Draft Clutha District Climate Change Strategy

January 2024

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MESSAGE FROM THE MAYOR

For inclusion on finalisation of Strategy

1.0 INTRODUCTION

Preparing for, and responding to, the impact of climate change is an urgent issue for local government in New Zealand.[1] The Clutha District Council ('Council') has specific responsibilities to consider the impacts of climate change and to promote social, economic, environmental, and cultural well-being.

A clear strategy to demonstrate leadership and response to climate change is therefore crucial. This must consider what is happening at the global and national level, but also remain relevant for local communities in the Clutha District. The decisions that we take now will be critical to ensuring the ongoing wellbeing of our people and our communities.

1.1 WHAT IS CLIMATE CHANGE?

Carbon dioxide and other 'greenhouse' gases in the atmosphere trap heat from the sun, which is necessary to keep earth warm (Figure 1-1). Since the Industrial Revolution humans have released increasing amounts of these gases into the atmosphere. As the concentration of gases increases, more heat is trapped, warming the earth at an unprecedented rate. This process is known as climate change.

Within the Clutha District, climate change is expected to bring higher temperatures, more frequent and heavier rainfall, higher sea levels, and more flood events.[2] How the climate continues to change in the future will largely depend upon how we as a global community act to reduce greenhouse gases. However, even if we manage to reduce our emissions, the effects of climate change will continue. Some of the consequences are already locked in.

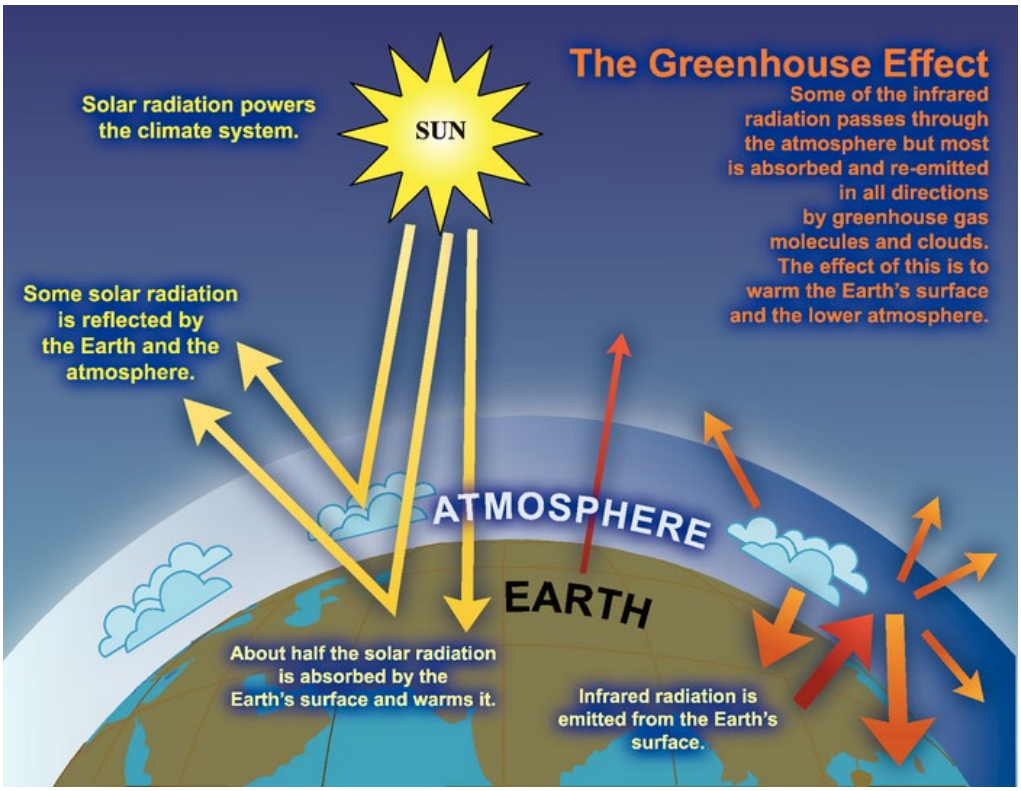

Figure 1-1 An idealised model of the greenhouse effect [13]

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1.2 CLUTHA DISTRICT CLIMATE CHANGE PROJECT

Council's ability to provide services and key infrastructure for the community may be significantly impacted if we don't consider climate change impacts through our strategic planning processes. We currently do this through our Infrastructure Strategy, Activity Management Plans, and the implementation of various projects.

To enable a consistent approach and provide clear direction, Council commenced work on a major climate change project in 2019. The aim of this project is to provide well-researched and locally relevant information about the likely impacts and risks associated with climate change, with input from local and external experts. The first two stages are now complete and have helped to inform this strategy. More information about the project is available at www.cluthadc.govt.nz/council/plans-and-strategies/climate-change.

The third stage is to ensure that information about the likely impacts and risks associated with climate change are incorporated into appropriate planning, decision-making, and responses. This information will enable Council to share and coordinate the management of risk, and to communicate with stakeholders about priorities.

This Climate Change Strategy, guided by a set of principles, is a roadmap for reaching our climate change objectives. A series of action plans are also included, to identify the specific steps we will take to get there.

1.3 VISION, PURPOSE AND OBJECTIVES

Vision

Clutha District Council will take an active leadership role and adapt our activities to withstand the impacts of climate change, so that our communities are resilient and can anticipate and respond to new challenges as they arise.

Strategy purpose	Strategy objectives
The purpose of this strategy is to align the relevant activities already underway throughout the Clutha District. This strategy aims to provide a framework for collaboration across our district and beyond – this includes neighbouring Councils, iwi partners, local and central government, private industry, NGOs, education, and most importantly our communities and people.	The objectives of this strategy are to: • Show leadership on the issue of climate change. • Provide a starting point for conversations with our communities, and to raise awareness of climate change impacts and risks. • Integrate and coordinate climate change-related work throughout different areas of Council. • Provide an agreed base-line dataset, which can be incorporated into planning, decisions, and responses.

2.0 ENVIRONMENT SETTING

The Clutha District covers an area of 6,362 km^2, stretching from the Umbrella Mountains in West Otago to Taieri Mouth in the east, and from the Lammerlaw Range in the north to the Catlins in the south (Figure 2-1). The district is bisected by the Clutha River/Mata-Au, which drains the largest catchment by area and flow in New Zealand.

This diverse physical environment is home to about 18,500 people, who have historically relied on a relatively stable, benign climate. However, a range of new challenges and opportunities will need to be faced in the future, and action taken to ensure our communities and the physical environment remain resilient.

2.1 THE CLUTHA DISTRICT

Across the Clutha District, it is projected that there will be local variations in the amount of change experienced - some areas will warm more, while others will experience higher increases in precipitation. For this reason, previous work [2] divided the Clutha District into four distinct areas so we could summarise localised climate change impacts. These areas generally experience similar climatic conditions, or contain similar geographic features:

- **Coastal and Eastern Clutha:** This area includes much of Clutha's coastline from Molyneux Bay to Taieri Mouth. It incorporates the Balclutha, Kaitangata and Bruce wards, and the towns of Balclutha, Milton and Waihola. This area is agriculturally dominated, has extensive low-lying areas, and can be prone to floods. The population of this area is about 10,700, which is approximately 57% of all Clutha residents.
- **The Catlins:** The sparsely populated Catlins Ward stretches from Chaslands and the Catlins conservation park in the south, to Kaka Point in the north. It is the Clutha District's wettest environment, boasting native forests, stunning coastal landforms, and agriculture in the hinterland. The population of this area is approximately 1,300.
- **Central Clutha:** This area includes the fertile Clutha Valley, the Clutha River, and its tributary, the Pomahaka. It incorporates the Clinton, Clutha Valley and Lawrence-Tuapeka wards, extending from the town of Clinton in the southwest to Lawrence and Waipori in the northeast. The combined population of this area is approximately 3,800.
- **West Otago:** This area includes the West Otago Ward and the towns of Tapanui, Heriot and Edievale. The terrain comprises steep high country, rolling hills, and broad floodplain areas. This area also experiences the greatest temperature extremes; it can be the warmest part of the Clutha District in summer, but also the coolest in winter. Approximately 2,300 people live in West Otago.


Photo credit: L. Button, CluthaNZ.com

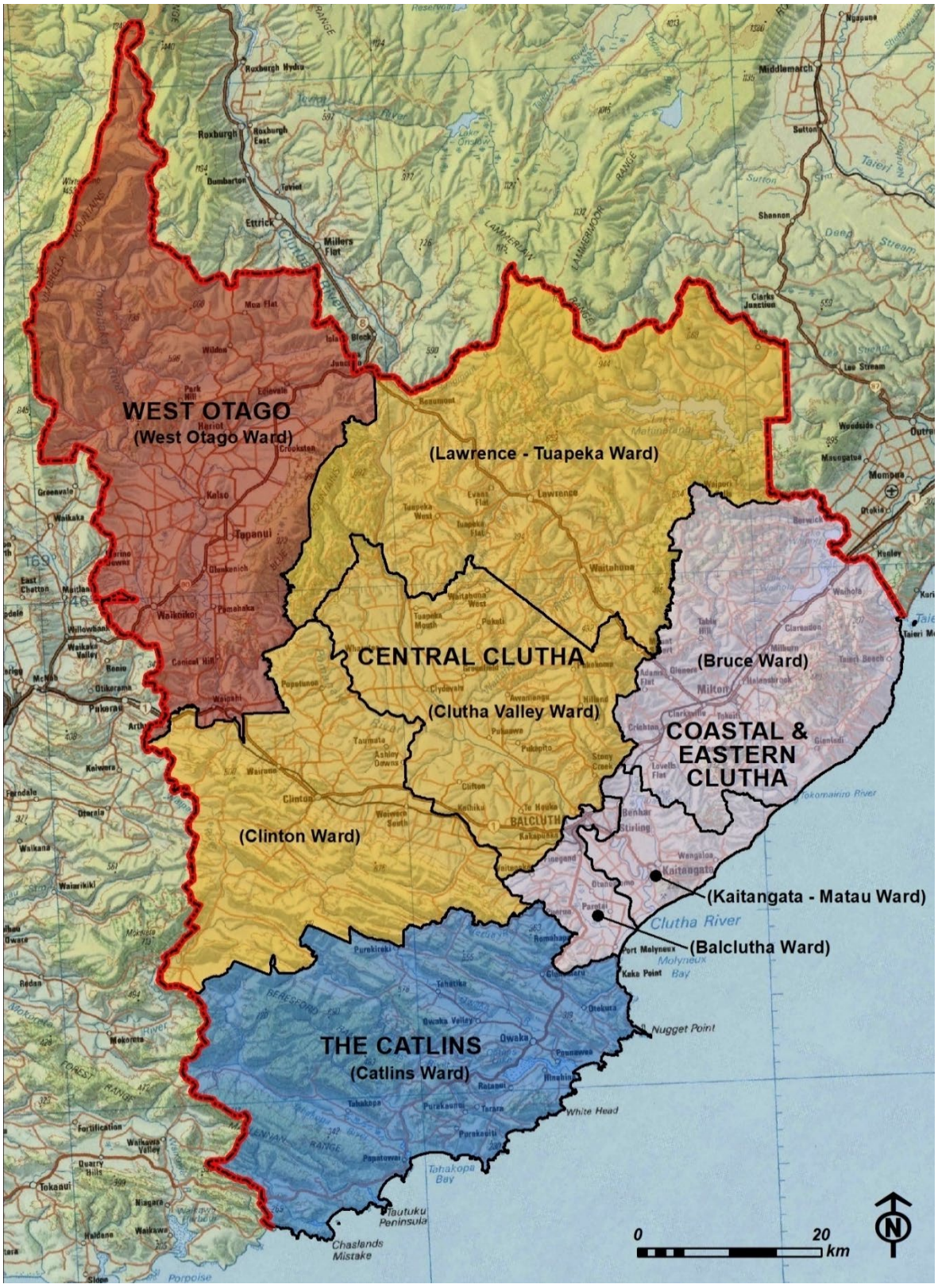


Figure 2-1 The Clutha District, separated into four distinct geographic and climatic areas

2.2 THE IMPACTS OF CLIMATE CHANGE IN CLUTHA

The Clutha District is already vulnerable to natural hazards including droughts, slips, flooding, and coastal erosion/inundation. Climate change will mean that the consequences of existing hazards becoming more serious, and the district will also face new challenges and opportunities. Locally and globally, community awareness and concern for this issue is growing. Previous community consultation has shown us that people are concerned about climate change and its impacts on the place we call home and want to see action.

Council undertook work in 2020 to better understand the impacts of climate change in Clutha,[2] with the key findings summarised in Figure 2-2.

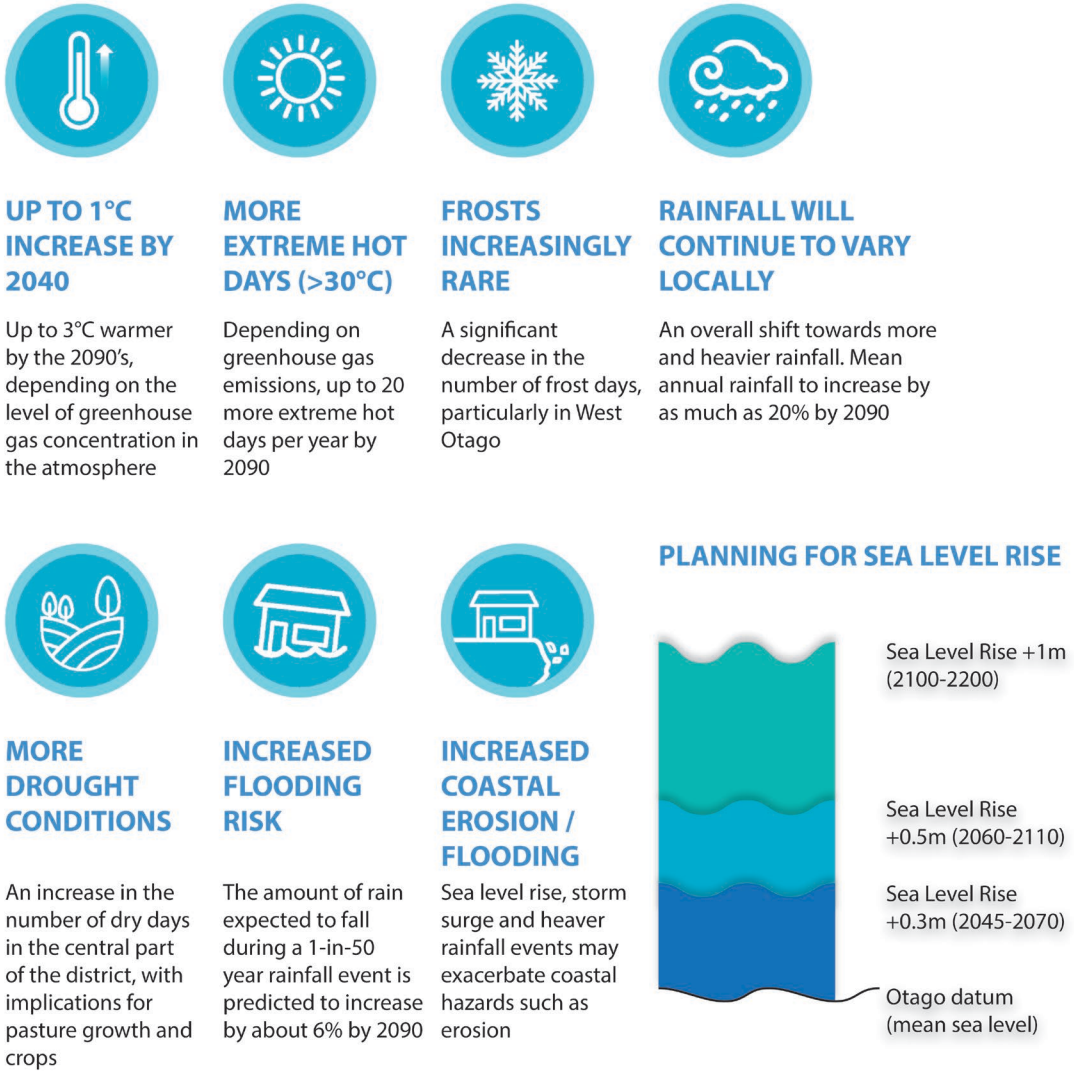


Figure 2-2 Likely impacts of climate change for the Clutha District

2.3 RISKS ASSOCIATED WITH CLIMATE CHANGE IN CLUTHA

Previous work by Council [6] has found that the highest risks facing infrastructure in the Clutha District are those associated with:

- potable water treatment plants
- road networks
- homes and buildings, and
- flood or coastal defence mechanisms.

These risks are created by an exposure to flooding, coastal inundation, or heavy rainfall events, all of which are predicted to increase due to climate change. Roads, buildings, and potable water treatment plants are important lifelines that, if damaged would significantly disrupt the social and economic functioning of the district. Flood and coastal defence mechanisms provide protection to some of this critical infrastructure, particularly along the Clutha River/Mata-Au, and so the consequence of these systems failing is also extreme.

Other potential concerns for the district include risks to community facilities (such as halls, libraries & recreation centres), and contamination from closed landfills due to flooding or coastal inundation, heavy rainfall events, or ongoing coastal erosion.

Table 2-1 Summary of the top climate change risks for infrastructure in the Clutha District

Sector	Risk description	Risk[a] (consequence)
Three Waters Infrastructure	Risk to stormwater pipes due to heavy rainfall and increased flood events throughout the district.	**Moderate**
	Risk to potable water intakes and treatment plants due to contamination during heavy rainfall periods, flood events, or coastal inundation.	**Extreme**
Transport	Risk to road networks due to coastal or flood inundation.	**Extreme**
Homes and buildings	Risk to homes, community housing units and commercial buildings in low-lying areas exposed to coastal or flood inundation.	**Extreme**
Public Amenities	Risk to community facilities (halls, libraries, recreation centres) due to flood or coastal inundation.	**Major**
Waste	Risk of contamination from closed landfills due to flood or coastal inundation.	**Major**
Flood and coastal defence	Risk to flood and coastal defence mechanisms (both ORC and CDC assets) as a result of more frequent inundation caused by floods or coastal hazards.	**Extreme**

2.4 CARBON EMISSIONS IN CLUTHA

In 2023, Clutha's economy generated approximately $1.2 billion in GDP (8% of Otago's GDP). Our economy is heavily reliant on the primary sector, which accounts for one third of the district's total GDP share. Manufacturing and construction are the two other biggest sectors in Clutha, accounting for 10% and 6.4% of GDP respectively (Figure 2-3).

[a] The consequence ratings [6] range from insignificant, to minor, moderate, major, and extreme.

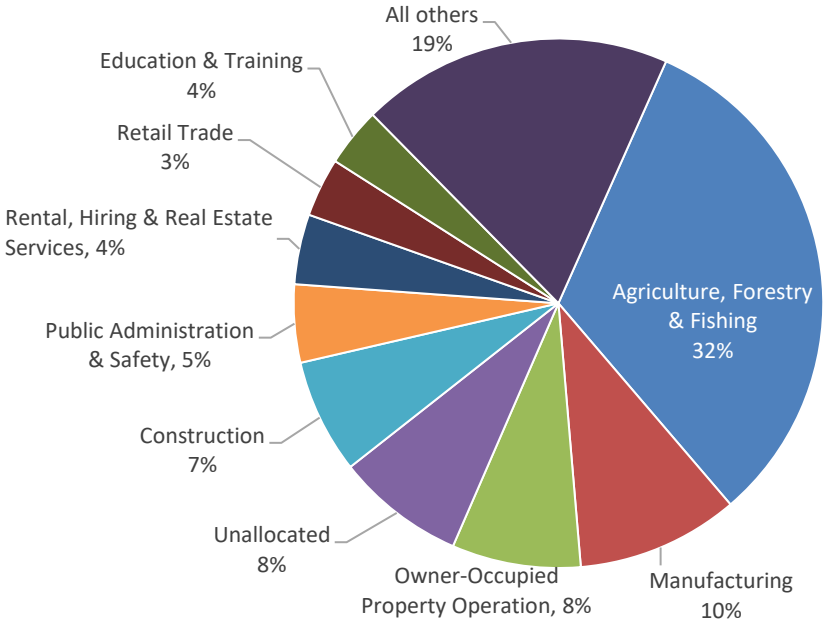


Figure 2-3 Proportion of GDP by industry in the Clutha District in 2020

2.4.1 Clutha District Council emissions

Clutha District Council is yet to undertake a Council-specific greenhouse gas emission inventory, but this is planned as part of the action plan associated with this strategy (along with other opportunities to reduce our emissions going forward, as listed in section 6.1).

Council currently owns 68 vehicles, and our contractors also use large machinery for mowing and vegetation control. The Council is considering options for converting some of the corporate fleet to electric or hybrid vehicles where possible and installed an electric car charger at its Rosebank site in 2021. Clutha District emissions

A report prepared for the ORC [11] identified the following key insights for the Clutha District:

- Gross emissions in Clutha are estimated at 1,829,896 tonnes of CO_2e.[b] This is approximately 31% of the Otago Region's gross emissions.
- Net emissions for the district are much lower, at an estimated 270,119 tonnes of CO_2e (the lowest in the Otago Region) due to our significant forest estate, which is an emissions sink.
- Emissions come primarily from the agriculture sector (Figure 2-4). Clutha has the highest number of sheep and dairy cattle in the Otago Region, and these contribute 43% and 31% to our agriculture emissions respectively. Clutha also applies a large amount of fertiliser, and this accounts for 15% of agriculture emissions.
- Stationary energy is the next largest emitting sector, with large amounts of coal (almost 60,000 tonnes) being used, primarily by manufacturing industries.

[b] CO_2e, or carbon dioxide equivalent, is a measure for how much global warming a given type and amount of greenhouse gas causes, using the equivalent amount of carbon dioxide as the reference.

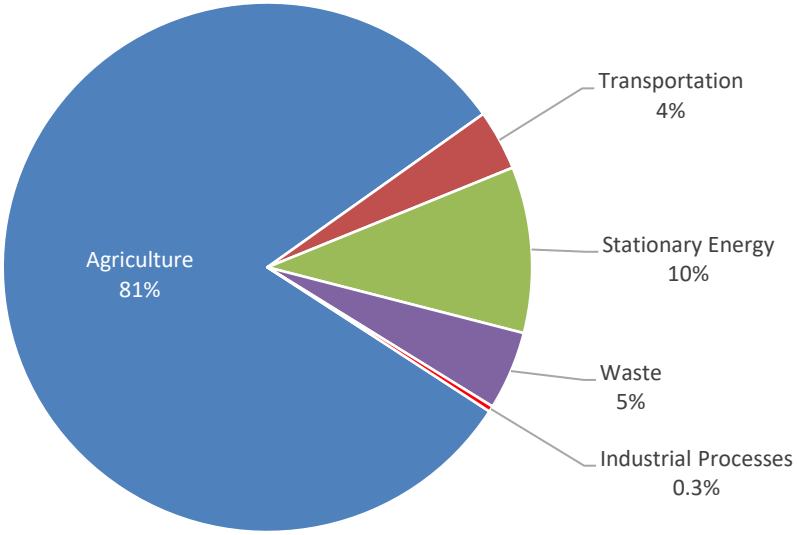


Figure 2-4 Greenhouse gas emissions for Clutha by source

The figures above reflect the rural nature of our district, the primary industries that support our economy, and the travel distances between urban centres. The agriculture industry is working hard to embrace innovation and find new ways of working to curb some of the emissions it produces,[c] and this will be particularly important for the Clutha District.

We need to work together to address our district's carbon emissions. In our climate change action plans (section 6.0), we outline what we will do to reduce the Council's emissions, and how we will work with our communities to reduce our district's overall footprint.

2.5 WORK CURRENTLY UNDERWAY

The potential impacts of climate change are already being considered when undertaking work to replace or improve infrastructure across the district. Two examples of work being undertaken by the Clutha District Council are summarised below, while Box 1 describes adaptation work planned by the Otago Regional Council for the Clutha Delta area.

2.5.1 Hina Hina Bridge

The Hina Hina Bridge across Catlins Lake was opened in July 2021, replacing the previous bridge which was built in 1957. The single lane, $3.6 million bridge was jointly funded by Clutha District Council and Waka Kotahi, has a design life of 100 years, and is designed to be above any future flood levels, even with the prospect of rising sea level due to climate change. However, the bridge does link to some low-lying roads in the Hina Hina area which are already vulnerable to inundation and erosion.[2]

[c] Beef + Lamb, Fonterra

Figure 2-5 The new Hina Hina Bridge

2.5.2 Resilient water supply

The establishment of a new water supply from the Clutha River was confirmed by Council in July 2021, with a budget of $19.8 million. This project will provide a high-quality, reliable source of water for much of central Clutha, including the Lawrence, Waitahuna, Tuapeka and Hillend areas, with construction expected to be completed in late 2024 (Figure 2-6). The Clutha River is less likely to be impacted by climate change than current water sources such as the Waitahuna and Tuapeka rivers, which can be affected by drought (limiting supply) and floods (sedimentation, flood damage). Local knowledge, climate change predictions, and significant community support were factors which led to Council's decision to create a new single water source and treatment plant.

Figure 2-6 Pipe welding and installation (left) as part of the Greenfield Water Scheme Project which will link from the lower Clutha River (right) to Lawrence

Box 1. Clutha Delta Natural Hazards Adaptation Strategy

The Clutha Delta extends from 4km north of Balclutha to the sea. This area is exposed to risks from coastal and flood hazard risks, which are projected to increase due to the impacts of climatic change (section 2.3). The Lower Clutha Flood Protection and Drainage Scheme (the scheme) helps to mitigate the risk of flooding and provides effective land drainage across the delta. The scheme covers an area of about 9,300 hectares and is managed by the Otago Regional Council (ORC).

The scheme combines flood protection (flood banks) and land drainage and is a critical piece of infrastructure which provides protection to people and property and supports the rural and urban economy of Balclutha and the Clutha Delta. Much of the area protected by the scheme is less than 1 meter above mean sea level.

ORC is following the Dynamic Adaptative Pathways Planning approach (DAPP, or 'Adaptation Pathways') [16] to aid the development of a Clutha Delta natural hazards adaptation strategy. Community engagement is at the centre of this approach, recognising that effective engagement is essential for successful natural hazards and climate change adaptation planning and decision-making. Community engagement activities for the programme are planned to kick-off in 2024.

Development of the natural hazards adaptation strategy will include detailed natural hazards and risk assessments, a review of the performance of the scheme, and a review of adaptation options (e.g., the PARA framework; Protect, Accommodate, Retreat, Avoid) [19]. Scheme performance and risk assessments for will commence early in 2024. A separate workstream will focus on Emergency Management planning (e.g., flood warning and preparedness).

The ORC programme will focus on core natural hazards concerns, including:

- *Balclutha township flood risks, safety and resilience.*
- *Flood risk to the wider delta, including Stirling, Kaitangata and other rural communities.*
- *Rising groundwater levels and agricultural sustainability.*
- *Management of the interface between land and sea, including key infrastructure.*
- *Seismic hazards such as liquefaction and lateral spreading.*

Broader aspects such as biodiversity and ecology will also be considered as important factors in the assessment of adaptation approaches, and the programme will consider potential opportunities in these areas.

View of the lower Clutha Delta and Molyneux Bay

3.0 STRATEGIC & LEGISLATIVE SETTING

There is a wealth of advice (and some important legal requirements) for local councils, as they look to find the best way to respond to the impacts of climate change. This section looks at the strategic direction and legislative requirements which are particularly relevant to the Clutha District. A key message is that central, regional, and local government need to pursue similar climate objectives. Similarly, Council will need to build effective relationships and open communication with the local communities that it serves, as this is where the impacts will ultimately be felt.

3.1 LIVING AND WORKING IN CLUTHA STRATEGY

The *Living and Working in Clutha Strategy* describes, at the highest level, where we want the district to head, and how Council intends to work towards its objectives. Adapting to climate change is included as a priority work area.

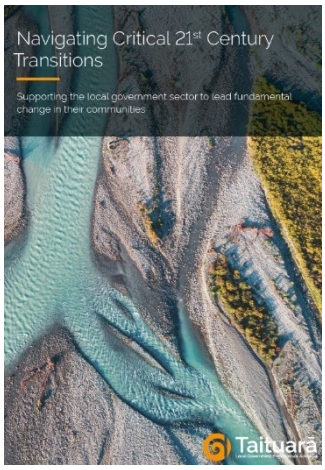
The strategy identifies some high-level climate objectives, including the ability to plan for changing land use opportunities & limitations, improved risk management & communication, and a reduction in the use of fossil fuels.

The strategy notes that ongoing work will be required across all Council activity areas, to incorporate new information on impacts and risk into work programs and decision-making. Additional direction on this process is provided through this Climate Change Strategy, and the actions listed in section 6.0.

3.2 TAITUARĀ – ADVICE FOR LOCAL GOVERNMENT

The role of local government is under close scrutiny at present, and a recent report [14] prepared by Taituarā[d] provides some strategic oversight regarding a range of drivers (including climate change).

The report introduces some key considerations for local government, so it can better support communities as they face a period of rapid transition due to changes in climate and other key drivers. A key message is the need to transition to a 'new normal', and to change some of our underlying assumptions and the way we do things in response to a 'disrupted' climate (Appendix A2.0).



For example, extreme weather events were previously considered to be rare. As they become increasingly frequent, land use decisions will need to consider the impacts of these type of events. Similarly, while there has previously been an assumption that all settlements will remain viable, in the future, built infrastructure may need to be moveable and vulnerable communities eventually relocated to 'safe zones'.

[d] Local Government Professionals Aotearoa

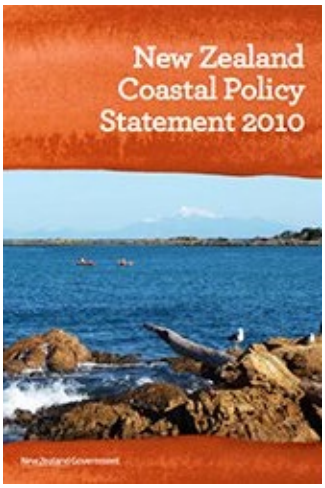
3.3 RESOURCE MANAGEMENT ACT 1991

The *Resource Management Act 1991* (RMA) remains a key piece of legislation in New Zealand. Under the RMA, local government is required to consider the effects of a changing climate on communities, and to incorporate climate change into existing frameworks, plans, projects, and standard decision-making procedures. The RMA is a key guiding document for how the Council considers climate change.[e]

The Clutha District Plan was made operative seven years after the RMA was enacted, in 1998. The plan notes that sites within the district "may be susceptible to sea level rise" and provides Council with the ability to exercise some control over the design of new buildings near the coast. However, it has limited ability to require new development to be located away from hazard-prone areas, with the exception of flood-risk areas in Milton.[7]

3.4 NEW ZEALAND COASTAL POLICY STATEMENT 2010

The *New Zealand Coastal Policy Statement 2010* (NZCPS) provides national policy direction for coastal management in New Zealand. It states policies to achieve the RMA's purpose of promoting sustainable management on a range of issues including coastal subdivision and coastal hazard risks. The NZCPS directs that climate change be taken into account in managing coastal hazard risk, and that management of these risks be done proactively by:

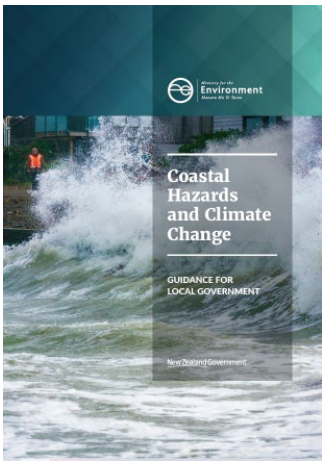


- *locating new development away from areas prone to such risks*
- *considering responses, including managed retreat, for existing development in this situation, and*
- *protecting or restoring natural defences to coastal hazards.*

A key policy in the NZCPS is to have regard to hazard risks and processes such as sea level rise over at least 100 years. Council's District Plan must give effect to the NZCPS.

3.5 MINISTRY FOR THE ENVIRONMENT GUIDANCE

The Ministry for the Environment's *Coastal Hazards and Climate Change* report [16] provides useful guidance for local government, including future projections for coastal areas, the leadership role of Councils, and the need for ongoing community involvement. The following section is relevant:



"Local government will need to identify communities that are vulnerable to the effects of sea-level rise and address the implications. Climate change will create risks for communities…that will increase over time. Different effects of climate change will be felt by vulnerable communities first, and some are already on the front line."

This report was published in 2017 and a full review of this guidance is expected from the Ministry for the Environment in 2024.

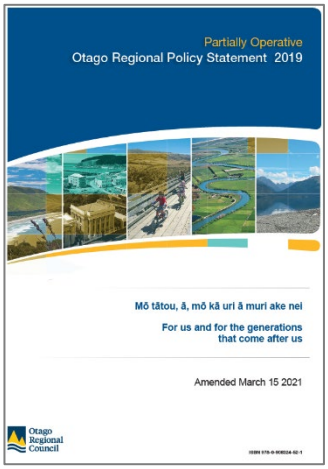
[e] In November 2023, the new Government announced it would cancel the proposed resource management reforms developed by the previous Labour Government (including the Climate Adaptation Act). The new Government has signaled it will develop new legislation to replace the RMA during its tenure.

3.6 REGIONAL CONTEXT

3.6.1 Regional Policy Statement

Current Regional Policy Statement

The current partially operative *Otago Regional Policy Statement* (RPS) includes an objective that 'Otago's communities are prepared for and able to adapt to the effects of climate change'.



This is supported by two policies which provide consistent guidance for local communities on the adverse effects of climate change.

Sea level rise

"Ensure Otago's people and communities are able to adapt to, or mitigate the effects of sea level rise, over no less than 100 years, by using:

a) A sea level rise of at least 1 metre by 2115, relative to 1990 mean sea level (Otago Metric Datum); and
b) Adding an additional 10mm per year beyond 2115, or the most up-to-date national or regional guidance on likely sea level rise."

Climate change:

Ensure Otago's people and communities are able to mitigate and adapt to the effects of climate change, over no less than 100 years, by all of the following:

a) Taking into account the effects of climate change, including by using the best relevant climate change data.
b) Applying a precautionary approach when assessing and managing the effects of climate change where there is scientific uncertainty and potentially significant or irreversible effects.
c) Encouraging activities that assist to reduce or mitigate the effects of climate change.
d) Encouraging system resilience.

A range of methods are listed in the RPS to achieve this objective, including:

- *Regional, City and District Council relationships* [f]
- *Regional, City and District Plans*
- *Research, monitoring, and reporting*
- *Non-RMA strategies and plans*
- *Education and information*
- *Advocacy and facilitation.*

New Regional Policy Statement

A new Regional Policy Statement is expected to be finalised in 2024. This will include integrated consideration of climate change within its policy framework.

3.6.2 Regional climate change collaboration

Under the Otago Mayoral and CE Forums, Council participates in the Otago Climate Officers' Group (OCOG), which helps to coordinate the wide range of climate change – related activities undertaken by local government in the Otago Region. Core work includes sequestration,

emissions scenario modelling and greenhouse gas emissions inventory at both regional and district levels.

3.6.3 Greenhouse gas emission inventory

The OCOG group is coordinating a greenhouse gas emission inventory report which is expected to be finalised in 2024. This will include various sources of greenhouse gas emissions. Of particular importance to the Clutha District is inventory data with respect to agriculture and forestry that addresses both carbon dioxide (CO2) and methane (CH4) greenhouse contributions. The inventory is expected to be updated on a bi-annual basis.

3.7 CLIMATE CHANGE RESPONSE ACT 2002

The *Climate Change Response Act 2002* provides a framework through which New Zealand can implement policies to contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels.

In 2019, this act was amended through the *Climate Change Response (Zero Carbon) Amendment Act 2019*. The amendments do four key things:

1. Set new domestic greenhouse gas emissions reduction target for New Zealand. These require:
    - all greenhouse gases, other than biogenic methane, to reach net zero by 2050.
    - emissions of biogenic methane to reduce to at least 10 per cent below 2017 levels by 2030, and to at least 24–47 per cent below 2017 levels by 2050.
2. Establish a system of emissions budgets to act as stepping stones towards the long-term target.
3. Require the Government to develop and implement policies for climate change adaptation and mitigation.
4. Establish a Climate Change Commission to provide expert advice and monitoring to help keep successive governments on track to meeting long-term goals.

3.7.1 National Adaption Plan and the Emissions Reduction Plan

The *national adaptation plan* and the *emissions reduction plan* are both requirements under the Climate Change Response Act 2002. They are not regulations in themselves, but they do set out the Government's plans to meet New Zealand's climate goals.

The *national adaptation plan* [21] sets out the Government's strategies, policies and proposals to address key climate change risks including:

- *Natural* (e.g., ecosystems, invasive species)
- *Human* (social cohesion and community wellbeing, displacement of communities)
- *Economy* (e.g., lost productivity, disaster relief expenditure)
- *Built* (e.g., risks to water supplies and buildings), and
- *Governance* (institutional arrangements are fit for climate change adaptation).

The government's *emissions reduction plan* [20] includes actions to help maximise opportunities and transition to lower emissions for the following sectors:

- *Transport* – i.e., changing the way we travel, improving our passenger vehicles and promoting a more efficient freight system.
- *Energy and industry* – preparing our renewable electricity sector to power the low-emissions economy, moving away from fossil fuels, and speeding up industrial decarbonisation through fuel switching and energy efficiency.

- *Agriculture* – continuing to develop and adopt the technology and practices that keep this sector on track to meet the biogenic methane targets and reduce long-lived emissions.
- *Waste and HFCs* – supporting the waste hierarchy, prioritising the reduction and diversion of waste from landfill (particularly organic), and reducing hydro-fluorocarbons (HFCs) with high-global warming potential.
- *Building and construction* – reducing building-related emissions and realising health or other co-benefits where possible.
- *Forestry* – establishing forest sinks that remove carbon from the atmosphere and promote biodiversity and wider environmental outcomes where possible.

Most of these sectors play an important part in Clutha's economy, and Council will monitor any legislative changes, and work with key stakeholders to implement any requirements.

Additional guidance for local government on how they should have regard to the *national adaptation plan* and the *emissions reduction plan* is available through a guidance note prepared by the Ministry for the Environment [22].

3.8 TE RUNANGA O NGAI TAHU CLIMATE CHANGE STRATEGY AND ACTION PLAN

A strategy [18] and action plan have been prepared by Ngai Tahu, to guide responses to the risks and opportunities presented by climate change, across the whole spectrum of Ngai Tahu interests, assets and activities. The strategy was developed through a comprehensive engagement process with whanau.

The central theme is kaitiakitanga (guardianship) and includes actions grouped under eight pou, including:

- Emit no greenhouse gases
- Marae and whanau resilience
- Careful wai (water) use
- Operations do not harm the environment
- Operations do not harm ecosystems
- Eliminate waste
- Grow renewable energy, and
- Education & community.

The strategy states that "Te Rūnanga will take appropriate action to adapt all areas of tribal interests and activity to withstand the compounding effects of our changing climate, to ensure Ngāi Tahu activities are aligned to … projected climate change outcomes, and to make the most of opportunities, so that Ngāi Tahu Whānui have every chance to thrive even in the most extreme scenarios."

It will be essential that Clutha District Council's adaptation and mitigation activities (as identified in section 6.0) evolve in an ongoing manner in response to insights from Māori. As Council listens more closely to the voices of iwi and hapū, improved knowledge and insights about the real impacts of climate change from a Māori perspective will emerge.

4.0 WHY CREATE THIS STRATEGY?

> *"Responsive leadership and a holistic approach to climate change is urgent. We must act now to avoid future risk and, at the same time, agree how to manage safety, existing risks, limitations and liabilities to underpin effective mitigation and adaptation."* [4]

There is a risk that the approach towards climate change adaptation in the Clutha District may be somewhat disjointed, focus on responding to certain types of natural hazard events, or concentrate only on certain locations. Although Council does consider the impacts of climate change through the Infrastructure Strategy and our Activity Management Plans, we don't necessarily have the consistent guidance, resources, and tools that we need.

Future-focused decision-making can be challenging, and people can be reluctant to engage on this issue - there are always plenty of other, 'more urgent' issues to address. The scale of change that is required for communities to adapt to climate change may be significant and at this stage, is not well understood.

There are a range of physical and human systems which may be affected by the impacts of climate change into the future. These include land-use planning; stormwater, wastewater, and drinking water infrastructure; roading and transport; and the finance and insurance sectors. Climate change impacts and implications can also spread or 'cascade' across systems, compounding to form multiple impacts across sectors.[5]

There may be cases where managed retreat needs to be considered. However, this should be a last resort option, and it is acknowledged that Council and local communities have a limited understanding of how a managed retreat process would be approached. One of the few examples of managed retreat in New Zealand occurred in the Clutha District at Kelso, after a series of major flood events in the 1970's and 1980's. [17]

There may be significant implications for local authorities, in terms of how climate change risks are managed. These include:

- The adequacy of current institutional arrangements.
- Interdependencies between agencies and assets – for example Three Waters, transport, flood risk management, and utility providers.
- The planning and design life of assets.
- Managing community expectations regarding future levels of service.
- Addressing uncertainty and changing risk profiles.
- Community understanding and engagement.
- Funding.
- Legal liability and legal challenges to delayed action.

Despite these challenges, Council (together with strategic partners such as the ORC) believes that it has a good understanding of the risks facing our district, and that it is best placed to engage with local communities on climate change adaptation. Additional work will be required, and this will need to focus on providing positive solutions to the challenges and opportunities that exist. This work is urgent, as the costs of inaction will be greater than the costs of action.

Figure 4-1 Pounawea, during a major storm surge event in April 2006 (Otago University Geography Dept)

Figure 4-2 Ross Place, Lawrence, following an intense downpour in February 2023

Council has some important responsibilities in relation to climate change. We have some good information about the impacts, key risks, and the uncertainties we are likely to face (noting that this information will continue to be refined into the future). We must use this information to inform our discussions with communities and other stakeholders, and where necessary, be prepared to assess a range of adaption options. This strategy is intended to provide a common framework through which climate change work can be integrated and coordinated throughout Council and between other agencies.

5.0 PRINCIPLES

This Climate Change Strategy is intended to provide a shared framework through which Council, the community, and other agencies can work to manage the risks associated with climate change. The strategy is based on a set of principles which are intended to guide the actions identified below, as well as future projects and decisions.

The principles are grouped under three core concepts, which are aligned with our overall goal to promote the environmental, social, cultural, and economic well-being of our communities. The principles draw from previous risk management work undertaken by Council,[7] national guidance,[8] and declarations by other councils.[9] & [10]

5.1 ENSURE SAFETY

- → As we manage the risks associated with climate change (both now and into the future) we will ensure the safety of people, and the effective operation of community infrastructure and public and private assets.
- → We will acknowledge those most affected, and address community concerns about the risks associated with climate change.
- → We will support our communities to adapt to climate change, recognising that capacity to do so is dependent on physical, social, economic, and political factors.
- → Actions to manage or mitigate the impacts of climate change will not negatively impact the wider community.

5.2 PLAN AHEAD

- → We will use resources wisely, so that the location and form of community assets and infrastructure will result in a more resilient community.
- → We recognise that allocating funding now to reduce the risks associated with climate change is an investment for the future.
- → We will manage for uncertainty by taking an adaptive risk management approach, to allow for changes in risk and in our understanding of natural hazards.
- → We recognise that the effects of climate change (including sea level rise) may not be felt until late within the planning horizon. We will ensure that future generations do not have to cope with the results of poor planning decisions made today.
- → We will adopt a responsible approach when considering new development on land which may be increasingly affected by climate-change impacts, and when mitigating the risk of existing development.

→ The risk associated with climate change will reduce over time by taking a broad-scale, adaptive approach over the longer term. The ability to respond to changes in the nature and extent of risk and provide the level of safety desired by the community is essential.

5.3 SUSTAINABLE LAND USE

→ Decisions enabling the sustainable and appropriate use of land will be informed by:
- Community awareness and acknowledgement of both the benefits and the risks that exist for development already located in hazard-prone areas.
- Consideration of all available options to manage climate change risk, including structural and non-structural options.
- Land use planning controls.

→ We accept that some parts of our district may require retreat and removal of infrastructure to adequately manage risks.

→ We will explore opportunities to build awareness of risk and encourage community-led steps to increase preparedness and resilience.

→ We will consider the predicted impacts of climate change on planning, constructing and renewal of key infrastructure to improve community resilience.

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6.0 CLIMATE CHANGE ACTION PLANS

The Clutha District Climate Change Project aims to provide a base-line data set to be incorporated into planning and decision-making. This data is summarised in sections 2.2 and 2.3 above, as well as through previous Council reports [2,6].

Future planning and decision-making will involve a range of processes at the Council and community level, and the following sections identify actions, grouped under five key areas. Some actions will need to be re-evaluated over time, and additional actions, to be implemented over the longer term (50-100 years), will also need to be developed.

Notes:

1. Where work has, or is already being undertaken, this is shown with a ✓ as well as any relevant references (section 8.0).
2. All actions listed in this strategy are important, but they need to be prioritised to enable efficient implementation.
3. The actions have been grouped into the following:
    - Highest priority actions
    - Medium priority actions
    - Other actions.
4. The tables below show the highest actions at the top, with lower priority actions listed below.

6.1 EMISSIONS

The actions listed below will help to reduce Council's own emissions and help us as we work with our communities to reduce the district's overall footprint. They include actions relating to waste management, as this activity can have a high emissions profile.

Priority	Action	Key partners
High	1. Identify landfills susceptible to climate change impacts and monitor risk over time.[g] ✓ [6]	
	2. Undertake regular district greenhouse gas emissions inventory, to allow us to monitor changes over time. ✓ [11]	• Otago Regional Council
Medium	3. Undertake regular Council greenhouse gas emissions inventory, so we can set realistic goals.	
Other	4. Reconfigure Council's waste management contracts to have a greener focus (e.g., focus on diverting material from the waste stream, landfill methane gas collection system).	• Waste management contractors
	5. Reduce the amount of waste generated by Council - incorporate packaging and life-cycle considerations within Council's Procurement Policy (see section 3.7).	• Suppliers
	6. Provide for increased energy efficiency of Council activities. Opportunities include: • Community housing upgrades. ✓ • Enviroschools education program. ✓ • Upgrades to water supply and wastewater infrastructure. • Promote travel efficiency & support public transport initiatives. • Direct emissions – e.g., replace coal-fired boilers or transition to low-emission vehicles.	• Suppliers • Community-based public/shared transport providers
	7. Support initiatives by the private sector to reduce emissions (advocacy, leadership).	• Agriculture sector [h]
	8. Support initiatives to improve the network of electric car chargers in the district. In early 2024, there were six public EV charging stations in the Clutha District.	• Various [i]
	9. Promote active transport, including support for local walking and cycling initiatives.	• Community

[g] Council is aware there may be closed landfills that have not yet been identified, which may be susceptible to coastal or riverbank erosion.

[h] Further work is required to understand what role Council might play in reducing private sector (e.g., agriculture, industry) greenhouse gas emissions – for example through our land use planning and building authority roles. Future versions of this strategy will include actions to address this matter.

[i] This action might be achieved through Council processes or relationships with stakeholders (e.g., PowerNet, Waka Kotahi).

6.2 COASTAL AND FLOOD DEFENCES

Parts of the Clutha District are heavily reliant on flood and coastal defence mechanisms. These include the Lower Clutha Flood Protection and Drainage Scheme, and other flood banks and seawalls maintained by CDC. Previous work by ORC [12] notes that parts of the scheme will likely be under threat within the next few decades due to the impacts of climate change, including sea level rise and coastal erosion. The low-lying nature of the lower Clutha Delta provides limited topographical resistance to inundation from the sea or the river (Figure 6-1). ORC intends to review the performance of the scheme as part of the development of a natural hazards adaptation strategy (section 2.5 – Box 1). Actions for CDC are listed below.

Priority	Action	Key partners
High	1. Advocate on behalf of the community and ensure that the principles underlying this strategy are incorporated into ORC's review of the Lower Clutha Flood Protection and Drainage Scheme.	• ORC • Community
Other	2. Support/work with ORC to monitor sea and groundwater levels, and shoreline change on the Clutha Delta. ✓	• ORC
	3. Work with other agencies to maintain a robust warning, prediction, communication, and response system for natural hazard events. ✓	• Emergency Management Otago • ORC

Figure 6-1 The lower Clutha Delta in flood (looking from Kaitangata towards Paretai) 15 October 1978 (ORC)

6.3 LEADERSHIP, GOVERNANCE AND EDUCATION

As a Council, we believe it is important to show leadership when it comes to climate change. We also understand that it is important to work together with other groups and individuals, because none of us can effectively respond to this challenge alone. Important considerations include meeting our legal liabilities, and that that our institutional arrangements are adequate to meet the changing risks and potential loss of service levels to the community. The actions listed below relate to Council's leadership, governance, and education roles.

Goal 1: Collaborate with our strategic partners and the community, for a unified response to climate change.

Priority	Action	Key partners
Medium	1. Maintain active working relationships with key stakeholders such as the agricultural sector, primary industry, mana whenua and youth. ✓	• Community groups • Clutha District Youth Council • Schools • Neighbouring councils • Mana whenua • ORC • Central Government
	2. Work with regional and central government on climate change related issues, and make submissions, as appropriate, on proposed policy and legislation. ✓	
Other	3. Investigate options for community collaboration to improve understanding, and to mitigate climate change impacts.	
	4. Continue working with ORC and other councils in the region to discuss climate change issues and progress joint projects.	

Goal 2: Our key documents, decisions, and operating procedures align with our climate change principles.

Priority	Action	Key partners
Medium	1. Ensure that Council documents, decisions and operating procedures align with the climate change principles listed in this strategy.	• Community
Other	2. Maintain organisational awareness of the climate change principles and actions.	
	3. Incorporate the actions in this strategy into documents due for review (e.g., Activity Management Plans, Long Term Plan). ✓	
	4. Report on progress towards actions in annual reports.	
	5. Review this Climate Change Strategy every three years.	

Goal 3: The community understands climate change issues and Council's response.

Priority	Action	Key partners
Other	1. Raise awareness about climate change impacts and risks through Council platforms (e.g., website, libraries).	• Community • Council library and service centre staff
	2. Develop a 2-page 'plain English' summary of this strategy.	
	3. Celebrate success and key milestones.	
	4. Continue to review and update communications material and methods.	

6.4 LAND USE AND THE BUILT ENVIRONMENT

To be resilient to the impacts of climate change, our communities will increasingly rely on appropriate use of land, as well as a robust built environment. The actions listed below aim to improve the resilience of community infrastructure and ensure that land use activities can cope with anticipated climate change impacts.

Goal 1: Existing and future development is resilient and avoids the worst impacts of climate change.

Priority	Actions	Key partners
High	1. Incorporate climate change awareness and risk mitigation into relevant council activities (including land-use zoning, urban design, building consents and infrastructure planning). ✓ [7]	• Local communities • ORC • Central Government
	2. Give effect to existing legislation and policy: • Regional Policy Statement, NZ Coastal Policy Statement • Resource Management Act, Building Act • National Adaptation Plan • National Emissions Reduction Plan ✓	
	3. Identify opportunities for enhanced and climate resilient building specifications and design. Examples include alternative types of development such as eco-villages and cohousing, infrastructure improvements to provide increased capacity for urban intensification, and green infrastructure.	

Goal 2: Identify, understand, and reduce risk to communities, and the infrastructure and services which support them.

Priority	Actions	Key partners
High	1. Identify the impacts of climate change on local communities. ✓ [2]	• Local communities • ORC • Other infrastructure providers • Mana whenua • Central Government
	2. Identify key risks to the infrastructure which supports local communities. ✓ [6]	
	3. Monitor ongoing impacts (e.g., through customer service requests and complaints) and use this information to inform decisions on land use and infrastructure projects. ✓	
	4. Provide relevant information through LIM's. ✓	
	5. Council's Infrastructure Strategy to: a. Identify work required to future proof critical infrastructure, and likely timing of that work. b. Identify potentially redundant infrastructure.	
	6. Collaborate with ORC on the Clutha Delta natural hazards adaptation strategy (section 2.5 – Box 1), and on the development of then next Otago Climate Change Risk Assessment.	
	7. Infrastructure design and renewal work. ✓	
	8. Involve, and collaborate with local communities: a. Create stakeholder action groups (as appropriate – also see section 6.3). b. Determine the pathways communities may need to take, to adapt to the impacts of climate change.[j] *c.* Prioritise high-risk areas.	

[j] 'Adaptive pathways' is a process recommended by MfE. It identifies pathways forward despite uncertainty, while remaining responsive to change should this be needed (adaptive).

6.5 INFRASTRUCTURE

As noted in section 6.4, our communities will increasingly rely on infrastructure which is resilient to the impacts of climate change. This includes Council-owned assets (Three Waters, transport, public amenities), and those owned by other providers. The actions listed below aim to incorporate existing knowledge into future infrastructure planning, improve knowledge where necessary, and use relevant information to inform long-term community plans.[k]

Goal 1: Identify, understand, and reduce risk to Three Waters infrastructure (see also section 6.4).

Priority	Actions	Key partners
High	1. Infrastructure Strategy to identify work required to future proof critical Three Waters infrastructure, with a focus on assets with a high vulnerability. 2. Consider up to date climate change information, when planning future Three Waters projects. 3. Identify areas where the risk from storm water overflow is high (capacity, vulnerable assets). 4. Include risk to, and from, Three Waters infrastructure in community engagement/stakeholder action group programs.	• Central Government • Local communities

Goal 2: Build a resilient transport network for the future.

Priority	Actions	Key partners
High	1. Infrastructure Strategy to: • Apply the most up to date knowledge to planned transport projects. • Identify and prioritise options to adapt the transport network to improve resilience, focusing on existing areas of extreme risk. 2. Work with other transport providers in the southern South Island to provide resilient transport infrastructure. 3. Include transport network adaptation as a key part of community engagement/ stakeholder action group programs (section 6.3).	• Waka Kotahi • Otago Regional Council • Neighbouring territorial authorities • Local communities

Goal 3: Reduce climate change risks to other infrastructure (energy, tele-communications)

Priority	Actions	Key partners
Medium	1. Incorporate information about risks to other infrastructure (where known) into the review of key documents. 2. Work with Emergency Management Otago (EMO) and infrastructure providers to improve understanding of risk to all lifelines, at the local community level. 3. Include risks associated with failure of other critical infrastructure, as part of community engagement/ stakeholder action group programs.	• EMO • Otago Lifelines Group (infrastructure providers)

[k] Council's Infrastructure Strategy will consider 'trigger points', where the level of service provided by a critical piece of infrastructure will be significantly impacted (e.g., a certain amount of sea level rise, or a certain frequency of flood inundation). The strategy will also consider the lead-in timeframe for critical decisions, and link with the Long Term Plan to ensure appropriate community and stakeholder consultation is undertaken.

7.0 HOW WILL WE MEASURE THE SUCCESS OF THIS STRATEGY?

This Climate Change Strategy applies to all Clutha District Council activities and operations, with climate change to be considered at all levels of decision-making. Internal promotion of the strategy will be undertaken to ensure consideration of climate change is embedded throughout all Council business and day-to-day activities.

The action plans included in this strategy generally include short to medium term actions (1-10 years). We will monitor progress against these and celebrate our steps in the right direction as we move towards our targets. Additional, longer-term actions will be included in subsequent reviews of this strategy.

The Council's Regulatory and Policy Committee will receive annual updates on progress towards the targets set out in this strategy. A report on the climate change project will also be included in the annual report at the end of each financial year.

7.1 STRATEGY REVIEW

Due to its broad nature, and its relevance across all of Council's operations and activities, this strategy will be reviewed every three years (or earlier if required). Knowledge of natural hazards, and climate change impacts is increasing rapidly, and this means that key information and actions in the strategy will need to be regularly reviewed. Future reviews will involve key local stakeholders in the process and also consider their policies and objectives.

Council will also periodically review the risks associated with climate change [6] as new information becomes available. This will ensure that our planning responses can be effective and adapt as the context changes. All reviews will be in line with current Central Government legislation and policy.

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APPENDICES

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A1.0 APPENDIX 1: PREVIOUS COMMUNITY CONSULTATION

A1.1 OUR PLACE CATLINS COMMUNITY PLAN

A consultation program to inform the *Our Place Catlins Community Plan* was held in early 2019. Climate change was one of the focus areas for discussion – with a key question being:

> *"How can we start planning and preparing response options so that our communities, and the services and infrastructure which support them can remain resilient into the future?"*

The feedback included the following:

- More than 80% of respondents thought that Council and communities in The Catlins should plan ahead for the effects of climate change.
- The marine and coastal environment was considered particularly vulnerable to climate change impacts. This includes wildlife, coastal roads, and locations such as Catlins Lake, Pounawea, Newhaven, Surat Bay, and Kaka Point.
- Other vulnerable items identified were water infrastructure and low-lying areas.
- Key areas where there should be a focus on managing climate change impacts included coastal erosion, roads, and avoiding development on low-lying/sandy coastal areas.
- A small number of respondents felt that managing the effects of climate change is not necessary.

> *"Beach front areas are particularly vulnerable, in danger of storm surges, rising sea level and the effects of nearby earthquakes on the sea. I think that many cribs … should not have been allowed to have been built so close to the sea and at sea level."*
>
> - Catlins resident

A1.2 2021/31 LONG TERM PLAN

Some feedback received through 2021/31 Long Term Plan consultation process related to climate change (as part of the revised Living and Working in Clutha Strategy). Of the feedback received (Table A1.1), most was supportive of Central Government, Council, or the wider community actively planning for the impacts of climate change.

Table A1.1 Climate change feedback received through the 2021/31 Long Term Plan consultation

We need to be more proactive with tackling climate change and environmental issues.
Let the Government lead the climate change as they have access to more money and resources and then every council is not reinventing the wheel.
Cows, concrete, fossil fuels need to be reduced, or replaced. Many options available e.g., hydrogen.
Demands of climate change means more spending in the short term to meet obligations.
Climate change - lots of small seaside towns.
The public health outcomes of climate change are well documented in the legislative reforms for Land and Water. While this is a regional council responsibility, we note that Council has considered the effects of climate change and has taken this into consideration, for example with infrastructure renewals, which will ensure positive wellbeing outcomes for the district's population.
Support a Plan for climate change
Climate Centred: Clutha District is resilient to the impacts of climate change. Any activities or developments in the region must actively mitigate their contribution to climate change. People understand the threat and urgency of climate change and are supported in climate change practices.
The Long-Term Plan should include measures to avoid or reduce climate change impacts on historic heritage wherever possible.

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A2.0 APPENDIX 2: TRANSITION TO LIVING IN A DISRUPTED CLIMATE

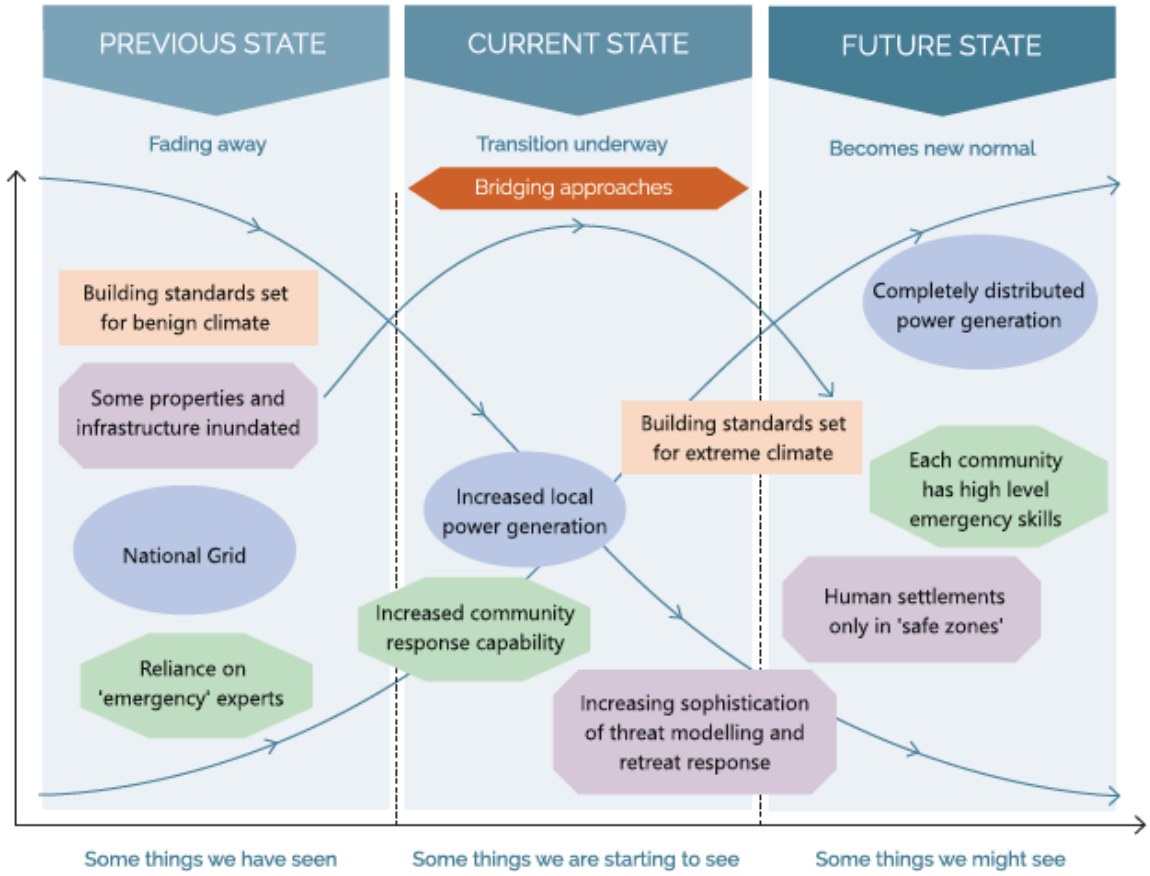

Figure A2-1 Transition to living in a disrupted climate[14]