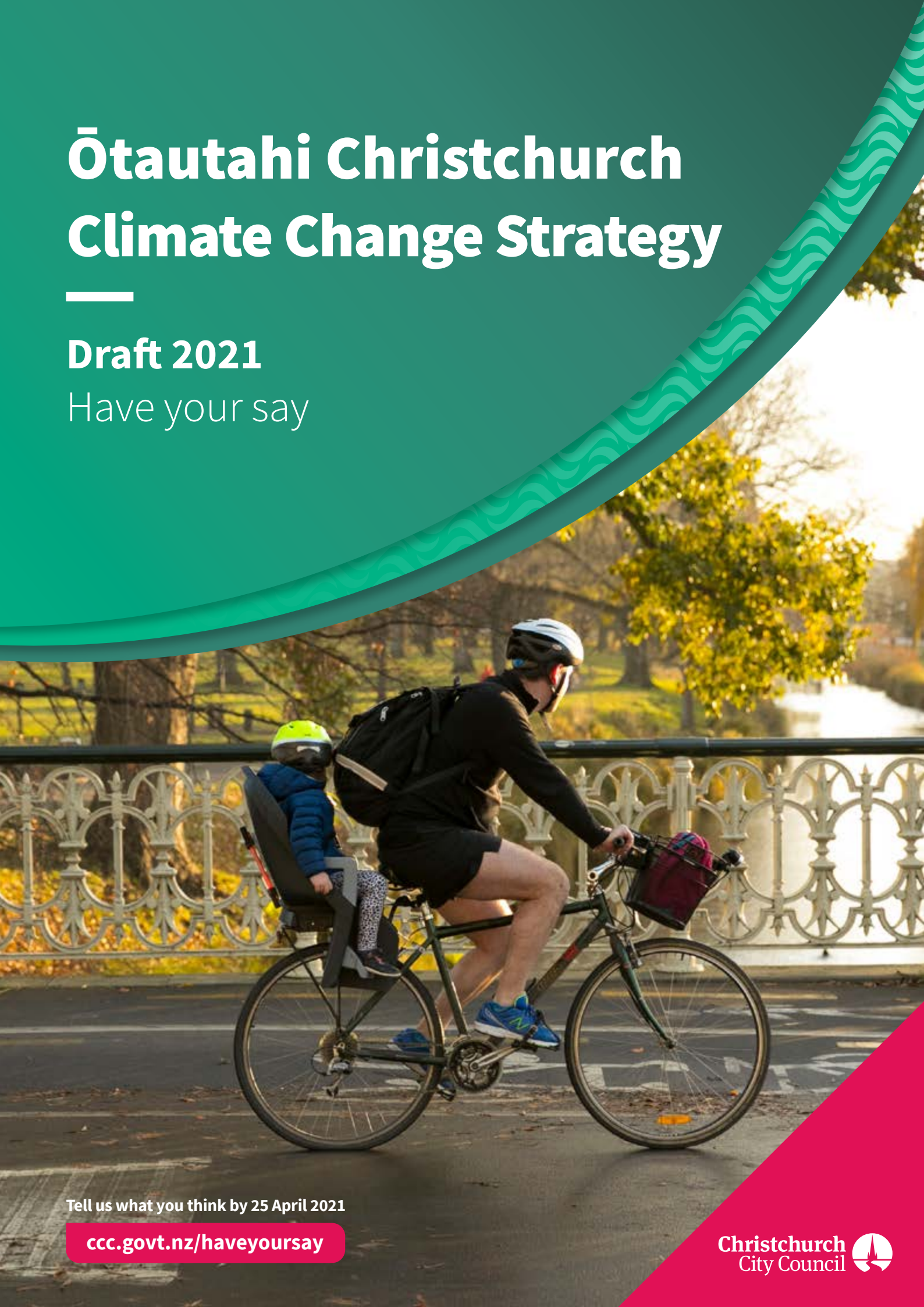
Ōtautahi Christchurch Climate Change Strategy

Draft 2021

Have your say



Tell us what you think by 25 April 2021

ccc.govt.nz/haveyoursay

Christchurch City Council

How to have your say

We'd like your feedback on the draft Ōtautahi Christchurch Climate Change Strategy.

More information and the full draft strategy is available on our website: **ccc.govt.nz/haveyoursay.** You can also view a printed copy at Council libraries and service centres.

Written submissions can be made from Friday 12 March until Sunday 25 April 2021.

Written feedback

Fill out our online form at
ccc.govt.nz/haveyoursay
This is your quickest and easiest option.

Fill out a submission form (available from libraries and service centres), fold and send to us freepost.

Post a letter to:
Freepost 178
Attn Tessa Zant
Draft Ōtautahi Christchurch
Climate Change Strategy
Public Information and Participation Unit
Christchurch City Council
PO Box 73016 Christchurch Mail Centre, 8154
Postage is free (you don't need a stamp)

Email your feedback to **Engagement@ccc.govt.nz** with 'Draft Ōtautahi Christchurch Climate Change Strategy' in the subject line.

Deliver to:
Te Hononga Civic Offices at 53 Hereford Street
by 5pm Sunday 25 April.

ccc.govt.nz/haveyoursay

Come and talk to us

Come along to our drop-in sessions to talk to us about the draft policy. Staff will be available to answer your questions.

Drop-in sessions*

TSB Space, Level 1, Tūranga, 60 Cathedral Square

- **Tuesday 23 March, 11.30–1.30pm**
- **Wednesday 31 March, 4.30–6.30pm**

These are shared sessions with colleagues from the Long Term Plan 2021-2031, the Development Contributions Policy review and the Representation Review 2021, so you can find out more and have your say about all four proposals.

**Please note, these sessions may need to be postponed or cancelled if COVID alert levels change.*

Can't make these meetings?
If there is a community meeting you would like us to attend, please let us know. You can also phone any time to speak with us directly about the project.

Tessa Zant,
Senior Engagement Advisor
Phone: **03 941 8937**

Climate change is the biggest challenge of our time. It is already affecting our weather, health and wellbeing, natural environment, taonga species, mahinga kai, food production, biosecurity, infrastructure, and the economy.

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Introduction

Climate change is the biggest challenge of our time. It is already affecting our weather, health and wellbeing, natural environment, taonga species, mahinga kai, food production, biosecurity, infrastructure, and the economy.

Responding to climate change is now an urgent issue. Global efforts to address climate change and reduce greenhouse gas emissions are falling short and, as a result, our world is heating up, our sea levels are rising and our climate is changing at an unprecedented rate.

> The last decade was the hottest in human history and, without decisive action, temperatures will continue to rise, bringing more extreme weather and climate-related events.

In Christchurch and Banks Peninsula, our summers are becoming hotter, dryer and longer, and our winters shorter and milder. We are likely to experience more extreme rain, wind, fire and flooding. Some areas will become more prone to drought while our low-lying coastal areas will be more exposed to tidal flooding.

For Ngāi Tahu Papatipu Rūnanga and whānau, climate change will have a particular impact on cultural wellbeing, resilience and the ability for mana whenua to maintain ancestral links with the landscape and taonga species.

Climate change will continue to affect our lives significantly and, without action, the world our children and grandchildren inherit will be vastly different to the world we live in today. We need to work together now to avoid the worst effects of climate change.

As a district, we need to reduce our carbon emissions and do what we can to mitigate the effects of climate change. We also need to prepare for the changes that are ahead of us and respond to the social, environmental and economic effects of our changing climate.

By collectively committing to urgent climate action, we can create a better future for Christchurch and explore new opportunities as we transition to a low-emission, innovative and more sustainable city – a city open to new ideas, new people and new ways of doing things.

Taking action on climate change will also deliver many benefits. Our community will be able to enjoy a greener and more liveable city with healthier homes, improved air and water quality, new transport options, more trees and green spaces, and a vibrant local economy with innovative businesses and new green jobs.

Christchurch's **commitment to climate action**

In 2019, Christchurch City Council declared a Climate and Ecological Emergency and adopted ambitious greenhouse gas emissions targets for our district. In doing so, we joined a growing number of councils across New Zealand and cities worldwide committed to taking urgent action to reduce their carbon emissions.

Council has set the target of achieving net zero greenhouse emissions by 2045 (excluding methane), and to halve our emissions by 2030, from 2016-17 levels. To achieve these targets, we all need to make changes to the way we travel, the waste we create, how we grow our food and the energy we use.

A climate change **strategy for Christchurch**

Our draft climate change strategy is a blueprint for collective action and part of a wider conversation about how we work together to reduce our greenhouse gas emissions to minimise future harm, and plan for the ongoing effects of climate change. It reinforces Christchurch City Council's commitment to climate change leadership, and is based on the latest scientific advice, underpinned by government legislation, and driven by increased calls for action from the community, who are at the heart of our decision-making.

This is a long-term framework for Christchurch's climate change journey and we will develop new programmes of work as our understanding of our changing climate and its consequences continues to evolve.

How this strategy was developed

The draft strategy was developed using feedback from Ngāi Tahu and the Papatipu Rūnanga, public surveys, Councillors, and staff, as well as an external technical advisory group with representation from local academics, scientists, unions, youth, health, community, and climate and sustainability advocates.

In developing the draft strategy, we also looked to both local and international examples of strategies including Ngāi Tahu's strategy, He Rautake Mō Te Huringa O Te Āhuarangi, Auckland's Climate Action Framework and Wellington's blueprint for a Zero Carbon Capital.

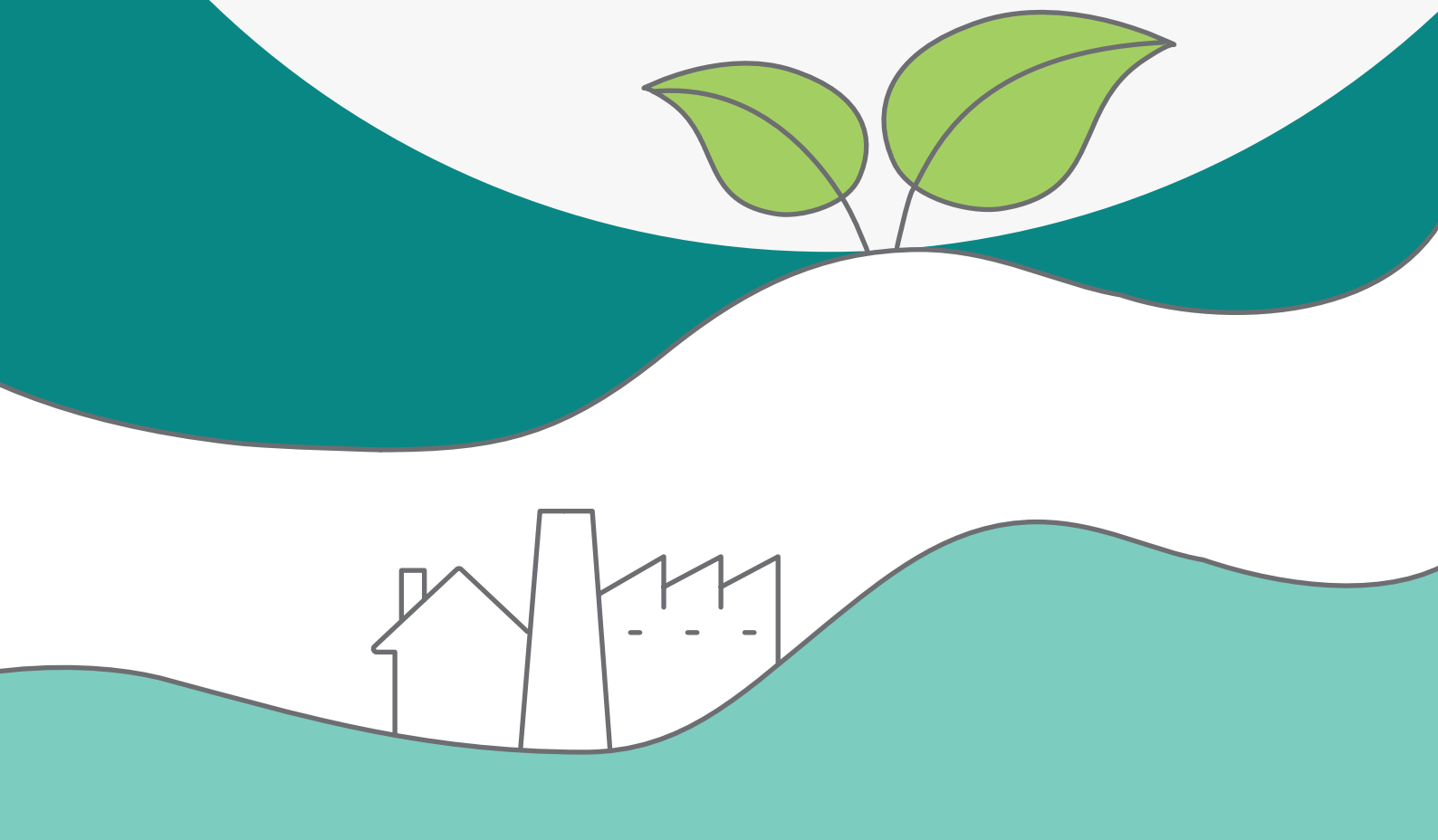
We will continue to work with the community, Ngāi Tahu and the Papatipu Rūnanga, central government, stakeholders, businesses and organisations across Christchurch and Banks Peninsula, to further develop and implement the Climate Action Programmes in the strategy.

How this strategy works

We have set four Climate Goals for Christchurch, supported by 10 Climate Action Programmes that outline what we need to do to achieve these goals.

The Council can't do this alone - everyone has a part to play in taking climate action.

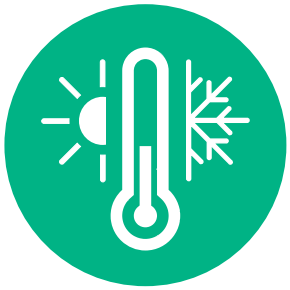
To achieve our climate goals, we need the people and organisations of Christchurch and Banks Peninsula to **work together** to deliver the actions under our Climate Action Programmes.



Our climate change **goals for Christchurch**

Goal 1

Net zero emissions Christchurch



Goal 2

We understand and are preparing for the ongoing impacts of climate change

Goal 3

We have a just transition to an innovative low-emission economy

Goal 4

We are guardians of our natural environment and taonga

Our climate action programmes - **achieving our goals together**

1 Building the foundation - partnerships and resourcing

2 Understanding the local effects of climate change

3 Proactive climate planning with communities

4 Adapting and greening infrastructure

5 Carbon removal and natural restoration

6 Economic transformation and innovation

7 Low-emission transport system

8 Energy efficient homes and buildings

9 Towards zero waste

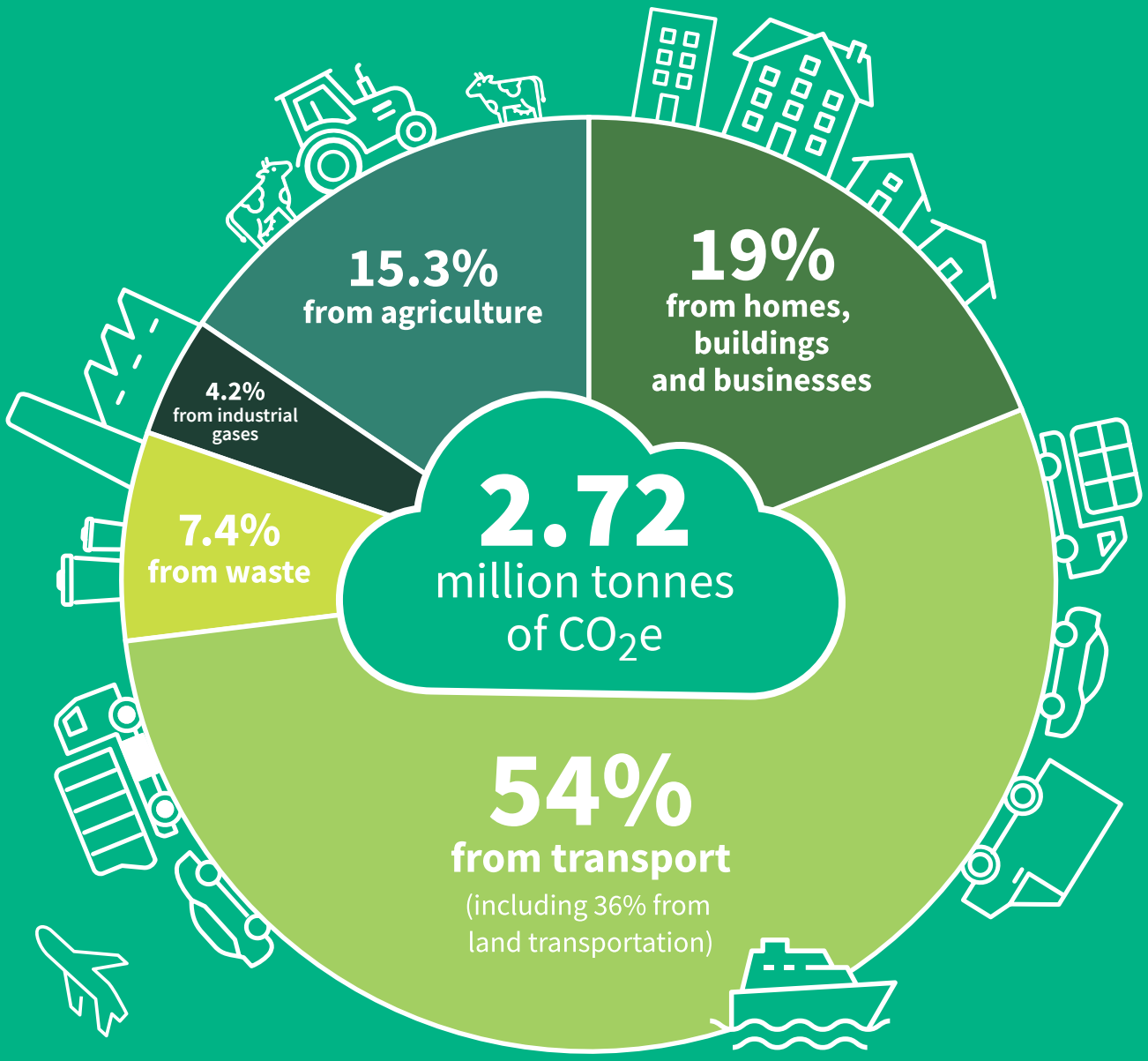
10 Sustainable food system

Christchurch's **greenhouse gas emissions**

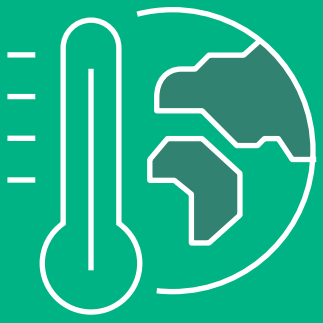
Data for the financial year 2018/19 shows that our district's total gross greenhouse gas emissions were 2.72 million tonnes of carbon dioxide equivalent (tCO2-e), slightly higher than two years ago. However, due to population increase, our per capita emissions remained stable at 7.1 tCO2-e/person. This is more than the global average of approximately 4.3 tCO2-e per person.

The bulk of Christchurch's greenhouse gas emissions came from transport (54.0% including 36% from land transportation), the energy powering our homes, buildings and businesses (stationary energy, 19.0%), agriculture (15.3%), waste (7.4%) and industrial product and gas use (IPPU, 4.2%) .

To reach our emissions reduction targets we will need to change the way we travel, increase the use of renewable energy, improve the energy efficiency of our buildings, reduce waste and support regenerative agriculture.



The **local impacts** of climate change



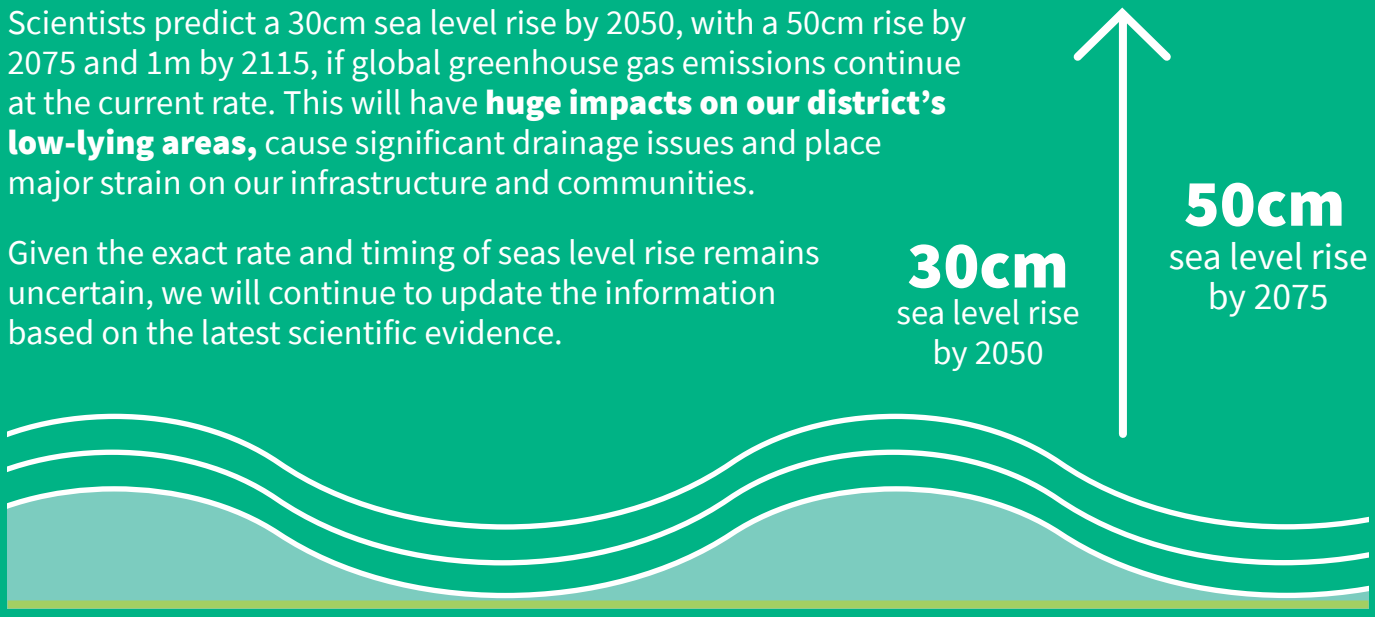
Significant changes to our climate are likely in the future. Average temperatures are projected to

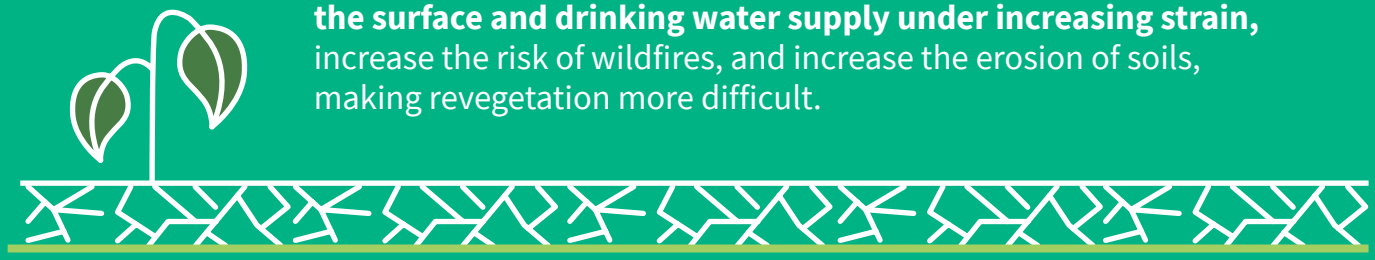
increase by **0.5ºC** to **1.5ºC** by 2040
and **3ºC** by 2090

increasing heat stress on people, animals and plants.

Scientists predict a 30cm sea level rise by 2050, with a 50cm rise by 2075 and 1m by 2115, if global greenhouse gas emissions continue at the current rate. This will have **huge impacts on our district's low-lying areas,** cause significant drainage issues and place major strain on our infrastructure and communities.

Given the exact rate and timing of seas level rise remains uncertain, we will continue to update the information based on the latest scientific evidence.





On Banks Peninsula, **increased drought conditions will place the surface and drinking water supply under increasing strain,** increase the risk of wildfires, and increase the erosion of soils, making revegetation more difficult.

The table in Appendix A outlines more of the key changes that we need to be preparing for across our district, based on the latest available scientific modelling, using the Intergovernmental Panel on Climate Change's RCP 8.5 scenario (aligning with national and regional modelling).

Our principles for **responding to climate change**

These principles guide how we will work with the community when developing and implementing Christchurch's climate action programmes.

In our responses to climate change we will:

Honour te Tiriti

we will acknowledge the principles of the Treaty, including the principles of partnership and the active protection of Māori interests in land and water. This includes the upholding of kaitiakitanga, and a duty to actively engage.

Think long term

we will take an intergenerational view to ensure our responses to climate change are sustainable over the long term, benefiting both current and future generations.

Be collaborative

we will work in partnership with households, community groups, businesses, unions, iwi, local and central government organisations and build on existing knowledge to develop and implement actions.

Promote wellbeing

our climate actions will aim to improve our community's social, cultural, environmental, and economic wellbeing. Actions with co-benefits will be encouraged.

Act boldly

we will display the strong leadership required to address the climate challenges and opportunities for the district.

Be evidence based

our actions and responses to climate change will be based on sound evidence.

Be transparent

we will share local emissions data and climate risk information with Ngāi Tahu and the Papatipu Rūnanga, governance group partners and the community, and help people understand our decisions.

Seek opportunities

We will support positive and innovative ideas that contribute to climate solutions for Christchurch.

Be equitable and inclusive

we will ensure people are empowered to participate in our programmes and we will avoid our response to climate change having inequitable impacts on people.

Our climate change goals for Christchurch

Our goals set out what we want to achieve to limit the impacts of climate change. While they focus on four specific areas, there are many links between the goals, and some of the actions we take will provide mutual benefits across multiple areas.

For example, planting native trees and restoring wetlands is an action that will contribute towards achieving each of the goals. Trees and wetlands absorb carbon dioxide emissions (Goal 1), provide flood mitigation to protect from future storms (Goal 2), provide local jobs (Goal 3), and restore the natural environment (Goal 4).

Goal 1: **Christchurch has net zero emissions**

Greenhouse gas emissions from human activities are heating the atmosphere and changing our climate. Christchurch needs to join global efforts to rapidly reduce our emissions to help prevent further harm.

Following public consultation, the Council has set new greenhouse gas emissions targets for Christchurch:

- Net zero greenhouse gas emissions by 2045, and a 50% reduction from the baseline financial year 2016/2017 levels, by 2030 (excluding methane);
- At least a 25% reduction in methane emissions by 2030, and 50% reduction from the baseline financial year 2016/2017, by 2045

We have also set an ambitious target of being net carbon neutral for the Council's operations by 2030. This will require Council to track and monitor our progress, to demonstrate our leadership and commitment as an organisation towards climate action. While becoming net carbon neutral may require the use of carbon offsets in the future, Council's preference is to make reductions first, wherever practicable.

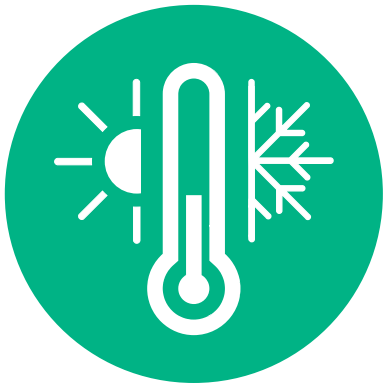
To achieve these targets we all need to make changes in the way we move, how we power our homes, buildings, businesses and infrastructure networks, how we deal with waste and how we grow food.

We have comprehensive district-wide greenhouse gas emissions baseline data. We will monitor progress over time with a series of indicators in between more substantial reporting. Pathway modelling will show the types and levels of emission reductions needed in various sectors to meet our emissions targets. We will focus our resources where they will have the biggest impact.

We also need to address the embodied carbon (carbon emitted in the production of the materials such as concrete and steel) that we use in our buildings and infrastructure, and transition towards more sustainable materials and construction techniques.

Signs of success – what we want to see in the future

- **Climate leadership** – Our civic partners, Papatipu Rūnanga, community leaders, business leaders, and influential organisations will lead by example and accelerate local and suppliers' emission reductions.
- **Action pathways** – Our community will understand the need to reduce greenhouse gas emissions and will be actively involved in developing pathways to achieve a net zero emission Christchurch.
- **People able to act** – We will support our communities, businesses and individuals to plan for, and implement a just transition to net zero emissions.
- **Low-emission transport** – Our city will be designed so people can take fewer and shorter trips to access goods and services, and have access to safe and reliable low-emission travel choices.



Goal 2: **We understand and are preparing for the ongoing impacts of climate change**

Climate change will affect everyone. While we work to mitigate the effects of climate change, our communities will need to adapt to the changes that are already unavoidable.

To develop resilient communities, we need to be aware of how and where we will be affected by the impacts of climate change, and plan our infrastructure accordingly. By understanding the local physical, social, economic and wider environmental impacts, we can work with communities to plan how they can adapt and take action to protect what they value most. We'll share research and data on the changing climate and environment with Ngāi Tahu and other agencies.

We have already started to plan for the future with our coastal communities. Sea level rise is causing coastal hazards such as flooding, erosion, and rising groundwater.

Other climate hazards, such as droughts and the increased risk of wildfires, will require different solutions, but we will use the same approach of working together with communities to address these.

Signs of success – what we want to see

- **Resilient communities** – our communities and Papatipu Rūnanga will have a good understanding of, and be prepared for, the current and future impacts of climate change and be actively involved in decisions that affect them.
- **Clear pathways** – we will provide clear and consistent direction and leadership for proactive and confident responses to future impacts of climate change
- **Adaptive capacity** – Council, Papatipu Rūnanga, communities, and businesses will have the knowledge, networks and resources to adapt and evolve over time. Risk management and budgeting processes will set out the requirements for responding to climate change.
- **Dynamic infrastructure planning** – Council plans and policies will be updated to outline how infrastructure and services will continue to adapt to the future impacts of climate change.

Goal 3: **We have a just transition to an innovative, low-emission economy**

The move to a low-emission and more environmentally sustainable economy will create new opportunities, businesses and jobs. Innovative solutions to climate change will contribute to a workforce transition away from resource intensive industries.

However, the transition to a low-emissions economy may impact and benefit some parts of our community more than others. Fair and inclusive decision-making as part of our just transition to a low-emission economy will give everyone the opportunity to benefit from the changes. Those who face hardship will need support through the transition.

Education, training and an openness towards innovation will be vital to ensure that Christchurch continues to be a city of opportunity for all.

Signs of success – what we want to see in the future

- **Planning together** – employers, unions, central government, Council, Papatipu Rūnanga, and community groups will work together to plan our transition to an innovative, low-emission economy.
- **Lifelong learning and reskilling** – everyone will have equitable access to education, training and lifelong learning, to reach their full potential in our innovative, low-emission economy.
- **Innovation and economic diversity** – creative climate change solutions and innovation will be supported for a more diverse, resilient and sustainable economy.
- **Strong communities** – support groups, networks and services will connect and assist our community, increasing individuals' ability to adapt to change.

Goal 4: **We are guardians of our natural environment and taonga**

A healthy environment is vital for the health and wellbeing of our people. Our natural environment is already under pressure from climate change. Changes to our natural environment and biodiversity may soon threaten our food and water supplies and reduce the natural absorption of carbon dioxide.

By restoring the natural environment, we will reduce the impacts of climate change, as trees, soils, and wetlands absorb large amounts of carbon dioxide that would otherwise further heat the atmosphere.

This also helps reduce the severity of flooding, prevents erosion, and encourages biodiversity.

Signs of success – what we want to see

- **Support our kaitiaki** – we'll support people and groups who are kaitiaki (caretakers) of our environment and taonga.
- **Value nature** – our community will understand, value and care for our indigenous plants, animals and ecosystems.
- **Restore ecosystems** – vulnerable species, habitats and ecosystems will be protected and managed in ways that support their restoration.
- **Garden city** – green spaces and healthy ecosystems will be protected as a vital part of our district.
- **Natural carbon absorption** – carbon dioxide will be removed from the atmosphere in ways that benefit local ecosystems and communities.

Climate Action Programmes
achieving our goals together

We have developed 10 climate action programmes, focusing on specific areas, to help achieve our climate goals.

Each programme relies on building partnerships across our district. The Council has a lead role in some programmes and their related actions, while in others our role is to support, advocate and encourage others to take action. The focus areas identified under each programme are a starting point to be developed further with Ngāi Tahu Papatipu Rūnanga as mana whenua, businesses, organisations, and community groups.

We've identified a 'Next Step for Council' for each programme to get things underway as we build up each programme further with the community.

Our new electric rubbish truck

Our climate action programmes will be responsive to new information and ideas as they emerge, and be able to take advantage of new opportunities and funding streams. We'll regularly review and modify the programme structure to deliver actions more effectively. We will also establish systems for monitoring and letting people know about our progress, issues and actions.

Programme 1: **Building the foundation - partnerships and resourcing**

Our commitment

Meeting Christchurch's climate challenge will require the support of the whole community. By harnessing the leadership and resources of Ngāi Tahu Papatipu Rūnanga, community groups, businesses and networks across our city and district, we can develop our response to climate change together.

We will build strong partnerships with inclusive and transparent governance arrangements to create and implement our climate action programmes and support broad, city-wide involvement.

Across Council, the work we do and the decisions we make will support our climate goals.

Our focus areas

- Establish climate change partnerships, resourcing, monitoring and reporting across all programmes.
- Develop a 'just transition lens' for use across all programmes to ensure actions benefit society and support those most vulnerable to change.
- Develop a communications and behaviour change programme to raise climate change awareness and encourage people to become involved in community initiatives.
- Further develop the Council's own response to climate change, focused on minimising our organisational emissions and increasing the resilience of our facilities, infrastructure, and services for our communities.
- Advocate to central government on climate issues.

Some examples of what's already happening

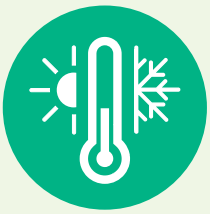
- The Greater Christchurch Partnership enables city and district leaders to work together to address our regional climate challenges.
- Council's internal Resource Efficiency and Greenhouse Gas Emission programme focuses on Council becoming more resource efficient and reducing greenhouse gas emissions from our operations.
- Council reports on Christchurch's greenhouse gas emissions.
- All Council's decision-making reports have a section considering the impacts on climate change.

Next step for Council:

Establish a climate leadership group with key stakeholder representatives to implement the strategy.

Supports Goals 1-4:

Christchurch has net zero emissions



We understand and are preparing for the ongoing impacts of climate change

We have a just transition to an innovative, low-emission economy

We are guardians of our natural environment and taonga

Programme 2: **Understanding the local effects of climate change**

Supports Goal 2:

We understand and are preparing for the ongoing impacts of climate change

Our commitment

Climate change affects local communities in different ways. We will gather local data to understand the implications across our district – for our people, our infrastructure, our economy, and our environment – and share this information with our communities so we can plan for the future together.

Our focus areas

- Complete comprehensive district risk assessments to deliver local data across all domains, including updates and monitoring of hazards, exposure and vulnerability.
- Increase understanding of the expected social and economic implications of climate change.
- Identify indicators to monitor how and how quickly our climate is changing.
- Support Ngāi Tahu Papatipu Rūnanga to identify and use culturally relevant indicators to monitor impacts on mahinga kai and other cultural resources.
- Understand the various legal and governance requirements, roles and responsibilities of climate adaptation, to ensure the Council and others fulfil their duty of care for communities.
- Identify the infrastructure that is most vulnerable to sea level rise and other climate change impacts, including water supply on Banks Peninsula, to inform community discussions and infrastructure planning.
- Identify triggers and thresholds that indicate how our exposure and vulnerability to climate hazards is changing, and where adaptation steps are needed.
- Create a targeted communication programme to explain what the data means for specific communities across Christchurch and Banks Peninsula.
- Share research and data with Ngāi Tahu Papatipu Rūnanga and partner agencies.

Some examples of what's already happening

- NIWA remodelling of global climate models shows projections of how the climate will change in the South Island/Canterbury.
- High-level risk screenings are underway at national, regional and local levels to identify which areas are most susceptible to which climate-change related risk. This is used to inform adaptation planning and covers natural, built, human, economic, and governance risk.
- Ngāi Tahu have worked with rūnanga to develop their climate change risk assessment.
- We monitor tides, river flow, rainfall and groundwater to provide a baseline for measuring change.
- We have commissioned several reports on climate-related coastal hazards and tidal ranges, and the Council's flood modelling now considers climate change.

Next step for Council:

To complete Christchurch's climate change risk assessment, including environmental, social, cultural and economic impacts.

Programme 3: **Proactive climate planning with communities**

Supports Goals 2 and 3:

We understand and are preparing for the ongoing impacts of climate change

We have a just transition to an innovative, low-emission economy

Our commitment

Supporting communities to plan for and adapt to future climate change challenges empowers them to use their own knowledge and social networks to take action. Change is an opportunity for innovation, and for our communities to have a say in shaping their future. We will help our communities to thrive by identifying our shared values, and the local changes we need to make together.

We will improve our knowledge of the full range of climate change impacts across Christchurch and Banks Peninsula and, together with our communities, determine how best to respond to the physical changes and the flow-on social, economic and wider environmental impacts.

Our focus areas

- Partner with Ngāi Tahu whānui to co-create adaptive pathways, ensuring that Ngāi Tahu values and aspirations are embedded in our city's adaptation approach.
- Provide climate education in schools and promote youth voices and leadership.
- Develop holistic, long-term responses to natural hazards and climate change with community and all Council activity areas.
- Involve the community in long-term infrastructure planning, as part of community adaptation discussions.
- Work with communities on Banks Peninsula to develop responses to localised climate issues such as threats to water supply, increased wildfire risk, and erosion.
- Work with key stakeholders (including Canterbury District Health Board and Environment Canterbury) to identify and mitigate emerging health issues caused by the impacts of climate change, such as extreme heat, damp housing, poor air quality and stress-related mental health issues.

Some examples of what's already happening

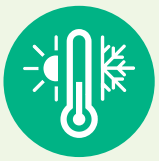
- Council has established a Coastal Hazards Adaptation Planning programme and has identified the priority communities to pilot adaptation planning with. The Programme will work with low-lying inland and coastal communities to identify adaption pathways to plan for and respond to hazards caused by sea level rise.
- A series of workshops were held in late 2020 with communities across the district, and a Coastal Hazards Working Group has been established with membership from Council, Environment Canterbury and Ngāi Tahu to oversee the ongoing development of this programme of work.
- Climate change education is being supported in coastal and low-lying inland schools to raise awareness about wider climate change issues, the impacts of sea level rise and how we can respond as a city.
- The CoastSnap community science initiative has been launched, with sites on the New Brighton Pier and the Taylors Mistake walkway encouraging people to help monitor coastal change.
- Te Rūnanga o Ngāi Tahu has developed their climate change strategy, Te Tāhū o Te Whāriki, and is initiating discussions on adaptation planning with Papatipu Rūnanga.
- The Canterbury Regional Climate Change Working Group and the Resilient Greater Christchurch Plan assists city and district leaders, including Ngāi Tahu, to empower their communities to take climate change action.

Next step for Council:

The Council has commissioned a coastal hazard assessment and strategic adaptation framework to guide the development of adaptation pathways with communities exposed to coastal hazards caused by climate change. Once these documents are ready for release in late 2021, Council will engage with communities to raise awareness of coastal hazards, and seek feedback on the strategic adaptation framework to ensure that it meets the expectations of Christchurch communities/is fit for purpose.

Programme 4: **Adapting and greening infrastructure systems**

Supports Goals 2 and 4:



We understand and are preparing for the ongoing impacts of climate change

We are guardians of our natural environment and taonga

Our commitment

Our buildings and infrastructure are increasingly coming under threat due to the impacts of climate change. Infrastructure supports our quality of life, and represents one of the biggest investment decisions in Christchurch. We will ensure our infrastructure can cope with the changing climate conditions in the future, while still delivering the services our communities need.

Any new infrastructure will utilise low-energy solutions, and be designed to minimise the amount of embodied carbon in the materials used so it is as efficient and sustainable as possible.

Green infrastructure (such as swales, rain gardens, sand dunes, street trees, natural waterways, plants, stormwater retention basins, and permeable paved paths) helps us manage flooding, storm surges, and erosion along our coasts and hillsides, and cleans our rivers and air. We will continue to incorporate greener infrastructure to respond to our changing climate, lower our infrastructure's carbon footprint, and allow nature to thrive while supporting our wellbeing.

Our focus areas

- Incorporate green infrastructure solutions when renewing infrastructure.
- Include the community in long-term infrastructure planning and adaptation discussions.
- Use the Ōtākaro Avon River Corridor Regeneration Plan to improve ecological values and restore natural buffers to the impacts of flooding and sea level rise.
- Continue to manage our surface water through our six values (drainage, ecology, cultural, recreation, landscape and heritage) and partner with Ngāi Tahu to uphold cultural and ecological values and water quality.
- Promote sustainable water use as part of a response to reduced surface water supply.
- Update Council guidelines, policies and planning processes, including infrastructure design specifications, to reflect new climate data and inform infrastructure and adaptation planning.
- Increase tree cover across the city.
- Optimise existing and new infrastructure to improve water and energy efficiency.
- Consider options for servicing relocatable housing.

Some examples of what's already happening

- Street upgrades within the central city's Ōtākaro Avon River Precinct use rain gardens to filter rainwater and increase green space.
- The Council's Integrated Water Strategy, Asset Management Plans, Activity Plans and Infrastructure Strategy outline climate change issues and consider green infrastructure solutions.
- New developments require onsite treatment of stormwater, such as swales, rain gardens and retention basins to manage how stormwater enters our waterways and to reduce downstream flooding.
- The Ōtākaro Avon River Corridor Regeneration Plan includes green infrastructure solutions, including wetlands and expanded salt marsh areas, to improve floodplain management and resilience to rising sea levels.
- The Land Drainage Recovery Programme takes into account the impacts of climate change in its planning.
- The Ōtākaro Avon, Ōpāwaho Heathcote and Styx Catchment Management Plans respond to flood management risk and water quality issues.

Next step for Council:

Create a series of ponds, wetlands, intertidal habitat and stormwater treatments in Bexley (Ōtākaro Avon River Regeneration Plan Area), to naturally filter surface water, support biodiversity, enhance flood management and improve amenity.

Programme 5: **Carbon removal and natural restoration**

Supports Goals 1 and 4:

Christchurch has net zero emissions

We are guardians of our natural environment and taonga

Our commitment

Our biodiversity and ecosystems will be increasingly threatened by climate change. By protecting and expanding natural areas in our district, we will help capture carbon dioxide, while benefiting natural ecosystems and biodiversity.

The Council's preference is for us all to reduce our emissions as much as possible. However, it is likely that even after significantly reducing greenhouse gas emissions across all sectors, we will still need to 'offset' the remaining, unavoidable emissions. To achieve safer and lower levels of global warming we need to remove emissions directly from the atmosphere. We will achieve this by regenerating forests, planting trees, restoring wetlands and enriching soil carbon. These projects can also benefit our local economy and improve the amenity of local communities.

Our focus areas

- Develop an approach to measure, reduce, and offset our emissions.
- Increase carbon sequestration through planting and natural regeneration of indigenous, and more fire resistant forest across Banks Peninsula.
- Identify, protect and restore areas of significant indigenous biodiversity.
- Naturalise waterways and introduce wetlands across the city.
- Restore coastal ecosystems.
- Create natural corridors between key forest/planted areas in Christchurch and Banks Peninsula to encourage biodiversity.
- Increase tree canopy cover in the city.

Some examples of what's already happening

- Regeneration of indigenous forest on Banks Peninsula including Hinewai Reserve.
- The Rod Donald Banks Peninsula Trust is developing environmental guardianship of Banks Peninsula.
- The Council's Christchurch and Banks Peninsula Tree and Urban Forest Plan aims to increase canopy cover in Christchurch and Banks Peninsula, which will assist with carbon sequestration, and reduce stormwater run-off.
- School and community groups take part in planting days and care for our rivers, coasts, hills and parks.
- Trees for Travellers, Million Meters Stream Project and One Billion Trees Programme get communities involved in restoration and carbon sequestration projects.
- The Christchurch Biodiversity Fund provides grants to private landowners to protect and enhance sites of ecological significance.
- Biodiversity education is provided through Council's Learning Through Action programme.

Next step for Council:

Identify sites where partnership opportunities could increase indigenous planting across Christchurch and Banks Peninsula

Programme 6: **Economic transformation and innovation**

Supports Goal 3:

We have a just transition to an innovative, low-emission economy

Our commitment

To reach our goal of zero net greenhouse gas emissions, we need innovative climate solutions and an economic transformation to move away from resource intensive, high emission industries.

A move towards low-emission, high value local businesses will create significant new opportunities for entrepreneurs, social enterprises and agile businesses. We will support economic transformation in renewable energy, transport, health, food and technology to provide new jobs and a more diverse, resilient and sustainable economic base for Christchurch.

A just transition to a low-emission economy will require support for people employed in sectors impacted by rapid change. To make Christchurch an attractive place for employers and employees, we will encourage training and education for emerging low-emission jobs.

Our focus areas

- Support local entrepreneurship and climate innovation networks to promote innovation and new job opportunities in mitigation and adaption to climate change.
- Enable the use of technology and rapid prototyping of innovative ideas that will transition Christchurch into a low-emission city.
- Improve access to education, (re)training and the life-long learning necessary to support workers and businesses through our transition into a low-emission city.
- Redefine measures of progress to better reflect social, cultural, economic and environmental wellbeing.
- Encourage and support local businesses, social enterprises, and the community sector to innovate and transform the economy to respond to climate challenges and opportunities.

Next step for Council:

Work with ChristchurchNZ, the Canterbury Employer's Chamber of Commerce and other stakeholders to deliver a series of events and activities to highlight and drive climate innovation in Christchurch.

Some examples of what's already happening

- The Centre of Entrepreneurship at Canterbury University encourages innovators to solve real world problems while building a new generation of entrepreneurs, often with a focus on sustainability and our climate challenges.
- Haea Te Awa is a strategy developed by Te Rūnanga o Ngāi Tahu to grow regional development, led by Papatipu Rūnanga.
- Smart Seeds is a design-led innovation programme focused on creating solutions to complex challenges by bringing mentors and emerging leaders together. Christchurch Supernodes bring together students, iwi, education providers, industry, and government to create new solutions and business opportunities for a low-emission future economy.
- The Akina Foundation supports social enterprise organisations and helps to transform business through the Impact Initiative.
- The Council's Smart City Programme helps to deploy innovative technologies and solutions to support smart living and businesses in Christchurch.
- Christchurch City Holdings Ltd is working to get all Council-owned companies to be net carbon neutral in their operations by 2030.
- Council's Sustainability Fund supports innovative community and business projects that respond to climate change.

Programme 7: **Low-emission transport system**

Supports Goal 1:

Christchurch has net zero emissions

Our commitment

Road transport is the biggest single contributor to Christchurch's emission footprint. The transport sector contributes 54% of our district's greenhouse gas emissions, with 36% coming from road transport. Reducing transport emissions is essential to achieve our greenhouse gas emissions targets. Christchurch has high levels of private car use and low level use of public transport.

We will make significant changes to our transport infrastructure to help meet our emissions targets. To halve our emissions in the next decade, we need to dramatically reduce the kilometres travelled in fossil fuel-powered vehicles. We will promote alternatives such as active and public transport.

Redesigning our suburbs and city to encourage more walkable neighbourhoods, where most short trips to services can be taken on foot or by bike, will further reduce transport-related emissions.

Reducing transport emissions provides wider benefits by improving air quality and reducing noise, while creating more connected neighbourhoods and continuing to support our economy through the efficient movement of people and goods.

Our focus areas

- Understand the pathways to reducing transport emissions and develop a progressive series of options to achieve them.
- Improve tools to model emissions reduction scenarios and show the wider impact, benefits and costs of each option.
- Improve the attractiveness of sustainable modes compared to driving.
- Increase education and incentivise the use of sustainable transport, such as walking, cycling, scootering, and public transport, and the reduction of emissions by working from home.
- Integrate sustainable transport and land use planning, reducing the need for car trips.
- Encourage use of zero exhaust emission vehicles (such as battery electric vehicles and electric bikes).
- Consider models of integrated community living and economic sustainability such as kāinga nohoanga, which reduce the need to travel for work.

Some examples of what's already happening

- New cycleways in Christchurch are encouraging more people to cycle - on average, an estimated 40,000 people cycle to work or school each day in Christchurch.
- 3,000 school students are provided with on-road cycle skills education (Cycle Safe) annually.
- Workplace travel planning is delivered to offices with a combined staff count of 3,200 per year.
- Three battery electric buses currently operate on the Airport to Bus Interchange route.
- Council is developing a Spatial Plan to provide better-integrated land use planning for sustainable transport and development.
- We support mode shift initiatives across Greater Christchurch - in particular through the Greater Christchurch Public Transport Futures Business Cases, and other service and infrastructure improvements to improve the bus network.
- Christchurch won the EVworld 'Most EV Friendly Town of the Year' award for the second time in 2019. Christchurch has at least 90 public electric vehicle charging points.

- The Zilch battery electric car share service provides a zero emission transport option for businesses and residents.
- There are permits for 1600 e-scooters for short-term hire on the streets of Christchurch. More than one million trips were taken on e-scooters in their first year in Christchurch.

Next step for Council:

Complete the Christchurch Transport Plan to understand pathways to reduce emissions and identify a progressive series of options to achieve the level of reductions we are seeking.

Programme 8: **Energy efficient homes and buildings**

Supports Goal 1:

Christchurch has net zero emissions

Our commitment

Our homes, buildings, businesses and infrastructure consume large amounts of resources such as energy, water and materials to build, operate, maintain, repair and replace.

We will design our homes, businesses, buildings, and infrastructure to be more energy and resource efficient, and powered by affordable, renewable energy. This will lower emissions, reduce costs, deliver healthier buildings, create businesses that are more efficient and conserve our precious resources.

Our focus areas

- Increase business resource efficiency (low energy and water usage) and reduce greenhouse gas emissions.
- Reduce residential greenhouse gas emissions and support resource efficient healthy homes.
- Advocate to central government for improved national building and energy efficiency and GHG emissions reductions standards.
- Maximise resource efficiency in our existing infrastructure and facilities, and minimise embodied carbon when designing and building new facilities and infrastructure.
- Investigate the use of wind and solar energy for individual houses, small communities, kāinga nohoanga, marae and businesses.

Some examples of what's already happening

- Over one hundred businesses (making up more than 60% of New Zealand's total greenhouse gas emissions) have joined the Climate Leaders Coalition committing to reduce their emissions in line with Intergovernmental Panel on Climate Change advice.
- Replacing the street lighting network with LED lights and smart controls is estimated to save $1m per year in electricity costs by June 2021, $600,000 in maintenance costs per year, and reduce greenhouse gas emissions by 1,500 tonnes per year.
- The Council-run Target Sustainability service assists Christchurch businesses to be energy efficient, reduce greenhouse gas emissions, solid waste and water use. Council, working with EECA, has delivered resource efficiency design advice to over 500,000 square metres of commercial buildings.
- Artesian ground source heat pumps have been installed at the Town Hall, Tūranga library, the Arts Centre, and at The Terrace and West End developments.
- The new Metro Sports Centre will have a wastewater heat recovery system.
- Over 8,000 Christchurch homeowners have received advice and support to improve the health and efficiency of homes through Build Smarter and Warmer Kiwi Homes.

Next step for Council:

Promote awareness of resources available to communities and businesses to assist with energy efficiency efforts.

Programme 9:
Towards zero waste

Supports Goals 1 and 4:

Christchurch has net zero emissions

We are guardians of our natural environment and taonga

Our commitment

Generally, our society buys things, uses them, and then throws them away. This is unsustainable and generates greenhouse gases and other pollution throughout the lifecycle of products. About 9% of Christchurch's greenhouse gas emissions come from our waste. However, approximately 40% of waste currently going to landfill in Christchurch has the potential to be recycled or composted, using the services currently available.

We will move towards a zero waste, circular economy, enabling resources to be reused or recycled, supporting new jobs and innovation, and creating a low-emission, resilient and more sustainable economy.

Our focus areas

- Maximise composting of organics.
- Maximise recycling of all recyclable materials.
- Show leadership and support innovation in the Christchurch waste and resource recovery sector.
- Promote how people can find new uses for things that would otherwise be treated as waste.
- Encourage people to purchase products and support businesses that value the environment.
- Promote the 'sharing economy' such as car sharing, tool libraries and toy libraries where people can borrow goods as needed, moving away from a buy-use-discard model.

Some examples of what's already happening

- 65% of our kerbside collection is diverted from landfill, including 55,000 tonnes of organic matter, and 40,000 tonnes of materials is recycled (data from 2018/19 financial year).
- We are supporting the central Government waste reduction work programme and participating in the national task force for recycling.
- Local social enterprise Kilmarnock Enterprises employs and supports differently abled people through the recycling and reprocessing of waste materials.
- Living Earth produces high quality certified organic compost in Christchurch at the largest enclosed compost plant in New Zealand.
- Local online platforms sell second-hand goods, which might otherwise go to landfill.
- Eco-Shop sells second-hand household items that might otherwise go to landfill. Residents can drop goods at three Eco-Drop locations.

Next step for Council:

Implement the Council's Waste Management and Minimisation Plan
ccc.govt.nz/ourwaste

Programme 10:
Sustainable food system

Supports Goals 1 and 4:

Christchurch has net zero emissions

We are guardians of our natural environment and taonga

Our commitment

The production, distribution, consumption and disposal of food generates significant greenhouse gas emissions. Changing the way we grow and consume food can create a more resource efficient, low-emission and resilient local food economy. The average New Zealand household throws out $650 of food – a national total of 157,000 tonnes – each year.

Christchurch has an opportunity to become an international hub and leader in agri-tech research, to develop solutions that help the agricultural sector produce food with the lowest possible emissions, and crops that are resilient to the changing climate. We will support sustainable food production to improve people's health and wellbeing, while restoring the natural environment.

The importance of mahinga kai to rūnanga and whānau goes back centuries and is essential to sustain culture and identity.

Our focus areas

- Reduce agricultural greenhouse gas emissions and improve food security.
- Support regenerative agricultural practices and resilient food production.
- Enable kāinga nohoanga and mahinga kai.
- Encourage urban farming and home, school and community gardening, and support groups who assist others to learn about growing their own food.
- Support organisations that help minimise food waste and improve food security, such as food rescue, food banks and community food sharing services.
- Promote sustainable, low-emission food choices.
- Protect highly productive soils.

Some examples of what's already happening

- Smartview maps 12,000 fruit and nut trees in public places across Christchurch.
- The Food Resilience Network is encouraging the growing of food in homes, schools and community gardens throughout Canterbury. Christchurch has 30 community gardens.
- ChristchurchNZ has identified 'Food, Fibre and Agri-tech' as a supernode of sustainable economic development in our region.
- Food Bank Canterbury rescues surplus or donated food and allocates it to those in need. To date they have provided 2.2 million meals, avoiding an estimated 600 tonnes of greenhouse gas emissions from food waste.
- In a recent Council survey, 59% of Christchurch households said they grow fruit or vegetables at home in a Council survey.
- Love Food Hate Waste is a campaign to reduce food waste. The average New Zealand household throws out $650 of food each year – a national total that could feed the population of Dunedin for nearly three years (157,000 tonnes).

Next step for Council:

Support the planting of 500 fruit trees in schools and community locations in Christchurch.

How does this fit with other strategies

This strategy fits alongside and complements a wide variety of national, regional and local policies, strategies and plans.

It underpins the Council's Strategic Priority of 'Meeting the challenge of climate change through every means available' and supports our key Community Outcome themes of Resilient Communities, Liveable City, Healthy Environment, and Prosperous Economy.

It has links to other Council strategies and plans and will increasingly influence the development of future plans and strategies, as climate action is embedded across Council activities.

References

[i]AECOM 2020. Christchurch Greenhouse Emission Inventories for Financial Years 2018/19 and 2016/17.

[ii]AECOM 2020. Christchurch Greenhouse Emission Inventories for Financial Years 2018/19 and 2016/17.

[iii]NIWA, February 2020. Report 2019339WN, prepared for Environment Canterbury. Climate Change Projections for the Canterbury Region, Gregor Macara, John-Mark Woolley, Petra Pearce, Sanjay Wadhwa, Christian Zammit, Abha Sood, Scott Stephens.

[iv]NIWA, February 2020. Report 2019339WN, prepared for Environment Canterbury. Climate Change Projections for the Canterbury Region, Gregor Macara, John-Mark Woolley, Petra Pearce, Sanjay Wadhwa, Christian Zammit, Abha Sood, Scott Stephens.

Appendix A

The table below presents the predicted local changes to climate and the impacts and implications of these changes.

Changing temperatures and seasonality

Predicted local changes to climate

Average temperatures will increase

0.5ºC to **1.5ºC** by 2040 and **up to 3ºC** by 2090

Days over 25°C will increase

by 2040 **10+ more 25ºC+ days** per year

Number of frosts will reduce

by 2040 **10 fewer frosts**
by 2090 **20 fewer frosts per year**

Average max temperatures up to 3-4°C hotter

Average min temperatures 1-2°C hotter

by 2090 20+ more 25°C+ days per year for Christchurch

by 2090 up to 40 more 25°C+ days per year in parts of Banks Peninsula

by 2090 significantly fewer frosts again for inland areas

Seasonal temperature will change most in autumn and least in spring

Impacts and implications

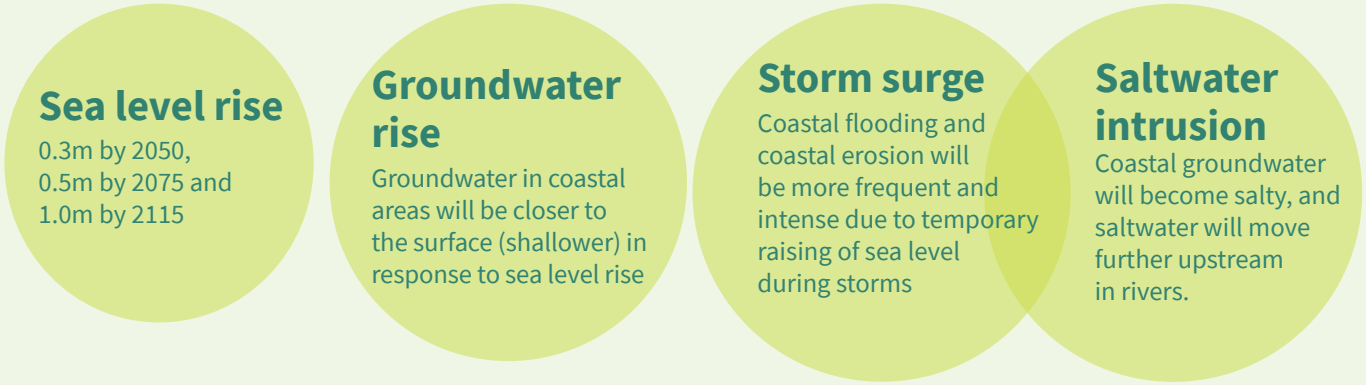
- Heat stress will affect the health of people, animals and plants
- Heating costs will decrease in winter, cooling costs will increase in summer.
- Demand for drinking water will increase when water is likely to be scarcer.
- Risk of wildfire will increase, especially in high winds and drought, when water is scarce for firefighting.
- Water quality will deteriorate, made worse by increased water use for human activity.
- Ecosystems will be under threat, with negatively impacts on health and the economy. Some species will become extinct
- Loss of biodiversity will impact mahinga kai and customary practices.
- Current agriculture and horticulture will be at risk of new pests and diseases. Higher temperatures may allow different crops to be grown.
- Summer leisure and tourism season will be extended, but the ski season will be shorter and glaciers will be disappearing.

Changing rainfall patterns and intensity

Impacts and implications

- Water available for drinking, irrigation, and agriculture will be reduced during drought, especially on the Banks Peninsula. Average river flows may be 20% less by 2090.
- Rivers will flood more often and more flash flooding of communities and businesses, will affect people, the economy, and Ngāi Tahu cultural values and mahinga kai.
- Storm water infrastructure capacity will be exceeded more often, resulting in surface flooding.
- Flood water will damage bridges, roads and other infrastructure.
- Insurance costs for homes and businesses may increase or become unavailable in areas most at risk.
- Parks and recreation grounds will be affected by both drought and flooding.
- Drought and fires will reduce vegetation on hills, increasing landslides and erosion during intense rainfall and strong winds. There could be permanent loss of soils in Banks Peninsula, preventing revegetation.
- Increased erosion will lead to more sediment in waterways, reducing water quality and stream capacity.
- Indigenous ecosystems, plants and animals, will be under threat, especially with drought.

Changes to sea level and coastal hazards



Impacts and implications

- More frequent, more severe coastal flooding of coastal communities, infrastructure and businesses will affect people's health, wellbeing and the economy.
- Saltwater incursion into freshwater systems will reduce habitats where there is no room for flora and fauna to migrate inland.
- Taonga species and mahinga kai will be lost.
- Shallow, salty groundwater will damage buried pipes and foundations of roads and buildings. It could result in cold, damp homes.
- Groundwater moving closer to the surface could lead to long-term standing surface water, which may attract insects and exacerbate flooding issues.
- Christchurch's coastline could switch from accretion to erosion leading to loss of road access to coastal communities in Banks Peninsula.
- Coastal and low-lying communities will need to adapt to sea level rise, or relocate.
- Our population may grow due to climate refugees from other countries.
- Wāhi tapu, wāhi taonga and cultural landscapes could be adversely affected, or lost.

Note: Predictions are comparisons to the 1986-2005 mean baseline and assume that greenhouse gas concentrations continue to increase at current rates based on the Representative Concentration Pathways scenarios. (RCP 8.5 scenario).

Information is sourced from the NIWA report prepared for Environment Canterbury, Climate Change Projections for the Canterbury Region published in February 2020, prepared by Gregor Macara, John-Mark Woolley, Petra Pearce, Sanjay Wadhwa, Christian Zammit, Abha Sood, Scott Stephens.

Oceanic changes

The ocean will become more acidic

Sea water will become warmer

There will be marine heatwaves

Impacts and implications

- Marine ecosystems will be altered, particularly affecting hard-shelled species.
- Some species will become extinct.
- Changes to the range of species, location and abundance of fish and sea birds around NZ, will impact the food chain.
- Aquaculture and fishing industries will be impacted.
- Taonga species and mahinga kai will be lost.
- Recreational benefits will be reduced.

Wind changes

Wind speeds are likely to increase

by up to 5% by 2100

Impacts and implications

- Trees, buildings and power lines will be damaged more frequently, reducing resilience of essential services.
- Fire risk will increase during hot, dry periods and soil will dry more quickly, increasing demand on water supply.
- Wind powered electricity generation will be more viable.

Have your say

Ōtautahi Christchurch Climate Change Strategy

Draft 2021

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Christchurch City Council