesses and other organisations to promote and educate the community about sustainable practices by 2023.	City		Low**
1.1.8	Continue to lead the implementation of the clever and creative vision and identify how the vision partner group will work with others to deliver municipality-wide emissions reduction.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (500,000+)

\*\* Subject to funding

## FOCUS AREA 1.2 GOVERNANCE AND ACCOUNTABILITY

The current municipal response to climate change is fragmented, reflecting the organic growth of interest and activism. There is overwhelming support for a more coordinated approach to better integrate collective efforts and achieve greater scales of action.

As an organisation, we are well-positioned to facilitate a coordinated and collaborative approach; however, community support will be crucial. Our recently formed Sustainability Advisory Committee, as a form of collaborative governance, will have an essential role in supporting the successful implementation this plan.

One of the hallmarks of an effective action plan is constant monitoring of progress to direct community effort. The total community emissions footprint that underpins this plan is useful, but it has some limitations. A more localised and complete picture is needed to guide community decision making.

Community expertise and citizen science will be required to help build the evidence base for the community footprint. There's also an opportunity to seek data directly from critical sources, such as businesses, organisations and community entities. By doing this, it will help us build a more complete picture of our emissions footprint.

Ref	Action	Lead	Support	Cost*
1.2.1	Recognise, communicate and address the local impacts of the global climate emergency, and reconsider the need to declare a local climate emergency by 2022.	City		Low
1.2.2	Provide regular plan progress updates to Council and the Sustainability Advisory Committee.	City		Low
1.2.3	Create more opportunities for public participation to: <ul style="list-style-type: none"><li>• support sustainability in decision making and</li><li>• aid the effective implementation of the Sustainability Framework 2020 and supporting action plans.</li></ul>	City		Low
1.2.4	Develop and implement a comprehensive plan for monitoring, evaluating and reporting climate action efforts and effectiveness, aligning with the Sustainable Development Goals by 2022.	City		Low
1.2.5	Support the <i>Victorian Climate Change Framework</i> target for Victoria to achieve net-zero greenhouse gas emissions by 2050.	City		Low
1.2.6	Evaluate the effectiveness of our sustainability reporting and continuously improve our reporting practices by 2022.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

## FOCUS AREA 1.3 RESOURCES AND INVESTMENT FOCUS

Community climate action is driven by voluntary efforts, complemented by formal funding through program resources, grants and incentives. The collective resources available to the region do not currently meet the scale of the challenge.

Climate change community advocates need to be supported and recognised for their contributions. Linking like-minded people, while supporting and recognising the varied strengths of the various players, will be an important first step. Long-term funding agreements that provide ongoing support will also be vital.

We want to adopt a new way of supporting community climate action. The climate action strategic partnership fund will support climate action delivered by volunteers and not-for-profit groups in the community and create a sustainable economic model for delivering this plan.

Ref	Action	Lead	Support	Cost*
1.3.1	Allocate resources for the establishment of community climate change officers by 2022.	City		Med**
1.3.2	Allocate resources for Climate Change Response Plan implementation project funding by 2022.	City		Med**
1.3.3	Establish a climate action strategic partnership fund to support partnerships that enable climate action across the community by 2021.	City		Med
1.3.4	Increase support for community-generated ideas and projects for sustainable practice and education through the City's Environmental Sustainability Grants by 2021.	City		Low
1.3.5	Advocate for additional resources and investment to the region for climate action from government, business and philanthropic organisations.	City	Community	Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

\*\* Subject to funding



**Figure 14 Beach erosion control using an artificial shellfish reef at Portarlington**



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## Principle 2: Increase energy efficiency and renewable energy production

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Emissions from stationary energy collectively make up more than two-thirds of our total community emissions profile. Energy in this context refers to electricity and natural gas for stationary activities, such as buildings, facilities and energy-using equipment.

The use of grid-sourced electricity accounts for more than half of the region's emissions, primarily derived from coal-burning.

Grid-sourced electricity emissions from the commercial sector account for approximately 23 per cent of the region's total community emissions. This sector – which includes non-industrial business, schools, universities and public utilities – is therefore our single greatest contributor to emissions.

Grid-sourced electricity used in the industrial sector accounts for 15 per cent of total community emissions, which is equivalent to household contributions. Gas usage is highest in the residential sector, accounting for about 7 per cent of the region's community emissions profile.

### **FOCUS AREA 2.1 IMPROVE ENERGY EFFICIENCY IN EXISTING BUILDINGS, FACILITIES AND INFRASTRUCTURE**

Despite an overall increase in City-owned buildings, our annual emissions from stationary energy have decreased significantly. This is due to our focus on improving energy efficiency, better energy management and installing and using power from renewable energy sources.

We will continue to increase our capacity to improve energy efficiency across our operations. We will also explore and where possible implement options for reducing gas use, particularly in public swimming pools.

Streetlighting is a significant source of electricity-based emissions and we are currently upgrading approximately 25,000-street lights to energy efficient LED lighting that will reduce 8,000 tonnes of carbon emissions each year.

Whilst most people understand the benefits of energy efficiency, it may not be a priority and available information can be overwhelming and a barrier for some. We need to provide information on why energy efficiency needs to be considered be a priority and make it easier for people to find the information they need to make informed decisions. In line with our social equity principles, adopted in 2017, we need to deliver this assistance in a way that is fair and equitable and reaches priority areas and groups, irrespective of gender, age, background, location, socio-economic circumstances and ability.

There is an opportunity to scale up energy management support and advisory services to both residents and business through new partnerships.

#### **BECOMING MORE ENERGY EFFICIENT**

##### **Residents**

- Carry out a home energy assessment to establish a baseline
- identify energy efficiency measures and track improvements – for example, by installing insulation or moderating your heating and cooling
- Support community solar bulk buys and access government rebates for energy-efficient equipment
- Buy or lease houses with high energy efficiency ratings

##### **Business**

- Conduct an energy assessment to identify potential upgrades
- Implement an energy management plan and track improvements
- Lease, purchase or build energy-efficient buildings
- Train staff to adopt energy efficient work practices

Ref	Action	Lead	Support	Cost*
2.1.1	Continue to adopt leading technologies to improve energy efficiency in City-owned and operated facilities by: <ul style="list-style-type: none"> <li>• upgrading lighting, heating and cooling systems in key facilities</li> <li>• undertaking an assessment of our gas-using infrastructure by 2022, to support a longer-term transition to gas-free operations</li> <li>• providing funding to transition gas infrastructure.</li> </ul>	City		Med**
2.1.2	Adopt a proactive energy efficiency management model and prioritise investment for upgrades for the City's operations by investigating energy consumption data to better inform future decisions.	City		Low
2.1.3	Upgrade all streetlights with energy efficient LED lighting by 2025 as part of a broader effort to implement leading technologies that reduce streetlight-related emissions.	City		High
2.1.4	Empower local businesses to reduce emissions by promoting access to energy efficiency and productivity initiatives, including: <ul style="list-style-type: none"> <li>• energy assessments</li> <li>• energy management plans</li> <li>• advice on energy-efficient buildings.</li> </ul>	City		Med**
2.1.5	Support community efforts to reduce emissions by promoting access to energy efficiency programs, including: <ul style="list-style-type: none"> <li>• home energy assessments</li> <li>• advice on available rebates and programs</li> <li>• tailored programs to support community members most vulnerable to climate change impacts</li> <li>• advocacy to state government to improve energy and thermal performance of existing public housing stock in the Geelong region.</li> </ul>	Community		Med**

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (more than \$500,000+)

\*\* Subject to funding

## FOCUS AREA 2.2 OPTIMISE ENERGY EFFICIENCY IN NEW BUILDINGS, FACILITIES AND INFRASTRUCTURE

With a rapidly growing population and expanding urban footprint, stationary emissions will increase unless we reduce our reliance on fossil fuels for energy in new buildings, facilities and infrastructure. Through the planning scheme, we can make sure all new buildings that require a planning permit are as energy efficient as possible including multi-unit, commercial and industrial buildings.

Transport is likely to remain a significant source of emissions in the foreseeable future given the region's strong car dependence and expanding urban footprint. Improved public transport, active travel infrastructure and new infrastructure that supports low-and-no emissions vehicles will require significant investment.

We have already committed to achieving a 5-star 'Green Star' environmental rating for all new City-owned and managed buildings and facilities. We are also consolidating our corporate operations into a single, energy-efficient building as part of our new Civic Precinct and will save \$1 million annually by securing zero-emissions renewably sourced electricity for the next decade via the Victorian Energy Collaboration (VECO) Power Purchase Agreement.

There is an opportunity to increase uptake of renewables through existing mechanisms – for example, Environmental Upgrade Agreements – and new measures – such as rate rebates. Setting standards for energy efficiency in new residences, buildings and facilities will also provide a buffer against incremental increases in energy use over time.

Ref	Action	Lead	Support	Cost*
2.2.1	Review and strengthen our Sustainable Buildings Policy to lower whole-of-life emissions for new buildings and energy-using infrastructure by 2022.	City		Low
2.2.2	Develop and implement best practice Environmentally Sustainable Design (ESD) Plans for all new urban developments, including: <ul style="list-style-type: none"> <li>• Geelong Northern Growth Area</li> <li>• Geelong Western Growth Area.</li> </ul>	City	Developers	Low
2.2.3	Amend procurement policy and practices to prioritise low embodied energy, sustainably produced, climate-resilient infrastructure and asset purchases – such as road and pavement surfaces – and undertake a climate risk assessment of significant infrastructure and procurement decisions, to identify preferred choices.	City		Low
2.2.4	Actively discourage gas infrastructure in new developments and support renewable alternatives by 2022.	City	Community	Low
2.2.5	Ensure all new buildings meet '7-Star' building standards under changes to the National Construction Code.	Builders	Building Inspectors	Med
2.2.6	Educate prospective new building owners of the advantages of ESD buildings by 2023.	Community	City	Med
2.2.7	Carry out ESD compliance with planning permits by 2022.	City		Low**

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

\*\* Subject to funding

### FOCUS AREA 2.3 INCREASE RENEWABLE ENERGY USE

The switch to renewable energy is happening quickly and on a broad scale. This is due to a range of factors including: solar Photo-Voltaic panels (solar PV) on rooftops and in solar farms; the availability of market mechanisms, such as renewable power purchase agreements; and community-led initiatives, such as bulk-buys of solar PV and battery systems, as well as community-owned renewable energy generation initiatives.

As an organisation, we have been transitioning to renewables since we installed our first rooftop solar system in 2008. We have installed more than one megawatt (MW) of solar PV across 27 of our facilities and have committed to zero-emissions electricity for all our operations over the next decade, as part of the Victorian Energy Collaboration Project. Other large regional organisations making significant commitments to renewables include Barwon Water and Deakin University.

Opportunities to increase the uptake of renewables include a subsidised energy audit service to businesses and residents, supporting community bulk buys, community-owned renewable energy initiatives and exploring the possibility of rate rebates.

Ref	Action	Lead	Support	Cost*
2.3.1	Continue to implement the City's renewable energy program by: <ul style="list-style-type: none"> <li>• sourcing renewable energy for the City's operations via a Power Purchase Agreement (PPA) by 2021</li> <li>• installing behind-the-meter solar systems on City-owned buildings</li> <li>• investigate energy trading opportunities for energy generated in City-owned buildings.</li> </ul>	City		Med

Ref	Action	Lead	Support	Cost*
2.3.2	Support community-owned renewable energy initiatives.	Community	City	Med
2.3.3	Support community-based programs that enable economies-of-scale procurement of renewable technology – for example, solar and batteries for home and business owners, renters and landlords.	Community	City	Med
2.3.4	Investigate opportunities to support 'smart grids' in new developments.	Developers	City	High
2.3.5	Support the establishment of a regional renewable energy research and development hub to support knowledge transfer and education across the region.	Deakin University		Med
2.3.6	Investigate and implement additional ways of supporting greater uptake of renewables for business and community by 2023 including: <ul style="list-style-type: none"> <li>existing mechanisms, such as Environmental Upgrade Agreements</li> </ul>	City		High**
2.3.7	Collaborate with regional partners to investigate options to produce green hydrogen as a new renewable fuel source.	City		High

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

\*\* Subject to funding

## Principle 3: Switch to sustainable transport and cleaner fuels

With a growing population and expanding areas of urban development, emissions from transport are expected to increase unless we make significant changes to our transport systems.

Transport-related emissions, including diesel, petrol, and LPG, account for almost one third of our total community emissions profile. About one third of total household emissions come from cars used for private transport.

To reduce our current transport emissions footprint, we must change the way we move around our communities. However, it will take significant commitment and investment from a range of different stakeholders for us to not only create viable alternatives, but to plan neighbourhoods that support this outcome.

Public transport could be a viable alternative to car-based travel, but not without significant changes to the way it operates in our region.

### FOCUS AREA 3.1 PRIORITISE THE DEVELOPMENT OF SUSTAINABLE TRANSPORT INFRASTRUCTURE AND SERVICES

While we're lucky to have access to bus and some rail services in our region, many users feel they are not worth the hassle and do not always provide a viable and usable alternative to car-based travel. As such, transport is dominated by private vehicles.

Significant investment is needed to keep building safer active travel infrastructure, such as bike trails and walking paths. We also need strong advocacy for improved public transport and consolidated urban growth around public transport nodes.

#### REDUCING TRANSPORT EMISSIONS

##### Residents

- Use active travel – walk, run, ride, skate, scoot
- Use of public transport
- Vehicle pooling and car sharing
- Advocate for improved public transport and active travel networks and infrastructure

##### Business

- Coordinate meetings and trips, support online meetings
- Encourage vehicle pooling, public and active transport use by staff
- Provide end-of-trip facilities for staff who commute via active travel
- Advocate for improved public transport and active travel networks and infrastructure

Ref	Action	Lead	Support	Cost*
3.1.1	Initiate the development of a draft integrated transport strategy for better integration between modes of transport, and to support sustainable transport choices by 2022.	City		High
3.1.2	Deliver and promote the Better Bike Connections Project to encourage active transport and reduce emissions by 2022.	City		High
3.1.3	Deliver and promote the <i>Shared Trails Master Plan</i> to encourage active transport and reduce emissions by 2022.	City		High
3.1.4	Investigate options to incentivise alternatives to private vehicle usage, including end-of-trip facilities, car-sharing and active travel.	City		Low
3.1.5	Advocate for sustainable transport, including consolidated urban growth around public transport nodes, as well as more reliable and regular public transport services across the region.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

## FOCUS AREA 3.2 TRANSITION THE REGIONAL FLEET TO ZERO-EMISSION POWER SOURCES

Technological innovation in electric vehicles, with lower or zero emissions, is occurring at a rapid pace globally and accelerating now in Australia. However, the cost of such vehicles is still prohibitive for many people.

While some European countries are already planning to ban new fossil-fuel-based vehicles within the next decade, the lack of publicly accessible rapid charging infrastructure is a critical local barrier for our community.

Mass transport – that is, trains, trams and buses – are well suited for electrification as they follow predictable routes and distances and can accommodate the necessary batteries.

Ref	Action	Lead	Support	Cost*
3.2.1	Transitioning City-owned light and passenger fleet vehicles to zero-emission power sources, including: <ul style="list-style-type: none"> <li>increasing hybrid vehicles in our fleet</li> <li>assessing and installing EV charging infrastructure by 2024</li> <li>changing over fleet vehicles to EV alternatives by 2027.</li> </ul>	City		Med**
3.2.2	Assess transition to EV charging infrastructure to fuel and vehicle options for Council's heavy and commercial vehicles by 2022.	City		Med
3.2.3	Advocate for the transition of the public bus fleet to renewable energy.	City		Med
3.2.4	Investigate opportunities to provide incentives for zero-carbon options – for example, bike and electric vehicle users.	City		Med
3.2.5	Install a network of publicly available electric vehicle charging stations powered by renewable energy across the region by the end of 2024.	City		Med**
3.2.6	Investigate the viability of establishing free, renewable-energy-powered 'Park and Ride' shuttles across the City, like the Deakin Free Shuttle model.	City	Deakin	Med
3.2.7	Decarbonise private vehicle transport via an electric vehicle bulk buy program by 2021.	Community	City	Med
3.2.8	Investigate the transitional aspects of the region's transport networks as technologies mature and become more affordable.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

\*\* Subject to funding

***'We need to create more electric vehicle charging stations locally and incentives to get more large transport operators to switch faster.'***

*Member of Geelong Youth Council*

## Principle 4: Reduce non-energy emissions and increase carbon storage

Both waste and agriculture are essential to the discussion about climate action in our region due to the proximity of farming areas to urban populations and the prominence of waste in people's day-to-day lives.

Emissions of methane from the breakdown of municipal waste are responsible for about three per cent of total community emissions. The primary source of waste emissions is organic waste which, when deposited in landfill, breaks down and forms methane, a potent greenhouse gas. Another source of waste emission is wastewater or sewerage, which emits methane during the treatment process.

Reducing waste and recovering waste energy are hallmarks of a circular economy – one that continues to recirculate its resources sustainably and with reduced environmental impact.

Agriculture is responsible for approximately one per cent of total community emissions. While not a significant emissions source, there are opportunities to support sustainable agricultural and local food production practices across the region.

### FOCUS AREA 4.1 REDUCE WASTE AND RECOVER WASTE ENERGY

We started capturing methane from the Drysdale landfill and using it as an energy source for electricity production in 2018. Since then, we've converted methane emissions into electricity through an on-site generator.

Barwon Water undertakes wastewater treatment for most of the municipality at the Black Rock Water treatment plant. The process generates methane emissions, so they are leading a partnership that is working to find a regional circular economy solution for this.

Several effective programs exist to promote sustainable waste management and the transition to a more circular economy including Transition Streets Geelong and community gardens. These and other volunteer-led initiatives need support to reach broader audiences.

Ref	Action	Lead	Support	Cost*
4.1.1	Prioritise service and infrastructure solutions to reduce and capture municipal waste emissions, which continuing to capture and reuse methane gas emissions from the Drysdale municipal landfill to produce energy.	City		Low
4.1.2	Implement a pilot food waste collection service for residents by 2022.	City		Med
4.1.3	Investigate opportunities to manage residual waste, such as an organic waste processing facility to support the circular economy by 2022.	City	Barwon Water G21 councils and Wyndham City Council	Med

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

### FOCUS AREA 4.2 SUPPORT ESTABLISHMENT OF REGIONAL DRAWDOWN SOLUTIONS

Another essential element of the emissions reduction challenge is to draw down carbon from the atmosphere.

Sequestration of carbon is a common form of drawdown and involves removing carbon emissions from the atmosphere in some way – for example tree planting (green carbon), improving soil carbon (brown carbon), marine systems (blue carbon) and wetlands (teal carbon). These types of drawdown are regularly used to support carbon offset schemes.

Blue carbon is an area of considerable interest in our region. As well as our extensive tidal estuaries and areas of seagrass, which offer high sequestration rates, Deakin University's Blue Carbon Lab is a world leader in this area.

There is also significant interest in a self-generated, voluntary regional offset scheme. Such a scheme could be part of a more diverse mix of offsets for businesses and organisations. With climate pressures already impacting vulnerable areas, including coastal and low-lying zones, this type of scheme could support private landowners and help protect and conserve valuable natural assets.

There are many challenges associated with setting up such a scheme, notably reaching the agreement on the best verification process. However, the benefits of such a program as a mechanism for directing investment to local climate and environmental solutions could be significant.

***‘Our region could be a world leader in blue carbon offsets.’***

*Workshop participant*

Ref	Action	Lead	Support	Cost*
4.2.1	Promote climate conscious sustainable agriculture practices through: <ul style="list-style-type: none"> <li>• education and incentives</li> <li>• policy and planning.</li> </ul>	City		Low
4.2.2	Investigate the feasibility of a regional carbon offsets scheme covering a variety of carbon sequestration solutions by: <ul style="list-style-type: none"> <li>• establishing regional carbon offset working group</li> <li>• developing a business case for a regional pilot scheme.</li> </ul>	Corangamite Catchment Management Authority	City	Med
4.2.3	Establish a carbon sequestration target to be achieved through revegetation biomass gains by: <ul style="list-style-type: none"> <li>• investigating baseline conditions and options for sequestration</li> <li>• developing and implementing a biodiversity strategy by 2022.</li> </ul>	City	Corangamite Catchment Management Authority	Low
4.2.4	Continue research into opportunities for blue carbon in the Geelong region.	Deakin		Med

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)



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## Principle 5: Increase awareness and understanding of climate change impacts

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The likelihood of climate-related hazards is increasing with improved climate modelling and predictions. So too are potential consequences due to the frequency, intensity and duration of climate-related events.

Climate change is expected to pose a growing range of threats to community health and wellbeing – both mental and physical. Human health is dependent on the health of our environment, and there is a growing recognition of the link between nature and human health.

Climate impacts will likely have a disproportionate effect on already disadvantaged residents through increased exposure and costs. For example, heatwaves can be problematic for the region, particularly in some geographic areas of Geelong.

One of the most significant climate change risks facing the region is the Urban Heat Island effect. The hard surfaces of urban landscapes – for example, roads and roofs – collect and store significantly more solar radiation than living, green areas. On days of extreme heat, urban areas can heat up faster and become much warmer than the surrounding living landscapes, forming an 'island' of urban heat.

### FOCUS AREA 5.1 IMPROVE LOCAL CLIMATE RISK KNOWLEDGE

Climate risk will increase over the coming decades with the potential to impact our environmental, social and economic systems. By improving our understanding of current and potential climate risks, we can develop adaptation pathways to help reduce the region's vulnerabilities, as well as increase the resilience of these systems.

By building general awareness about potential impacts, it will give more people in the community the impetus to act. Given that many climate-related decisions will affect local communities, they should be involved in the decision-making process where possible.

Ref	Action	Lead	Support	Cost*
5.1.1	Improve understanding of local changes in temperature, rainfall, and related variables related to urban infrastructure condition and function by making existing climate data more accessible and useful for the community.	City		Low
5.1.2	Monitor, evaluate, report and improve climate change adaptation by developing and implementing a long-term framework based on state-wide risk assessments for the municipality.	City		Low
5.1.3	Continue to provide guidance material to support government, business and community in planning and delivering effective place-based adaptation to address the impacts of climate change.	Department Environment Land Water & Planning	City	Med

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

## Principle 6: Build climate action into decision-making

Climate change poses a range of risks that need to be managed to ensure the best long-term outcomes for the community.

As a local government, we perform a range of roles relevant to climate change including planning for urban growth and development, setting strategic directions for the region, building community infrastructure, and managing and delivering services.

It is challenging to embed climate action in decision-making, as local governments are complex organisations that are guided by multiple pieces of legislation. It requires not only buy-in and support from key decision makers, but also a shared understanding of the issues and necessary responses.

### FOCUS AREA 6.1 EMBED CLIMATE THINKING IN OUR DECISIONS

We can impact streetscapes, major drainage, stormwater and public open space in new developments as part of our statutory planning responsibilities. However, we have limited authority to mandate energy efficiency standards for single dwellings via the planning scheme, as planning permits are generally not required for single houses.

We can influence urban precincts to be more sustainable using precinct plans. But we don't have a legislated authority to mandate energy-efficient or climate-resilient developments. Instead, outcomes are highly dependent on state government planning policy provisions and the goodwill of the development industry.

Our Environmentally Sustainable Design Local Planning Policy is one approach we've taken to work within these limitations. It allows us to assess multi-unit developments (3 and above), mixed-use, commercial and industrial precincts, and require minimum standards.

Planning, designing, and building climate ready community infrastructure is a challenge, as there is no existing process demonstrating how to plan and build infrastructure under different future climate scenarios. However, we are working on a 10-year rolling annual plan that will help us consider climate change risks in all community infrastructure decisions. Similarly, our Corporate Asset Management Strategy will help us consider future risks to significant assets.

Ref	Action	Lead	Support	Cost*
6.1.1	Ensure local planning schemes, standards, codes and policies support the use of best available climate change data and adaptive planning principles as part of decision making, particularly as it relates to infrastructure, development and land use changes.	City		Med
6.1.2	Develop a policy to ensure all new strategies and plans consider the implications of climate change risk and demonstrate how to manage such issues by 2023.	City		Low
6.1.3	Plan for climate change and emergency management at the municipal level, provide relief and recovery services and support emergency response operations.	City		Low
6.1.4	Support and enhance a culture in the City that leads to improved decisions for climate change resilience.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

### FOCUS AREA 6.2 CORPORATE CLIMATE RISK MANAGEMENT AND DISCLOSURE

Managing climate change as a corporate strategic risk is a critical aspect of our adaptation approach. Our Audit and Risk Committee leads these assessments and evaluates the effectiveness of risk management controls. Part of the risk assessment involves our investments.

Currently there is limited connection between our financial investments and our broader sustainability agenda. This needs to be addressed so that more funds can be invested into accredited environmentally sustainable ventures, such as renewable energy generation, low-carbon transport, low-carbon buildings and sustainable water management infrastructure.

Ref	Action	Lead	Support	Cost
6.2.1	Monitor, evaluate and report on the City's effectiveness of climate change adaptation readiness.	City		Low
6.2.2	Implement new risk management and reporting software solutions to manage risks and enable integrated reporting by 2022.	City		Low
6.2.3	Integrate climate change risk management into investment decisions and develop a financial risk disclosure statement.	City		Low
6.2.4	Review the City's Financial Investment Policy and develop an investment strategy based on the City's <i>Sustainability Framework 2020</i> .	City		Low
6.2.5	Pursue financial divestment away from fossil-fuel-aligned investments.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

## Principle 7: Increase collaborative climate change responses

Climate risks span geographic environments, jurisdictions and boundaries. They are complex challenges and require a systems-based approach.

As a local community, we must have a shared understanding of the risks and agree on the appropriate measures to manage or respond to those risks. Without formal networks and partnerships across different organisations, this holistic approach is unlikely to occur.

The *Wadawurrung Country Plan* highlights the importance of climate risks to the cultural, ancestral, spiritual and historical connections to the country, identifying opportunities for new perspectives on climate action. The plan provides a unique opportunity to work in partnership with the Wadawurrung People, to guide the future landscape resilience of the Geelong region and restore its balance, while preparing for the realities of climate change.

Collaboratively managing current and future climate-related risks will enable the most innovative and effective adaptation pathways. Our role is to lead in climate change adaptation, working with the community and stakeholders to understand the issues and risks, evaluate the alternatives and collaboratively implement appropriate adaptation responses.

### FOCUS AREA 7.1 BUILD NETWORKS AND PARTNERSHIPS FOR ADAPTATION RESPONSES

We have established various working groups and partnerships in critical risk areas of coastal planning, health and wellbeing and emergency management. Using our Enterprise Risk Framework, there is an opportunity to also establish a cross-department group to drive collaborative responses.

At the broader regional scale, the new Barwon South West Climate Alliance will provide an opportunity for us to share knowledge, coordinate advocacy and deliver collaborative climate action across the region.

Ref	Action	Lead	Support	Cost*
7.1.1	Help establish the Barwon South West Climate Alliance to build networks and cross-agency relationships in climate change adaptation planning and identify opportunities to collaborate across tenures and boundaries by 2022.	City	Barwon South West region local governments	Low
7.1.2	Ensure critical decisions consider climate change mitigation and adaptation implications.	City		Low
7.1.3	Improve coordination of policy development and implementation between various levels of government and different land managers to avoid maladaptation and promote synergies.	Department Environment Land Water & Planning	City	Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

### FOCUS AREA 7.2 COLLABORATE IN AREAS OF EMERGING CLIMATE RISKS

Climate change directly affects health through extreme weather events, prolonged heatwaves, flooding and bushfires. It also has indirect health impacts, such as poorer air quality, an increasing incidence of infectious disease, risks to food safety and drinking water quality and effects on mental health. The data is already showing environmental effects locally, as well as health effects for those most vulnerable to climate change impacts.

With these risks in mind, some of the key areas where we need to collaborate to address emerging climate risk include agriculture, health, support for vulnerable communities and coastal adaptation.

Ref	Action	Lead	Support	Cost*
7.2.1	Collaborate with primary producers to: <ul style="list-style-type: none"> <li>investigate how climate change could impact agriculture and sustainable land use</li> <li>improve understanding of local supply chains and</li> <li>identify critical gaps.</li> </ul>	City		Low
7.2.2	Partner with Traditional Owners to ensure their cultural, ecological and economic values and expertise are integrated into climate adaptation planning	City	Wadawurrung Traditional Owners Aboriginal Corporation	Low
7.2.3	Increase resilience to, and reduce risk of, the urban heat island effect by: <ul style="list-style-type: none"> <li>completing urban heatwave vulnerability modelling and identifying priority urban greening sites by 2023</li> <li>developing an urban ecology plan by 2025</li> <li>increasing tree canopy cover in urban Greater Geelong to 25 per cent by 2045, with an interim target of 20 percent by 2030.</li> </ul>	City	Deakin University	Low
7.2.4	Investigate the establishment of a Regional Adaptation Strategic Partnership to improve our understanding of coastal processes in particular coastal erosion by 2022.	City	Department Environment Land Water & Planning	Low
7.2.5	Develop coastal adaptation plans by 2024 that identify the adaptation pathways and responses for priority coastal hazard sites along the Bellarine Peninsula, Corio Bay and outer coast.	City		Low
7.2.6	Investigate market incentives for retrofitting homeowner and rental properties.	City		High
7.2.7	Consider climate change risk assessments for biodiversity assets across the municipality, in conjunction with the development of the Biodiversity Strategy.	City		Low

\* Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (\$500,000+)

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