



THE CITY OF
GREATER GEELONG

CLIMATE CHANGE RESPONSE PLAN

2021–30

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.

We want to better understand how we can unify our efforts around the concept of 'caring for country', learning from the depth of experience and knowledge of the Wadawurrung, our Traditional Owners.

This plan been developed in consultation with community groups, businesses and agencies from across the municipality. We would like to extend our gratitude to Encader Consulting, as well as the many individuals and organisations whose enthusiasm, commitment and contributions helped shape the plan.

Artwork entitled *On Country* by Ammie Howell

COMMUNITY GROUPS AND NON-GOVERNMENT ORGANISATIONS

- 100% Clean Bellarine
- Active Geelong
- Australian Parents for Climate Action
- Bellarine Bayside Committee of Management
- Bellarine Catchment Network
- Bellarine Landcare
- Centre for Climate Safety
- Diversitat
- Friends of the Ocean Grove Nature Reserve
- Geelong Environment Council
- Geelong Field Naturalists Club
- Geelong Sustainability
- Geelong Youth Council
- Ocean Grove Coastcare
- Ocean Grove Community Association
- Public Transport Users Association - Geelong
- Transition Streets Geelong
- Trust for Nature

BUSINESSES AND PEAK BODIES

- Geelong Chamber of Commerce
- Geelong Port
- Godfrey Hirst
- Viva Energy
- Wadawurrung Traditional Owners Aboriginal Corporation

GOVERNMENT AGENCIES

- Barwon Coast Committee of Management
- Barwon Water
- Corangamite Catchment Management Authority
- Our councillors and employees
- Deakin University
- Department of Health and Human Services
- Department of Environment, Land, Water and Planning
- Kardinia Park Stadium Trust
- Sport & Recreation Victoria
- Sustainability Advisory Committee
- Sustainability Victoria
- The Gordon



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MAYOR'S MESSAGE

Climate change is one of the most pressing issues of our time.

Extreme heat, bushfires, declining rainfall and extreme storm events are challenging our community's resilience. We can no longer ignore it, and the time for debate is long gone. We need to address climate change urgently to achieve our aspiration to be a clever, creative city region.

Of course, we understand that this is a global issue, and we are just one small part of the problem. But we also know that a significant part of the solution is in all those smaller parts taking action. It is critical that we take action locally, and encourage others to do the same, to reduce our emissions and prepare for the impacts.

We are fortunate to have so many committed and self-motivated residents in our community and it is our role as a council to take the lead, and also to ensure we enable everyone in our municipality to take action and play their part in the solution.

We have made significant progress in reducing the organisation's emissions and managing climate impacts. We have committed to reaching net zero emissions for our operations by 2025 and already use 100 per cent renewable electricity. We are rapidly transforming our fleet to zero-emission vehicles and recover 95 per cent of the methane generated from our landfills.

We are educating our whole organisation and embedding climate action through our Sustainability Framework and Action Plan, which are underpinned by our Sustainability Policy. We have also embedded climate change in our Enterprise Risk Framework and, earlier this year, Council endorsed our founding membership of the Barwon South West Climate Alliance.

As we look towards our future, we fully embrace taking a leadership position as we understand action on climate change is a significant priority for residents. An essential step to achieving collective impact at the municipal level is a coordinated and cooperative response, all working towards an agreed community emission reduction target.

Following endorsement of our Sustainability Framework, Council began engaging with the community in 2020 to develop this municipality-wide Climate Change Response Plan, which I am delighted to share with you.

The plan is a roadmap to reduce greenhouse gas emissions across the municipality and make our city-region more resilient to climate impacts. We listened when the community told us to set an ambitious target and responded with a goal of net zero emissions Greater Geelong-wide by 2035.

This target and the plan to achieve it both acknowledge that we all need to play a role within our spheres of control and influence, both individually and collectively. It is a call to action for everyone to be part of the solution.

The plan identifies what actions we need to take, not the operational details of how we might implement those actions. It is intended that residents, businesses and organisations will use the plan for guidance and act within their spheres of control and influence.

We recognise the strong foundations of grassroots and local climate action initiatives across the region. As a Council, we are committed to working with all parties to deliver climate actions that provide mutual benefits for the entire region.

We want to develop new partnerships and collaborations that build on the work, expertise, ideas and capacity that exists across our community. We want to better understand how we can unify our efforts around the concept of 'caring for country', learning from the depth of experience and knowledge of the Wadawurrung, our Traditional Owners. We will do what we can within our sphere of control to support individuals and grassroots community action and advocate for action at higher levels.

Thank you to everyone who contributed to this plan, including councillors, staff, community members, businesses, organisations, consultants and of course our Sustainability Advisory Committee. Thank you all for sharing your ideas, expertise and insights to help make the plan the best it can be.

Our aspiration is to become a zero-emissions, climate-ready city and region. I hope that you will join with us as we work to get there.



A handwritten signature in black ink that reads "Stephanie A".

Cr Stephanie Asher

Mayor
City of Greater Geelong

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 with, and listening 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

This plan fits within a much broader framework of strategic planning within our organisation. 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*.



Figure 1: Our environment and sustainability planning framework

OUR CLIMATE CHANGE RESPONSE PLAN 2021–30

Our aim is for the Greater Geelong community to achieve net zero community emissions and increase resilience to climate change impacts through a coordinated and collective response. The table below shows a summary of the plan, which 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.

Clever and creative vision	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.						
Goal	Become a zero-emissions, climate-ready city and region.						
Key success factor	A coordinated and collective response from the whole community						
Targets	Mitigation target Achieve net zero community emissions by 2035				Adaptation target Become a climate-ready municipality, with increased resilience to current and future climate risks		
Principles	Principle 1 Support an empowered and active community	Principle 2 Increase energy efficiency and renewable energy production	Principle 3 Switch to sustainable transport and cleaner fuels	Principle 4 Reduce non-energy emissions and increase carbon storage	Principle 5 Increase awareness and understanding of climate change impacts	Principle 6 Build climate action into decision-making	Principle 7 Increase collaborative climate change responses
Focus Areas	1.1 Community awareness, education and capacity building	2.1 Improve energy efficiency in existing buildings, facilities and infrastructure	3.1 Prioritise the development of sustainable transport infrastructure and services	4.1 Reduce waste and recover waste energy	5.1 Improve local climate risk knowledge	6.1 Embed climate thinking in our decisions	7.1 Build networks and partnerships for adaptation pathways
	1.2 Governance and accountability	2.2 Optimise energy efficiency in new buildings, facilities and infrastructure	3.2 Transition vehicles to zero-emission power sources	4.2 Support establishment of regional drawdown solutions		6.2 Corporate climate risk management and disclosure	7.2 Collaborate in areas of emerging climate risk
	1.3 Resources and investment focus	2.3 Increase renewable energy use	*There is a list of actions below each focus area with identified lead/support roles and anticipated costs (see page 24 onwards).				

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 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 CO₂-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

In June 2021, our Council endorsed a series of Sustainability Performance Indicators and Targets that will be publicly reported on annually, including a carbon reduction target and supporting programs. Evaluation will also be aligned with relevant United Nations Sustainable Development Goals. The goals provide a roadmap to achieve a better and more sustainable future for all.

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 on emerging priorities, take advantage of newly identified opportunities and keep pace with the rapid changes that are happening in the climate change arena.

INTRODUCTION

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.



Photo: Aerial view of the
Geelong Waterfront



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 continue¹ – these effects could become much worse.

By the 2050s, some predictions suggest Geelong’s climate will be more like the current climate of Shepparton². The frequency of extreme weather events, such as droughts, bushfires, heavy rain and heatwaves, are also expected to increase (see Figure 2).

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 list of risks on page 11).

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, heat and transport, together with industrial processes, waste, land clearing and agriculture.

Our community emissions profile includes greenhouse gas emissions resulting from the actions of people, businesses and organisations in the City of Greater Geelong municipality, but excludes emissions associated with consumption of goods and services (for example, food and air travel).

Figure 2 Climate projections for the Barwon Region²

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

1 Department Environment Land Water & Planning (2015) Climate-ready Victoria: Barwon South West
2 Clarke JM, Grose M, Thatcher M, Round V & Heady C. 2019. Barwon Climate Projections 2019. CSIRO, Melbourne Australia

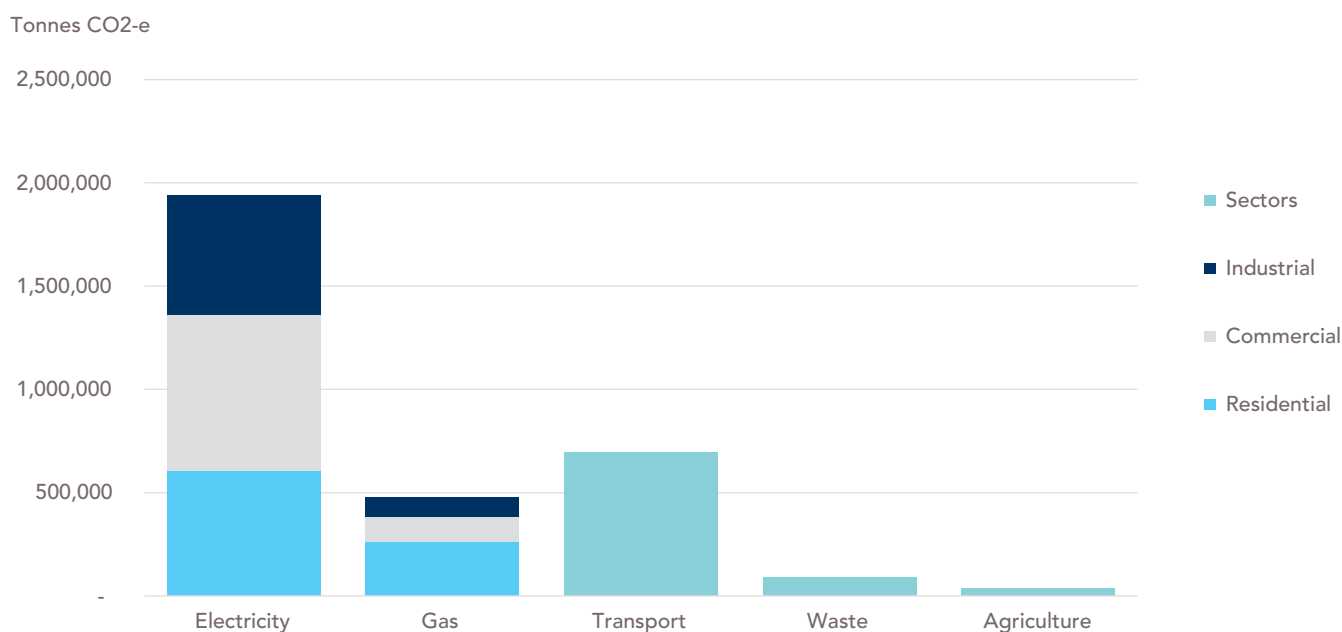


Figure 3 City of Greater Geelong community emissions profile 2019³

For the 2019 calendar year, community emissions were estimated to be 3,232,000 tonnes CO₂-e³ (see Figure 3). 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 from buildings and facilities, vehicle fleet and municipal waste was 36,780 tonnes CO₂-e in 2019–20. While this accounts for just over one per cent of the total community emissions profile, we recognise the role we must play in leading the way.

The community emissions includes the major sources of carbon emissions for the municipality from the following sources:

- stationary energy (grid supplied electricity and gas)
- transport (on-road use and rail)
- waste (landfill and wastewater)
- agriculture (enteric fermentation, manure management, and synthetic fertilizer use)
- land use change (land clearance and reforestation).

The community emissions profile is not a baseline as it will constantly change over time and does not include industrial product use and processes.

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 and 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 extreme events 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
- Increased demand on community services to support 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, such as fire, flood, storms and heatwaves

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

RESPONDING TO THE EMERGENCY

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

Across the Greater Geelong municipality, there has been increasingly 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 Centre for Climate Safety, a Geelong-based community group, was instrumental in creating 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 2021 International Panel on Climate Change warns that we are getting close to exceeding the Paris Agreement Goals of limiting average global temperature rise to 1.5°C. The science tells us that we must aim for net zero emissions as soon as possible (by 2050 at the latest) and that we need rapid decarbonisation during this decade. 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.



Photo: 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, as Figure 4 demonstrates:

REDUCING EMISSIONS

Also called *mitigation*, this refers to any action addressing the underlying cause of climate change – namely, increasing greenhouse gas emissions. Examples of such action include improving energy efficiency, reducing use of fossil-fuel-based energy, increasing availability and use of renewable electricity, using electric vehicles, reducing consumption, diverting organics from landfill, revegetation 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 plans 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 4 Climate change responses

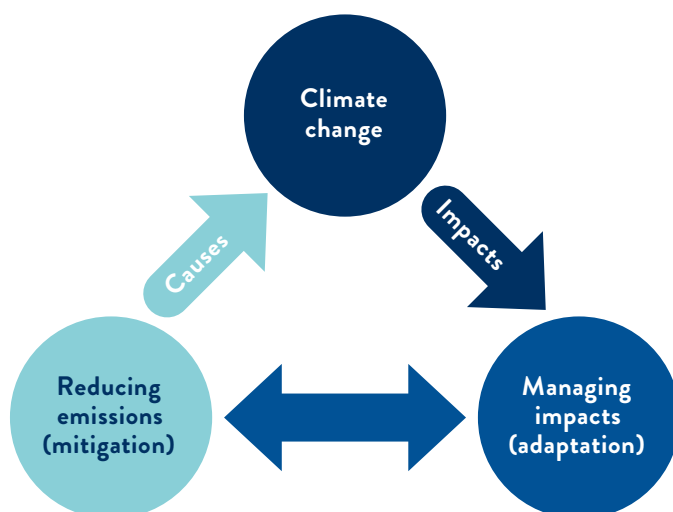




Photo: Revegetation at Griggs Creek is an example of a mitigation project

WHO IS RESPONSIBLE?

While much of what shapes climate change in the region is determined by global and national forces, there is 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 advocating

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.

Photo: Planting an edible garden is one way residents can reduce their carbon footprint.



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 5 shows how the Climate Change Response 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

Our Environment Strategy 2020–30 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 Goal 1 of the Environment Strategy, with some minor adjustments to accommodate what we heard during the community engagement process.



Figure 5: Our 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 (see table below), which aligned with the approach outlined in the *Zero Carbon Communities Guide 2020*.

Stage 1 Understanding the issues	Stage 2 Co-designing the solutions	Stage 3 Develop the plan	Stage 4 Plan endorsed
Apr to Sep 20	Dec 20 to Feb 21	Mar to Aug 21	Sept to Nov 21
<ul style="list-style-type: none"> Conducted 21 employee workshops Online individual discussions with 24 groups representing community, business and agencies. 	<ul style="list-style-type: none"> Launched online engagement Facilitated 6 community co-design workshops General community forum Engaged with stakeholders and organisations 	<ul style="list-style-type: none"> Facilitated a community forum, councillor workshop and interviews with 10 key community businesses and organisations Facilitated workshops with the Community Sustainability Advisory Committee Reviewed the engagement outcomes from our council planning process Draft plan developed Released plan for feedback from the broader community 	<ul style="list-style-type: none"> Reviewed 431 comments received, which included 39 submissions Incorporated changes into the plan Plan endorsed by Council Ongoing collaboration using the plan as a shared platform for community action

WHAT WE HEARD

We received a total of 431 comments about the draft plan, which included 39 submissions: 33 from private individuals, five from community-based groups and one from a commercial enterprise.

The overall feedback about the draft plan was that it was well-considered, scientifically based and a sound response to the issue. Respondents also acknowledged the hard work involved in preparing such a document. However, there were still some suggestions for improvement.

GENERAL COMMENTS

- Respondents identified a need for regular, public and transparent reporting, monitoring, target setting and evaluation. The need for actions to be supported by clear timelines and measurables was also highlighted.
- The City's commitment to resourcing and funding the actions within the plan was welcomed and respondents identified state and federal funding as an opportunity to boost local resources.
- Respondents highlighted the need for community climate change officers who are able to work across all areas of the City as vital.

NET ZERO COMMUNITY EMISSIONS BY 2035

- Respondents were strongly in favour of setting a strong target and adopting a science-based data approach. Interim targets for 2025 and 2030 were also suggested.
- Some respondents felt the business sector should be included within the definition of 'community' and that businesses should also commit to the target, led by the Council.

AN EMPOWERED AND ACTIVE COMMUNITY

- The City's leadership role was identified as key to the success of a community-wide response to climate change, as was a stronger focus on opportunities, public participation and community partnerships.
- Respondents strongly supported the concept of a communications plan, including specific branding and visuals, to ensure positive messaging in the community and 'bring the draft plan to life'.

ENERGY EFFICIENCY AND RENEWABLE ENERGY

- Many respondents were supportive of a transition away from natural gas, as well as greater uptake of renewables across the region.
- Some respondents suggested training and support for local businesses to help them transition to zero emissions.
- Incentives and support programs for householders in existing dwellings, as well as neighbourhood battery applications, were also suggested.
- The concept of green hydrogen as a future fuel that could be produced in Geelong was supported.

SUSTAINABLE TRANSPORT

- Respondents called for a variety of sustainable transport options, including: better active transport and public transport routes and infrastructure within the Geelong region; car share schemes; shuttle buses with free parking/collection points; and best-practice planning to ensure that the transport needs of new residential developments are addressed.
- Some respondents called for detailed data-driven assessments of trip types, distances, and frequencies to better understand what would improve public and active transport use.
- While greater uptake of electric vehicles and charging infrastructure was well supported, the cost and sustainability of batteries was of concern to some respondents, with hydrogen-powered vehicles suggested as an alternative.

REDUCING NON-ENERGY EMISSIONS AND INCREASING CARBON STORAGE

- Respondents were supportive of a regional shift to a circular economy and called for both a reduction in plastic waste, as well as a municipal-wide food organics processing system.
- There was also strong support for regional carbon drawdown solutions including a regional offset scheme and transition away from animal agriculture to plant-based food alternatives supported by sustainable agricultural practices.

CLIMATE CHANGE IMPACT AWARENESS

- Respondents felt there was a need to focus beyond physical risks, opportunities and threats associated with energy transition to ensure that communities are early adopters and don't get left behind.



Photo: Climate Rally 2019 (Image by Rima Taylor)

CLIMATE ACTION IN DECISION MAKING

- Overall, respondents felt building climate action into decision making was critical to the success of this plan. Prioritising climate over financial outcomes in all decision making was also highlighted.
- Some respondents called for action to direct funds away from projects that are either not environmentally sustainable, or inhibit the City's ability to adapt to climate change.
- There were also calls for a climate-conscious procurement policy for all City purchases.

COLLABORATIVE CLIMATE CHANGE RESPONSES

- The need for the City to advocate to state and federal governments was identified as a critical role for the organisation and several submissions

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

Workshop participant

highlighted the need for a stronger emphasis and prioritisation of this in the plan.

- Respondents also identified the need to recognise, and work more closely with, Traditional Owners on climate change responses.

The extensive feedback we received has been embedded throughout the plan. To see the full stakeholder consultation and engagement reports, please visit yoursay.geelongaustralia.com.au/CCRP

OUR CLIMATE CHANGE RESPONSE PLAN 2021–30

Clever and creative vision	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.						
Goal	Become a zero-emissions, climate-ready city and region.						
Key success factor	A coordinated and collective response from the whole community						
Targets	Mitigation target Achieve net zero community emissions by 2035				Adaptation target Become a climate-ready municipality, with increased resilience to current and future climate risks		
Principles	Principle 1 Support an empowered and active community	Principle 2 Increase energy efficiency and renewable energy production	Principle 3 Switch to sustainable transport and cleaner fuels	Principle 4 Reduce non-energy emissions and increase carbon storage	Principle 5 Increase awareness and understanding of climate change impacts	Principle 6 Build climate action into decision-making	Principle 7 Increase collaborative climate change responses
Focus Areas	1.1 Community awareness, education and capacity building	2.1 Improve energy efficiency in existing buildings, facilities and infrastructure	3.1 Prioritise the development of sustainable transport infrastructure and services	4.1 Reduce waste and recover waste energy	5.1 Improve local climate risk knowledge	6.1 Embed climate thinking in our decisions	7.1 Build networks and partnerships for adaptation pathways
	1.2 Governance and accountability	2.2 Optimise energy efficiency in new buildings, facilities and infrastructure	3.2 Transition vehicles to zero-emission power sources	4.2 Support establishment of regional drawdown solutions		6.2 Corporate climate risk management and disclosure	7.2 Collaborate in areas of emerging climate risk
	1.3 Resources and investment focus	2.3 Increase renewable energy use	*There is a list of actions below each focus area with identified lead/support roles and anticipated costs (see page 24 onwards).				

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, opposite) 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.

No single organisation can achieve the targets and actions set out in this plan on their own. All levels of government, business and community must play an active role to achieve collective impact.

While we have committed to reaching net zero emissions by 2025 for our operations, we recognise that the community is seeking our support and leadership to achieve the broader target. Action, advocacy, education, communication, coordination and support for grassroots action are just some of the ways we can respond.

OUR VISION

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.

OUR GOAL

We aim to become a zero-emissions, climate-ready city and region. We will achieve this through a coordinated and collective response from the whole community.

TARGETS

1. Achieve net zero community emissions by 2035.
2. Become a climate-ready municipality, with increased resilience to current and future climate risks.



Photos: Before and after photos of a beach recovery project on the Bellarine Peninsula, which is an example of an adaptation project



Photo: Solar PV array on Leisurelink Waurin 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. Some of these actions will be funded as part of future annual council budgets, but others will require us to work actively with our partners to pursue public and private sector resourcing and funding.

In addition to our annual community grants, we are also introducing a new funding model that supports community climate action partnerships. This will be used to provide additional support for climate action delivered by volunteers and not-for-profit groups in the community (see Focus Area 1.3).

EVALUATION

In June 2021, our Council endorsed a series of Sustainability Performance Indicators and Targets that will be publicly reported on annually, including a carbon reduction target and supporting programs. As well as this, our evaluation will also be aligned with the relevant United Nations Sustainable Development Goals (see Figure 6 for complete list), which are designed to act as a roadmap for a more sustainable future.

REVIEW

This plan is intended to guide our climate response until 2030, however it will be reviewed in 2024. This review will help us reflect on priorities, review progress towards targets and take advantage of newly identified opportunities.



Figure 6 List of all Sustainable Development Goals.

Photo: An example of tree plantings cooling urban areas in Central Geelong.



PRINCIPLE 1

SUPPORT AN EMPOWERED AND ACTIVE COMMUNITY

SUSTAINABLE DEVELOPMENT GOALS



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.

Photo: Volunteers assisting with a tree planting day



Photo: Andrea Dennett (right) and Friends of the Hooded Plover volunteers on duty

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	TIMEFRAME	COST
1.1.1	Develop a community campaign to raise awareness of the region's climate risks, impacts and responses by 2022.	City	Department Environment Land Water & Planning	Short	Low*
1.1.2	Develop and implement a collaborative community capacity-building program for climate action, leveraging the skills and experience available in the region by 2023.	City	Community	Short	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	Short	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	Short	Low*
1.1.5	Support community involvement in citizen science programs to collect climate-change-related data by 2022.	City		Short	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		Short	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		Short	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		Ongoing	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: 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 of 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. Doing this will help us build a more complete picture of our emissions footprint.

REF	ACTION	LEAD	SUPPORT	TIMEFRAME	COST
1.2.1	Recognise, communicate and address the local impacts of the global climate emergency.	City		Ongoing	Low
1.2.2	Provide regular plan progress updates to Council and the Sustainability Advisory Committee, in line with the Sustainable Development Goals and our Sustainability Performance Indicators and Targets.	City		Ongoing	Low
1.2.3	Create more opportunities for public participation to: <ul style="list-style-type: none"> • support sustainability in decision making and • aid the effective implementation of the Sustainability Framework 2020 and supporting action plans. 	City		Ongoing	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		Short	Low
1.2.6	Evaluate the effectiveness of our sustainability reporting and continuously improve our reporting practices by 2022.	City		Short	Low
1.2.7	Seek leadership and support across Council to drive implementation of the plan.	City		Ongoing	Low
1.2.8	Encourage the regional community to publicly commit to the municipal community emissions target.	City		Ongoing	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: 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. While the Victorian Government contributes financially to climate activity across our region, community groups are also able to access financial support through our Environmental Sustainability Grants. However, these funding sources are relatively small compared to the voluntary and in-kind contributions made by our residents and businesses and, collectively, 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	TIMEFRAME	COST
1.3.1	Allocate resources for the establishment of community climate change officers by 2022.	City		Short	Med*
1.3.2	Allocate resources for the Climate Change Response Plan implementation by 2022.	City		Short	Med*
1.3.3	Establish a climate action strategic partnership fund to support partnerships that enable climate action across the community by 2022.	City		Short	Med
1.3.4	Increase support for community-generated ideas and projects that address sustainable practice and education via our Environmental Sustainability Grants by 2022.	City		Short	Low
1.3.5	Advocate for additional resources and investment to the region for climate action from government, business and philanthropic organisations.	City	Community	Ongoing	Low
1.3.6	Allocate resources to support local businesses in developing clean technology and circular economy solutions.	City		Short	Med

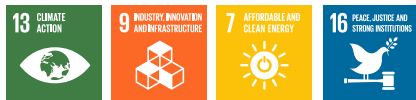
Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

* Subject to funding

PRINCIPLE 2

INCREASE ENERGY EFFICIENCY AND RENEWABLE ENERGY PRODUCTION

SUSTAINABLE DEVELOPMENT GOALS



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.

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 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

THE CITY GOES 100% CLEAN

In July 2021, we partnered with 45 other Victorian councils to join the largest-ever emissions reduction project by local government in Australia.

Known as the Victorian Energy Collaboration (VECO), the project will provide participating councils with 100 per cent renewable energy until the end of 2030. It is estimated the agreement will generate 240 GWh of clean energy – enough to power 48,000 homes with renewables, or remove emissions from 90,000 cars every year.

working
together
to power
46 councils
with
renewable
energy

the
victorian
energy
collaboration

veco



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.

Street lighting uses a significant amount of electricity. We are currently upgrading approximately 25,000 streetlights to energy efficient LED lighting. This will reduce electricity use by 65 per cent each year.

While most people understand the benefits of energy efficiency, it is not always seen as a priority and available information can be overwhelming and a barrier for some. We need to provide simple information that makes it easier for people to make informed decisions. In line with our social equity principles, adopted in 2017, we also need to deliver 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.

REF	ACTION	LEAD	SUPPORT	TIMEFRAME	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"> • upgrading lighting, heating and cooling systems in key facilities • undertaking an assessment of our gas-using infrastructure by 2022, to support a longer-term transition to gas-free operations • providing funding to transition away from gas infrastructure. 	City		Short	Med*
2.1.2	Prioritise investment to upgrade our operations to meet the 2025 emissions reduction target.	City		Short	Low
2.1.3	Upgrade all streetlights with energy efficient LED lighting by 2025.	City		Short	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"> • energy assessments and energy management plans • incentives and finance programs • advice on energy-efficient buildings. 	City		Ongoing	Med*
2.1.5	Support community efforts to reduce emissions by promoting access to energy efficiency programs, including: <ul style="list-style-type: none"> • home energy assessments • advice on available rebates and programs • tailored programs to support community members most vulnerable to climate change impacts • advocacy to state government to improve energy and thermal performance of existing public housing stock in the Geelong region. 	Community		Ongoing	Med*

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (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 – including multi-unit, commercial and industrial buildings – are as energy efficient as possible

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, large City-owned and managed buildings and facilities. We are also consolidating our corporate operations into a single, energy-efficient building as part of the Wurriki Nyal 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 Finance – and new measures – such as rate rebates. Setting standards for energy efficiency in new residences, buildings and facilities will also help prevent incremental increases in energy use over time.

REF	ACTION	LEAD	SUPPORT	TIMEFRAME	COST
2.2.1	Review and strengthen our Sustainable Buildings Policy to reduce emissions for new buildings and energy-using infrastructure by 2022.	City		Short	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"> • Geelong Northern Growth Area • Geelong Western Growth Area. 	City	Developers	Short to Med	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 climate risk assessment of significant infrastructure and procurement decisions.	City		Short	Low
2.2.4	Actively discourage gas infrastructure in nominated new developments and support renewable alternatives by 2022.	City	Community	Short	Low
2.2.5	Encourage all new buildings to meet '7-Star' building standards, in line with anticipated changes to the National Construction Code.	Builders	Building Inspectors	Short	Med
2.2.6	Educate prospective new building owners of the advantages of ESD buildings by 2023.	Community	City	Short	Med
2.2.7	Carry out on-site ESD inspections to ensure compliance with planning permits by 2022.	City		Short	Low*

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: 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.



GEELONG JOINS NATIONAL CLIMATE PARTNERSHIP

We have joined the Cities Power Partnership, Australia's largest network of cities and towns working together to tackle climate change.

REF	ACTION	LEAD	SUPPORT	TIMEFRAME	COST
2.3.1	Continue to implement our renewable energy program by: <ul style="list-style-type: none"> sourcing renewable energy for all our operations via a Power Purchase Agreement by 2021 installing behind-the-meter solar systems on City-owned buildings investigating energy trading opportunities for energy generated in City-owned buildings. 	City		Ongoing	Med
2.3.2	Support community-owned renewable energy initiatives.	Community	City	Ongoing	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	Ongoing	Med
2.3.4	Investigate opportunities to support 'smart grids' in new developments.	Developers	City	Short	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	Med
2.3.6	Implement initiatives that support the uptake of clean technologies, renewables and climate positive solutions by business and community by 2023, such as Environmental Upgrade Finance.	City		Short	Low*
2.3.7	Collaborate with regional partners to investigate options for producing green hydrogen.	City		Med	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

* Subject to funding

PRINCIPLE 3

SWITCH TO SUSTAINABLE TRANSPORT AND CLEANER FUELS

SUSTAINABLE DEVELOPMENT GOALS



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 just over one fifth 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.

Transportation of goods into the region is a significant contributor to our total transport-related emissions. Sourcing products locally, including food, can help reduce the region's transport-related carbon footprint and strengthen the local economy. Encouraging local food production in backyards and community gardens can help reduce food miles and connect communities and people with nature.

REDUCING TRANSPORT EMISSIONS

Residents

- Use active travel – walk, run, ride, skate or scoot
- Use public transport, vehicle pooling and car sharing
- Advocate for improved public transport, active travel networks and infrastructure
- Support locally sourced goods and services, including food

Business

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

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.

REF	ACTION	LEAD	SUPPORT	TIMEFRAME	COST
3.1.1	Initiate the development of an integrated transport strategy for better integration between modes of transport, and to support sustainable transport choices by 2022.	City		Short	High
3.1.2	Implement and promote the Better Bike Connections Project to encourage active transport by 2022.	City		Short	High
3.1.3	Implement and promote the <i>Shared Trails Master Plan</i> to encourage active transport by 2022.	City		Short	High
3.1.4	Investigate options to incentivise alternatives to private vehicle usage, including end-of-trip facilities, car-sharing and active travel.	City		Short	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		Short	Low
3.1.6	Investigate the transport footprint of the goods and services entering the region and develop a plan to reduce food and product miles through the local circular economy.	City		Med	Med*

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

* Subject to funding

FOCUS AREA 3.2 TRANSITION VEHICLES 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.

‘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

REF	ACTION	LEAD	SUPPORT	TIMEFRAME	COST
3.2.1	Transition City-owned fleet vehicles to zero-emission alternatives by: <ul style="list-style-type: none"> increasing hybrid vehicles in our fleet assessing and installing EV charging infrastructure by 2024 changing over light fleet vehicles to EV alternatives by 2027. 	City		Short	High*
3.2.2	Assess EV charging infrastructure and vehicle options for our heavy and commercial vehicles by 2022.	City		Short	Med
3.2.3	Advocate for transitioning the public transport bus fleet to zero-emission vehicle alternatives.	City		Short	Low
3.2.4	Investigate opportunities to provide incentives for zero-carbon transport options – for example, bike and electric vehicle users.	City		Short	Low*
3.2.5	Support the installation of a network of publicly available electric vehicle charging stations powered by renewable energy by the end of 2024.	City	Community	Short	Med*
3.2.6	Investigate the viability of establishing free, renewable-energy-powered 'Park and Ride' shuttles across the municipality, similar to the Deakin Free Shuttle model.	City	Deakin University	Short	Med
3.2.7	Decarbonise private vehicle transport via an electric vehicle bulk buy program.	Community	City	Short	Med
3.2.8	Investigate the transitional aspects of the region's transport networks as technologies mature and become more affordable.	City		Ongoing	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

* Subject to funding

UNDERSTANDING POPULATION EMISSIONS

We are working with Deakin University to achieve increased sustainable development outcomes for the Northern and Western Growth Areas. The partnership involves the development of a Dynamic Scenario modelling tool for proposed urban growth areas. The tool will allow use to assess various developments against a range of sustainable development indicators including emissions, water use and tree canopy cover.



Photo: Saving carbon emissions by
scooting to school

PRINCIPLE 4

REDUCE NON-ENERGY EMISSIONS AND INCREASE CARBON STORAGE

SUSTAINABLE DEVELOPMENT GOALS



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

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 within our region, agriculture accounts for about 12 per cent of Australia's national emissions. There are significant opportunities to support sustainable agricultural and local food production practices across the region to help reduce this emissions source.

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. As the process generates methane emissions, they are leading a regional partnership that is looking for a circular economy solution to 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	TIMEFRAME	COST
4.1.1	Prioritise service and infrastructure solutions to reduce and capture municipal waste emissions. Continue to capture and reuse methane gas emissions from the Drysdale municipal landfill.	City		Short	Low
4.1.2	Implement a pilot food waste collection service for residents by 2022.	City		Short	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	Short	Med

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: 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 already an area of considerable interest in our region. Deakin University's Blue Carbon Lab is a world leader in this area and we are fortunate that our extensive tidal estuaries and seagrass areas offer high sequestration rates.

Locally, 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. Unfortunately, there are many challenges associated with setting up such a scheme, notably agreeing 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	TIMEFRAME	COST
4.2.1	Promote climate conscious sustainable agriculture practices through: <ul style="list-style-type: none"> • education and incentives • policy and planning. 	City		Ongoing	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"> • establishing a regional carbon offset working group • developing a business case for a regional pilot scheme. 	Corangamite Catchment Management Authority	City	Short	Med
4.2.3	Continue research into opportunities for blue carbon in the Geelong region.	Deakin University		Ongoing	Med

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000) High (500,000+)

* Subject to funding



FOOD ORGANICS TRIAL

Sending food waste to landfill is problematic as it creates methane, a potent greenhouse gas, and leachate, which can pollute soil and water.

We will be introducing a food and organics waste recovery trial in 2021. By collecting food waste as a separate waste stream, it can be used to create compost or renewable energy, which is a much more sustainable solution for our community and for the environment. It also helps move us closer to becoming a circular economy.

PRINCIPLE 5

INCREASE AWARENESS AND UNDERSTANDING OF CLIMATE CHANGE IMPACTS AND OPPORTUNITIES

SUSTAINABLE DEVELOPMENT GOALS



Improved climate modelling and predictions, as well as observations of climate-related events, have increased our understanding of climate-related hazards significantly.

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.

Increased maximum and minimum daily temperatures are expected to have a significant impact in urban areas, as hard surfaces, such as roads and areas of roof, collect and store significantly more solar radiation than living, green areas. This contributes to an Urban Heat Island effect on days of extreme heat. The impacts of this will likely have a disproportionate effect on already disadvantaged residents through increased exposure and costs.

At the same time, there are risks associated with the transition of our energy sector, presenting short-term challenges and opportunities for our regional economy.



Photo: Artist's impression of the Green Spine from the Gheringhap Street end.

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	TIMEFRAME	COST
5.1.1	Improve understanding of local changes in temperature, rainfall, and variables related to urban infrastructure condition and function by making existing climate data and information more accessible and useful for the community.	City		Ongoing	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.	City		Ongoing	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	Ongoing	Med
5.1.4	Utilise the City's Sustainability Framework, Planning Framework and environmental policies to mitigate climate change impacts and support positive community health and wellbeing outcomes.	City	Barwon Health	Ongoing	Med

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

PRINCIPLE 6

BUILD CLIMATE ACTION INTO DECISION-MAKING

SUSTAINABLE DEVELOPMENT GOALS



Climate change poses a range of risks that need to be managed to ensure the best long-term outcomes for our 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, 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	TIMEFRAME	COST
6.1.1	Ensure local planning schemes, standards, codes and policies support the use of best available climate change data and adaptative planning principles as part of decision making, particularly as it relates to infrastructure, development and land use changes.	City		Ongoing	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		Short	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		Ongoing	Low
6.1.4	Support and enhance a culture in our organisation that leads to improved decisions for climate change resilience.	City		Ongoing	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: 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	TIMEFRAME	COST
6.2.1	Monitor, evaluate and report on our climate change adaptation readiness.	City		Ongoing	Low
6.2.2	Implement new risk management and reporting software solutions to manage risks and enable integrated reporting by 2022.	City		Short	Low
6.2.3	Integrate climate change risk management into investment decisions and develop a financial risk disclosure statement.	City		Short	Low
6.2.4	Review our Financial Investment Policy and develop an investment strategy that is consistent with the <i>Sustainability Framework 2020</i> .	City		Short	Low
6.2.5	Pursue financial divestment away from fossil-fuel-aligned investments.	City		Short	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

PRINCIPLE 7

INCREASE COLLABORATIVE CLIMATE CHANGE RESPONSES

SUSTAINABLE DEVELOPMENT GOALS



Climate risks and opportunities span geographic environments, jurisdictions and boundaries. Both require collaborative, systems-based approaches.

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 Healthy 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.



Photo: The view from Wurdi Youang, which means 'big hills' in Wadawurrung language (Big Rock)

THE BARWON SOUTH WEST CLIMATE ALLIANCE

The City of Greater Geelong is a founding member of the new Barwon South West Climate Alliance. The alliance will coordinate a range of mutually beneficial climate adaption and mitigation projects across the region, providing a unified voice for climate change issues.



FOCUS AREA 7.1 BUILD NETWORKS AND PARTNERSHIPS FOR ADAPTATION PATHWAYS

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.

On a 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	TIMEFRAME	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	Short	Low
7.1.2	Ensure critical decisions consider climate change mitigation and adaptation implications.	City		Ongoing	Low
7.1.3	Improve coordination of policy development and implementation between various levels of government and different land managers to promote synergies and avoid maladaptation.	Department Environment Land Water & Planning	City	Ongoing	Low
7.1.4	Allocate resources to support local businesses in developing climate mitigation and adaptation programs, technologies and solutions.	City		Short	Med
7.1.5	Allocate resources to support the planning and implementation of climate mitigation and adaptation programs by regional primary producers and agribusiness.	City		Short	Med

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)



Photo: Volunteers supporting a revegetation project on National Tree Day

FOCUS AREA 7.2 COLLABORATE IN AREAS OF EMERGING CLIMATE RISK

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 impacts 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.

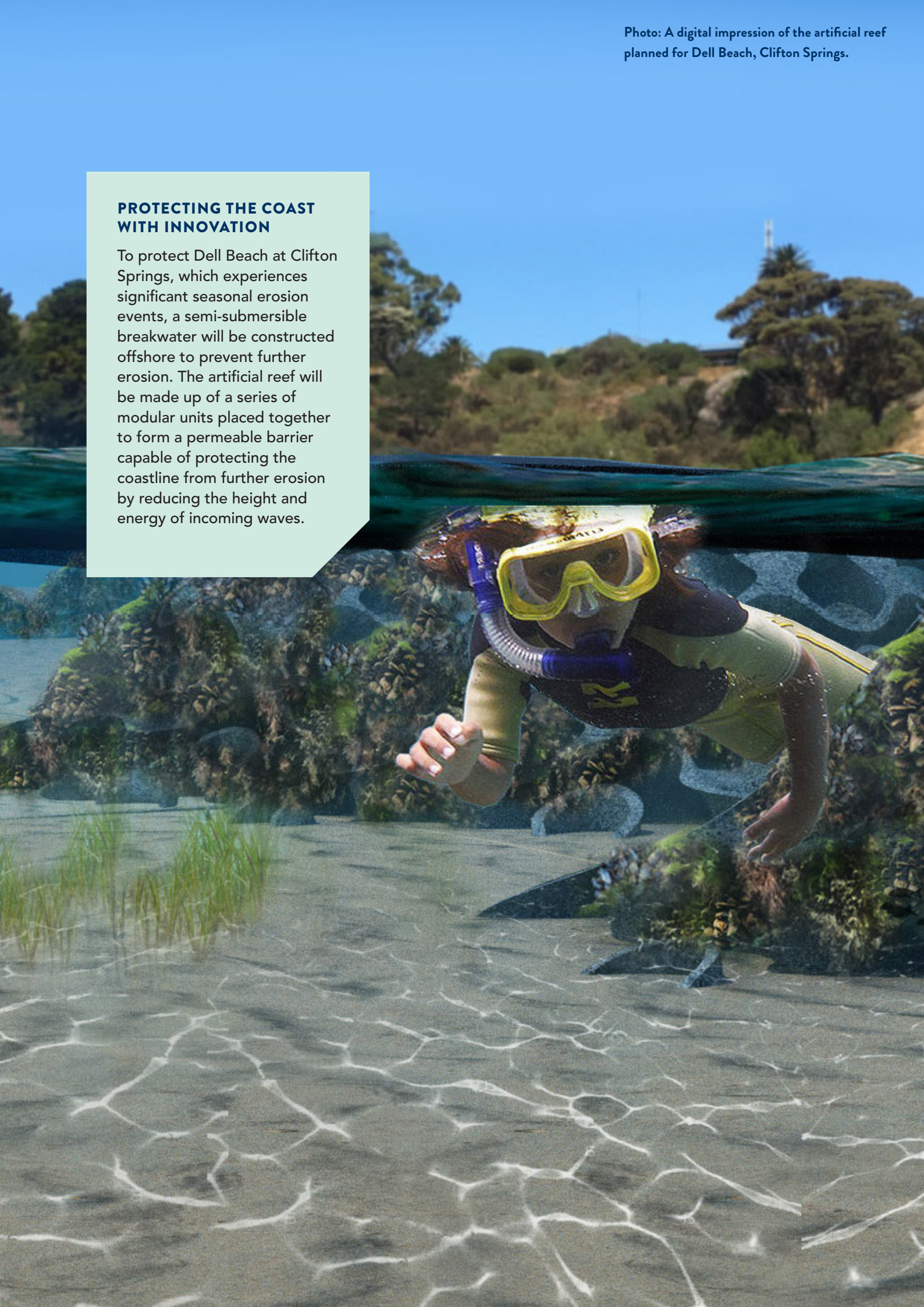
REF	ACTION	LEAD	SUPPORT	TIMEFRAME	COST
7.2.1	Collaborate with primary producers to investigate how climate change could impact agriculture and sustainable land use and improve understanding of local supply chains.	City		Ongoing	Low
7.2.2	Partner with Traditional Owners to ensure their cultural, ecological and economic values and expertise are integrated into climate adaptation planning.	City	Wadawurrung Traditional Owners Aboriginal Corporation	Ongoing	Low
7.2.3	Increase resilience to, and reduce risk of, the urban heat island effect by: <ul style="list-style-type: none"> • completing urban heatwave vulnerability modelling and identifying priority urban greening sites by 2023 • developing an urban ecology plan by 2025 • increasing tree canopy cover in urban Greater Geelong to 25 per cent by 2045, with an interim target of 20 percent by 2030. 	City	Deakin University	Long	Med
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	Short	Med*
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		Short	Med
7.2.6	Investigate and promote market incentives for retrofitting homeowner and rental properties.	City	Community	Ongoing	Low
7.2.7	Consider climate change risk assessments for biodiversity assets across the municipality, in conjunction with the development of our planned biodiversity strategy.	City		Short	Low

Timeframe: Short (1–3 years), Med (4–6 years), Long 7+ years | Cost: Low (\$0–\$100,000), Med (\$100,000–\$500,000), High (500,000+)

* Subject to funding

PROTECTING THE COAST WITH INNOVATION

To protect Dell Beach at Clifton Springs, which experiences significant seasonal erosion events, a semi-submersible breakwater will be constructed offshore to prevent further erosion. The artificial reef will be made up of a series of modular units placed together to form a permeable barrier capable of protecting the coastline from further erosion by reducing the height and energy of incoming waves.



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GLOSSARY

Adaptation – the process of adjusting to actual or expected climate change and its effects.

Barwon South West Climate Alliance – a collaboration of councils, water authorities and land management agencies across the Barwon South West region in Victoria.

Biodiversity – the variety of living organisms, the genetic differences between them and the communities and ecosystems in which they occur.

Carbon emissions – refers to all greenhouse gases (see definition below).

Carbon footprint – refers to the total carbon emissions caused by an organisation or other entity.

Carbon neutral – means an organisation, product or service has been proven to have reduced its emissions where possible and compensated for the remainder by investing in carbon offsets to be 'net zero' carbon emissions.

Carbon offset – is the form recognition of process that removes greenhouse gas emissions from the atmosphere and can be traded.

Carbon sequestration (or drawdown) – the long-term storage of carbon in plants, soils, geologic formations and the ocean.

Circular economy – refers to an economic model that continues to reuse, re-purpose and recycle resources.

Climate change – the phenomenon of changing weather patterns caused by the overall warming of the planet due to greenhouse gas emissions.

Fossil fuels – any of a class of fuels from living things, such as oil, gas, coal and wood, that contain hydrocarbons and can be used as a source of energy when combusted.

Green-blue infrastructure – refers to the natural and built assets within urban landscapes which are living (green) and which manage water (blue).

Greenhouse gases – atmospheric gases responsible for causing global warming and climate change. The six Kyoto Protocol classes of greenhouse gases are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydro-fluorocarbons (HFCs), per-fluorocarbons (PFCs) and sulphur hexafluoride (SF₆).

Integrated water management – water cycle systems including natural, built and services aspects, such as waterways, wetlands and floodplains, drainage and stormwater, drinking water and sewerage, as well as water's interfaces with the land in public open spaces.

Mitigation – also referred to as emissions reduction, mitigation is any human intervention or activity that reduces the sources or enhances the sinks of greenhouse gases.

Net zero emissions – achieving a balance between emissions produced (sources) and emissions taken out of the atmosphere (sinks).

Renewable energy – energy that comes from a source or processes that are constantly replenished, such as solar, wind and hydro (water).

Resilience – the capacity of something (ecosystems, people, groups and organisations) to adapt, survive and continue to function and thrive despite stresses and shocks.

Sustainability Advisory Committee – established in 2021, the committee is made up of 12 members with expertise in environmental management, social and community planning and financial analysis.

Urban Heat Island Effect – the way built-up areas have a greater capacity to absorb, hold and emit the sun's heat, compared to rural areas.



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CUSTOMER SERVICE CENTRE

100 Brougham Street

Geelong VIC 3220

8.00am – 5.00pm

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