



THE  
LEVER  
ROOM

WAIKATO REGIONAL  
COUNCIL:  
CLIMATE ACTION  
ROADMAP

A Proposal by Rebecca Mills

---

MAY, 2020

# 1. EXECUTIVE SUMMARY

This Climate Change Action Roadmap provides a comprehensive perspective on Waikato Regional Council's (WRC's) current response to climate change and where it is best placed to take future action.

This document takes a full systems approach and seeks to make sense of the highest leverage pathways suitable for WRC to construct its response roadmap. Practically speaking it focusses on areas that represent both the biggest challenges and opportunities, and are currently within regional council spheres of influence. It is also an important first step to enable the delivery of a wider collaborative and comprehensive climate change response strategy.

This paper summarises the extent of the challenge, the current policy response and clarifies WRC's role.

The need for climate change mitigation and adaptation is urgent. We need to reduce emissions now in order to minimise the significant adaptation costs and challenges that councils and our communities will experience if change is not made. This work is also nationally significant, as Waikato Region's per capita net emissions are nearly 50% higher than the national average (14.8 vs 11.6 tonnes CO<sub>2</sub>e per capita).<sup>1</sup> The high-emission Waikato economy, compared to the national average, deepens the region's exposure to the impacts of policy initiatives to reduce emissions.

New Zealand is committed to playing its part in implementing the Paris Agreement, which is an international commitment to limit global warming to well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to no more than 1.5°C.

WRC has specific climate responsibilities through the Resource Management Act 1991 and the Climate Change Response Act 2002 and there are a range of options available to WRC to optimise its regional response. WRC has already committed to emissions reductions through its in-house activities, and seeks a 70% reduction in its activities by 2030.

<sup>1</sup> GHG Inventory Waikato Region: Emissions Summary – Detail 2018/19

This paper identifies the following ten clear roadmap pathways that WRC will progress as a matter of priority:

1. Sustainable Investment Pathway – to support WRC investments that are underpinned by sustainability principles and which reduce investment risk from climate change.
2. Agriculture and Soils Pathway – to work with the agricultural sector to develop integrated approaches to reduce emissions, increase biodiversity and improve water quality.
3. Biodiversity Pathway – to recognise the risks of climate change for biodiversity, apply strategies to improve biodiversity and reduce pest incursion, and support inter-regional and central government commitment.
4. Afforestation Pathway – to proactively identify areas for afforestation that will deliver climate-related benefits, provide the best return for freshwater quality, and support community resilience and safety.
5. Drainage and Flood Protection Pathway – to determine the extent to which current infrastructure and flood protection schemes are fit for purpose, and respond accordingly.
6. Coastal Communities Pathway – to work regionally to reduce the risk of climate-exacerbated natural hazards on the coastal environment, and manage the impacts of sea level rise.
7. Freshwater Allocation Pathway – to ensure freshwater allocations reflect both changing land use and climate change signals.
8. Energy and Electricity Supply Pathway – to facilitate access, development, and use of renewable energy sources within the region.
9. Māori Economic Development Pathway – to work with iwi and other Māori organisations to use mātauranga and climate data to support sustainable economic development that benefits current and future generations.
10. Transport Pathway – to reduce the exposure of the sector to the increasing costs of carbon emissions, and enable the transition to low carbon transport fuels in a changing climate.

To successfully implement this Climate Action Roadmap, WRC faces a decision on where best to initially focus, to achieve maximum traction and impact. Clearly there are many actions that can and are being immediately taken in-house, and across procurement and planning activities.

The research presented in this report highlights a key opportunity to focus reduction efforts on agriculture as it generates 69% of all emissions. The region may also consider options for reducing emissions from transport and increasing carbon removal potential through forestry. In order for Waikato to rapidly transition to a low-emissions future, forestry, land use, and land-use change should be areas of targeted focus.

WRC's Climate Action Committee is currently taking a leadership role in facilitating collaborative action, community engagement, and communication.<sup>2</sup> This Climate Action Roadmap acts as a step on this leadership path by providing a transparent view into both the planned and active actions of WRC.

Beyond this report, a wide range of stakeholders, including Māori, have indicated support for collaborative action in the Waikato to help position the region for the future.

<sup>2</sup> Waikato Regional Council. 21 February 2020. New climate change committee springs into action. Media Release. Accessed: <https://www.waikatoregion.govt.nz/community/whats-happening/news/media-releases/new-climate-change-committee-springs-into-action/>

# CONTENTS

|  |    |
|--|----|
| 1. Executive Summary.....                            | ii |
| 2. Introduction.....                                 | 6  |
| PART 1: LAY OF THE LAND.....                         | 10 |
| 3. Current Policy Response and National Targets..... | 10 |
| 4. Emissions in New Zealand.....                     | 13 |
| 5. Emissions in the Waikato Region .....             | 15 |
| 6. Partnership with Māori .....                      | 17 |
| 7. WRC Role and Legal Responsibilities.....          | 17 |
| PART 2: ROADMAP PATHWAYS.....                        | 19 |
| 8. WRC Ambition and Pathway Goals.....               | 19 |
| 9. WRC In-House Pathway .....                        | 20 |
| 10. Sustainable Investment Pathway.....              | 22 |
| 11. Agriculture and Soils Pathway .....              | 25 |
| 12. Biodiversity Pathway .....                       | 27 |
| 13. Afforestation Pathway .....                      | 28 |
| 14. Drainage and Flood Protection Pathway.....       | 30 |
| 15. Coastal Communities Pathway .....                | 32 |
| 16. Freshwater Allocation Pathway.....               | 35 |
| 17. Energy and Electricity Supply Pathway .....      | 36 |
| 18. Māori Economic Development Pathway .....         | 38 |
| 19. Transport Pathway .....                          | 38 |
| 20. Pathways of Greatest Leverage for WRC.....       | 41 |
| 21. Areas for Further Work.....                      | 43 |

## 2. INTRODUCTION

### 2.1 BACKGROUND

Adapting to the impacts of a changing climate is a priority focus for councils across New Zealand, so too is supporting communities on the national journey to reduce greenhouse gas emissions towards a zero-carbon economy by 2050. This Climate Change Action Roadmap provides a comprehensive perspective on both Waikato Regional Council's (WRC's) current response and where it is best placed to take future action on climate change. The Roadmap assesses the suitability of all levers currently within regional council spheres of influence.

It's important to note WRC's commitment to a strong focus on climate change, underscored by its recent decision to create a new committee with climate as a specific focus. This report represents a further step for the Council as part of its ongoing contribution to wider community efforts.

Globally, the understanding of climate change has shifted from a perception of an environmental problem to one that is recognised as a threat to financial systems, economic security, and a matter of national and international security. Projections for local climatic changes present significant implications for the Waikato Region's environment, economy, and the safety of our communities.

### 2.2 CONTEXT

The Waikato Region is New Zealand's fourth largest region and is particularly exposed to the effects of climate change with significant coastal development, landslide and riverine flooding potential and increasingly, with drought-prone areas.

In a WRC-commissioned report on future trends in the Waikato Region, climate change was identified as a key element among a series of environmental tipping points that risk shifting the Earth's balance into abrupt and irreversible change. This is likely to be one of the most important issues for the Waikato Region in terms of impacts on social, economic, and environmental wellbeing.<sup>3</sup>

<sup>3</sup> Field A, Hirsch L, Mills R, Norgrove K. 2019. Strategic trends and implications: Waikato Region. Political, economic, social, technological, legal, and environmental analysis. Auckland: Dovetail and The Lever Room.



On a per capita basis, Waikato's gross emissions are significantly higher than the national average.<sup>4</sup> The high-emission Waikato economy, compared to the national average, further exposes the region to the impacts of policy initiatives to reduce them.

This roadmap addresses both the mitigation and adaptation aspects of climate change within the existing sphere of influence of WRC. In brief, mitigation addresses the causes of climate change (accumulation of greenhouse gases in the atmosphere), whereas adaptation addresses the impacts and implications of climate change.

## 2.3 THE OPPORTUNITY AND CURRENT RESPONSE

WRC has long recognised declining natural capital and climate change as regional risks and has committed to taking clear action to help position the region for the future. This report provides an overview of these actions and intended future commitments.

There are a range of options available to WRC to refine and optimise its regional response. A 2018 stocktake of Councils across the country highlighted two key approaches taken by other councils:<sup>5</sup>

- Some councils have focused on developing and implementing climate change action plans that require broad commitment to achieving an emissions reduction target through action across all facets of the organisation.
- Other councils have identified specific target areas where they can cut down on emissions. In many cases, emissions reductions are an indirect consequence of councils taking a more sustainable approach to the way they do things.

Councils recognise that there are a range of areas in which they can contribute to greenhouse gas emissions reductions. These include but are not limited to: procurement decisions; by the way in which infrastructure is designed and operated; through land use planning; by engagement and collaboration with the community; through partnerships with external organisations; through internal

<sup>4</sup> Stancu C, Marquart M. 2017. Waikato Region greenhouse gas inventory - July 2015 to June 2016. Auckland: Prepared for Waikato Regional Council by Envirostrat and AECOM. <https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/TR201731.pdf>

<sup>5</sup> Local Government New Zealand. 2018. Councils' climate change mitigation work: A stocktake of emissions reduction activities. Wellington: LGNZ. <https://www.lgnz.co.nz/assets/Uploads/f4cafb5ec0/46628-LGNZ-Summary-of-Emission-Reduction-7-Proof-FINAL.pdf>

decision-making processes; via policy decisions and frameworks or strategies designed to promote organisation-wide behavioural change.

This document takes a full systems approach and seeks to make sense of the highest leverage pathways suitable for WRC to construct its response roadmap. Practically speaking it focusses on areas that represent both the biggest challenges and opportunities for the council.

WRC's recently established Climate Action Committee has the responsibility to inform strategic leadership on climate change mitigation and adaptation in the Waikato Region. It will achieve this through informing the development of climate action initiatives, sharing information, and facilitating collaborative action to reduce emissions (mitigation) and prepare communities for the impacts of climate change (adaptation).

A key opportunity for the Climate Action Committee is a leadership role in facilitating collaborative action, community engagement, and communication.<sup>6</sup> This Climate Action Roadmap acts as a step on this leadership path by providing a transparent view into both the planned and active actions of WRC.

Beyond this report a wide range of stakeholders, including Māori, have indicated support for a Regional Climate Action Roadmap to guide collaborative action in the Waikato as part of New Zealand's transition to net-zero carbon by 2050.

## 2.4 WHY NOW?

*Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems.<sup>7</sup>*

In 2018, the world's leading climate scientists released a report through the IPCC. In it, they warned of a 12-year window for global warming to be kept to a maximum of 1.5°C, beyond which even half a

<sup>6</sup> Waikato Regional Council. 21 February 2020. New climate change committee springs into action. Media Release. Accessed: <https://www.waikatoregion.govt.nz/community/whats-happening/news/media-releases/new-climate-change-committee-springs-into-action/>

<sup>7</sup> IPCC. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. Geneva, Switzerland: IPCC <https://www.ipcc.ch/report/ar5/syr/>



degree will significantly worsen the risks of drought, floods, extreme heat, and poverty for hundreds of millions of people.<sup>8</sup>

For New Zealand, future projections show a warmer, wetter, and windier climate, with more extreme daily and seasonal variation and inconsistent geographic effects. Over the next century<sup>9</sup>, the Waikato Region can expect rising sea levels, more extreme weather, drier warmer summers, milder winters, and shifting seasons. Within the region, it is projected that drought risk will increase in the north and east, and there will be more intense rainfall and increased wind in the west. These climactic changes have implications for local communities with increased risk from droughts and from natural hazards such as river and coastal flooding, coastal erosion, and severe weather.<sup>10</sup>

The need for climate change mitigation and adaptation is urgent. We need to reduce emissions now, in order to minimise the significant adaptation costs and challenges that councils and our communities will experience if change is not made.

New Zealand has lacked a coherent plan for transitioning to a net-zero emissions economy for a long time. However, territorial and regional authorities have demonstrated ongoing commitment to reducing emissions in their organisations and communities. This document sets out a roadmap for the Waikato Region, which will guide the climate action activity for the WRC in years to come.

<sup>8</sup> IPCC. 2018. Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty: Summary Report for Policymakers. Geneva, Switzerland: IPCC <https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/>

<sup>9</sup> Projections are nominally referred to as occurring over the next century, but some changes are recognised to occur beyond this due to time lags in natural systems. An example is the ongoing expectations of sea level rise over coming millennia.

<sup>10</sup> Ministry for the Environment. 2016. Climate projections for New Zealand: Snapshot June 2016. Wellington: MfE <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/climate-projections-snapshot.pdf>

# PART 1: LAY OF THE LAND

## 3. CURRENT POLICY RESPONSE AND NATIONAL TARGETS

### 3.1 PARIS AGREEMENT

The New Zealand government ratified the Paris Agreement in April 2017. The Paris Agreement is an international commitment to limit global warming to well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to no more than 1.5°C.<sup>11</sup>

The Paris Agreement differs from previous international treaties and conventions in that it emphasises processes rather than defined outcomes. It requires signature countries to communicate nationally determined contributions. In addition, countries must progressively work towards increased ambition via reviews every five years.<sup>12</sup>

The Paris Agreement obliges signatories to develop plans to address climate adaptation, as well as mitigation, with the understanding that global emissions will need to peak as soon as possible, to achieve the goal of net-zero emissions by mid-century. 196 countries are parties to the agreement. For global warming to remain below 2°C, emissions reductions of 60-80% must be achieved.

### 3.2 NATIONAL LEGISLATION

Climate change is specifically mentioned in two New Zealand statutes relevant to the roles and functions of local government:

- Resource Management Act 1991; and
- Climate Change Response Act 2002

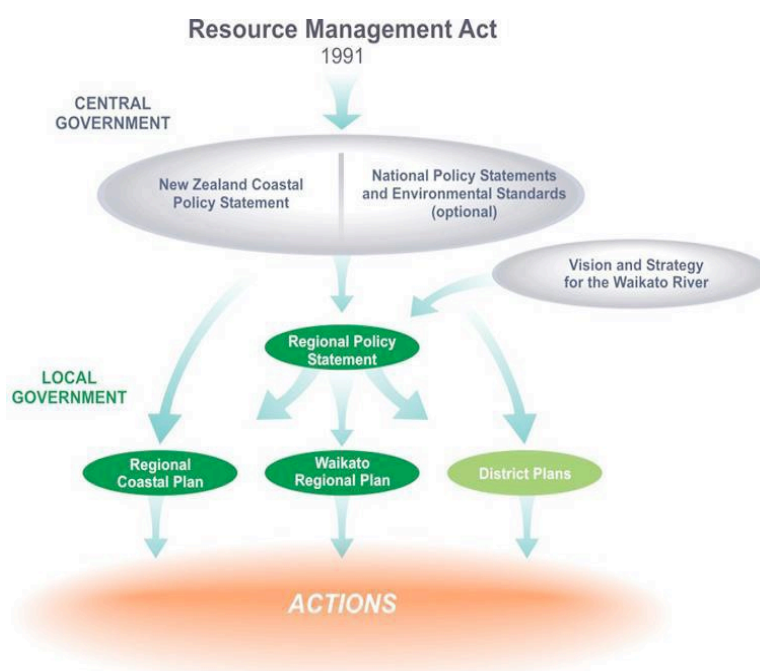
<sup>11</sup> United Nations. 2015. Paris Agreement. Paris: United Nations <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>12</sup> Harvey H. Orvis R. Rissman J. 2018. Designing climate solutions: A policy guide for low carbon energy. Washington: Island Press <https://www.energypolicy.solutions/guide/>

### 3.2.1 RESOURCE MANAGEMENT ACT

The Resource Management Act (RMA)<sup>13</sup> mentions climate change as an ‘other matter’, where persons exercising functions and powers under the Act must have particular regard to the effects of climate change. Within its design, the Act has a system of direct hierarchical linkages which align central government directions with the functions of regional councils and territorial authorities. For WRC, the RMA is integrated into the Regional Policy Statement with respect to resource allocation, provision of infrastructure and the reduction of risks from natural hazards with land use (Figure 1).

Figure 1. How the Resource Management Act is integrated into WRC policy and actions



During the course of writing this Roadmap document, New Zealand’s Parliament Environment Select Committee reported back on the 2019 Resource Management Act Amendment consultation. The Select Committee recommended repealing its anti-climate mitigation provisions, and that council decisions must link to emission reduction targets inserted into the Climate Change Response Act under the Zero Carbon Bill.<sup>14</sup>

<sup>13</sup> New Zealand Government. 1991. Resource Management Act. Wellington: Parliamentary Counsel Office  
<http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230265.html>

<sup>14</sup> New Zealand Government. 2019. Climate change response (zero carbon) amendment bill. Wellington: Parliamentary Counsel Office  
[http://www.legislation.govt.nz/bill/government/2019/0136/latest/LMS183742.html?search=qs\\_act%40bill%40regulation%40deemedreg\\_Climate+Change+Response+\(Zero+Carbon\)+Amendment+Bill\\_resel\\_25\\_h&p=1](http://www.legislation.govt.nz/bill/government/2019/0136/latest/LMS183742.html?search=qs_act%40bill%40regulation%40deemedreg_Climate+Change+Response+(Zero+Carbon)+Amendment+Bill_resel_25_h&p=1)

The RMA amendment bill itself is mostly about freshwater, but it also reversed legislation from 2004 which prevented regional councils from considering the effects of climate change when making rules or assessing applications relating to discharges of greenhouse gases. At the time, climate policy was considered to be an issue best addressed nationally by the Emissions Trading Scheme.

### 3.2.2 CLIMATE CHANGE RESPONSE ACT 2002

The Climate Change Response Act 2002<sup>15</sup> and associated regulations is the Government's principal response to managing climate change. A key mechanism for this is the New Zealand Emissions Trading Scheme which puts a price on greenhouse gas emissions, providing an incentive (weak at present values of New Zealand emission units) for people – through government policy – to reduce emissions and plant forests to absorb carbon dioxide.

In November 2019, the Climate Change Response (Zero Carbon) Amendment Bill<sup>14</sup> received its third reading and passed into law with near unanimous support. The amended Act<sup>16</sup> provides a framework by which New Zealand can develop and implement clear and stable climate change policies that:

- Contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5°C above pre-industrial levels; and
- Allow New Zealand to prepare for, and adapt to, the effects of climate change.

The amendment has four elements:

1. Establishing an independent Climate Change Commission, to provide independent expert advice and monitoring to advise future governments on meeting the Paris Agreement targets.
2. Setting up a split track for the government's 2050 greenhouse gas emissions target (consulted on in 2018). A target to reduce biogenic methane levels below 2017 levels was set with an interim reduction of 10% by 2030, and between 24%-47% by 2050. All other greenhouse gases are to be reduced to net-zero by 2050.
3. Creating a series of five-yearly emissions reduction budgets to provide a market signal, reduce abrupt policy changes, and in the process create certainty.

<sup>15</sup> New Zealand Government. 2002. Climate change response act. Wellington: Parliamentary Counsel Office <http://www.legislation.govt.nz/act/public/2002/0040/latest/DLM158584.html>

<sup>16</sup> New Zealand Government 2019. Climate change response (zero carbon) amendment act 2019. Wellington: Parliamentary Counsel Office <http://www.legislation.govt.nz/act/public/2019/0061/latest/LMS183736.html>

4. Establishing a range of climate change adaptation measures to identify the risks to the nation and ensure that there is a plan to address them.

Importantly, the amended Act requires that the first emissions reduction plan and the first national adaptation plan are published by the Minister of Climate Change. It also expressly permits decision-makers acting under other legislation to take statutory emissions targets, emissions budgets, and emissions reduction plans into account.

WRC's Climate Action Committee will be key to supporting compliance with the Climate Change Response Act. Under this legislation, Council will become a 'Reporting Organisation' and may be required to report a description of:

- Governance in relation to the risks of, and opportunities arising from climate change;
- Actual and potential effects of the risks and opportunities on the council's business, strategy, and financial planning; and
- Processes for identifying, assessing, and managing the risks, metrics, and targets used to assess and manage risk and opportunities; and any other matter specified in regulations.

The national framework under the legislation also provides for whole of country, whole of economy targets. It is recognised that the transition to a low carbon economy through adaptation and mitigation cannot be pursued by central government without the involvement, and actions of local government.

Aligning with the commitment to set up a system of emissions budgets to act as stepping-stones towards the long-term target, the Ministry for the Environment is developing a provisional emissions budget for 2021–2025 period.<sup>17</sup> This budget process is expected to bring the importance of understanding the emission gap and the trajectory change for emissions into perspective.

## 4. EMISSIONS IN NEW ZEALAND

*When we look at the pathway to zero net emissions by 2050, there are two things that stand out from this report – firstly, we have a long way to go, but secondly, that the scale of what is required goes beyond what current policies will achieve.*

*Hon James Shaw, Minister for Climate Change, April 2020*

<sup>17</sup> More information is available under 'Next Steps' at: <https://www.mfe.govt.nz/climate-change/zero-carbon-amendment-act>

New Zealand's Greenhouse Gas Inventory is the official annual report of all anthropogenic (human induced) emissions and removals of greenhouse gases in New Zealand. The most recent inventory contains all major emissions trends from 1990 to 2018.<sup>18</sup> In 2018, net emissions fell by 3% from 2017, however, since 1990 New Zealand's net emissions rose by 57.2%. The four main net emission sources were:

- Enteric fermentation from dairy cattle (methane)
- Fuel use in road transportation (carbon dioxide)
- Land remaining forest land
- Land converted to forest land

In 2018, gross emissions decreased by 1% compared to 2017 levels. However, since 1990, New Zealand's gross emissions increased by 24% (15.3 million tonnes CO<sub>2</sub>e), with an average annual growth of 0.7%. The five main gross emission sources were:

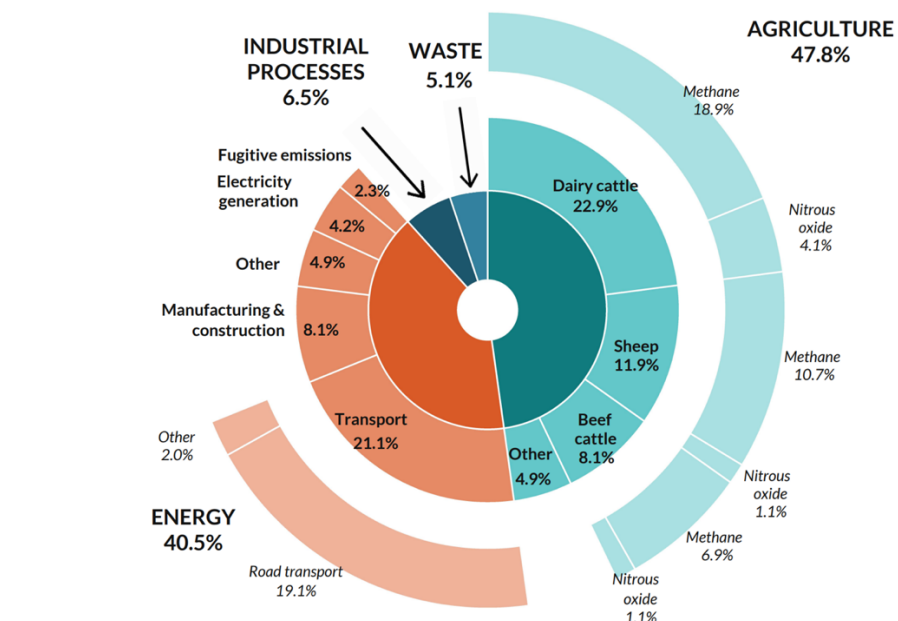
- Enteric fermentation from dairy cattle (methane)
- Fuel use in road transportation (carbon dioxide)
- Agricultural soils from increased fertiliser use (nitrous oxide)
- Industrial and household refrigeration and air-conditioning systems from increased use of hydrofluorocarbon-based refrigerants that replaced ozone depleting substances (fluorinated gases)
- Manufacturing industries and construction (carbon dioxide)

The profile of New Zealand's emissions is illustrated in Figure 2.

<sup>18</sup> Ministry for the Environment. 2020. New Zealand's Greenhouse Gas Inventory 1990-2018: Fulfilling reporting requirements under the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Wellington: New Zealand Government <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/new-zealands-greenhouse-gas-inventory-1990-2018-vol-1.pdf>



Figure 2. New Zealand's Greenhouse Gas Inventory 1990-2018<sup>18,19</sup>



## 5. EMISSIONS IN THE WAIKATO REGION

Accurate tracking of emissions trends within a sound understanding of the region's unique emissions profiles (i.e. the sources of emissions by sectors and gases) is needed. With this understanding, prioritised actions through defined pathways may be developed to inform the Climate Action Roadmap.

The first baseline emissions inventory for the Waikato Region was prepared in 2017 and covered the 2015/16 financial year.<sup>20</sup> It followed the methodology outlined by the World Resources Institute<sup>21</sup>. Most recent reported activities are for the period from 1 July 2018 to 30 June 2019. In that period,

<sup>19</sup> Note, percentages in the graph may not add up to 100 due to rounding

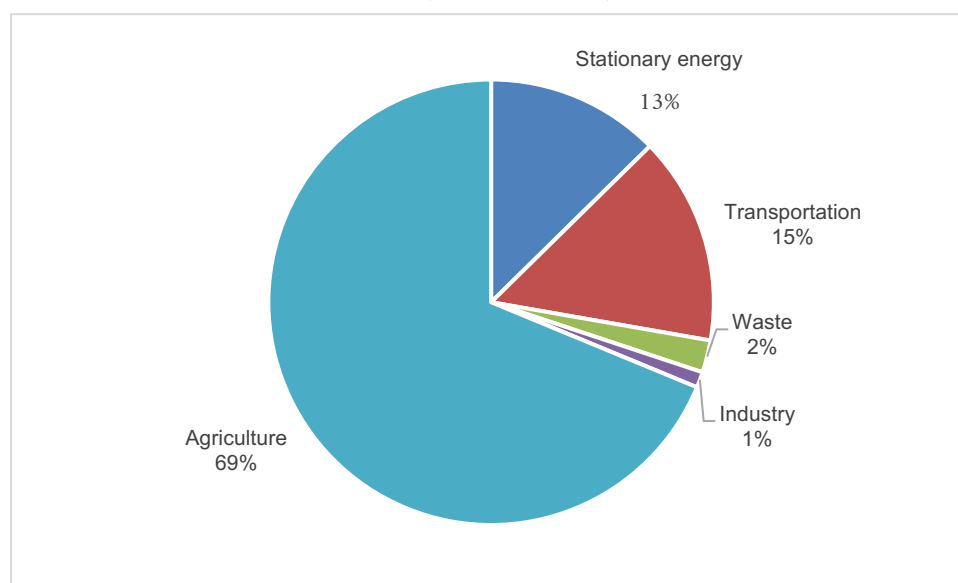
<sup>20</sup> Stancu C, Marquart M. 2017. Waikato Region greenhouse gas inventory - July 2015 to June 2016. Auckland: Prepared for Waikato Regional Council by Envirostrat and AECOM. <https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/TR201731.pdf>

<sup>21</sup> World Resources Institute. 2014. Global protocol for community-scale greenhouse gas emission inventories: An accounting and reporting standard for cities. USA: World Resources Institute [https://ghgprotocol.org/sites/default/files/standards/GHGP\\_GPC\\_0.pdf](https://ghgprotocol.org/sites/default/files/standards/GHGP_GPC_0.pdf)

the activities within the region's boundaries generated approximately 12.6 million tonnes CO<sub>2</sub>e. When forestry is included, the total net emissions for the region was 7.1 million tonnes CO<sub>2</sub>e.<sup>22</sup>

- Waikato Region's per capita net emissions are nearly 50% higher than the national average (14.8 vs 11.6 tonnes CO<sub>2</sub>e per capita).
- Agricultural activities generate 69% of all emissions. On a per capita basis, Waikato's agricultural emissions are more than twice the national average (18.2 vs 7.9 tonnes CO<sub>2</sub>e per capita).
- The forestry sector removes about 44% of the Waikato's total gross emissions, more than double the national per capita average (-11.7 vs -4.9 tonnes CO<sub>2</sub>e per capita). However, most carbon sequestration comes from exotic forest.
- For this latest emissions inventory, agriculture remained the largest contributor to the total gross emissions for the Waikato Region, followed by transportation and stationary energy (Figure 3).

Figure 3. Total gross emissions by source (excluding forestry) the Waikato Region for 2018/19.



The emissions profile of the Waikato Region indicates an opportunity to focus reduction efforts on agriculture, particularly on methane emissions reduction as it composes about 70% of agricultural emissions. The region may also consider options for reducing emissions from transport and maintaining or increasing carbon removal potential (forestry).

<sup>22</sup> GHG Inventory Waikato Region: Emissions Summary – Detail 2018/19

## 6. PARTNERSHIP WITH MĀORI

Iwi / Māori within the Waikato Region have a significant interest in climate change. A large portion of the regional Māori economy is in the primary sector, and a number of Māori communities, food sources, and marae are considered vulnerable.<sup>23</sup> Moreover, many iwi have been proactive about preparing for climate change and influencing climate change policy. The intent to tackle climate change has been written into the remit of Te Ture Whaimana and an objective of the Waikato-Tainui environmental plan is to understand and prepare for the effects of climate change.

Fundamental to addressing climate change, in the view of many Māori, is meaningful partnership, equity for Māori communities and a focus on intergenerational solutions. WRC is committed to working with Māori to achieve robust and lasting solutions.<sup>24</sup>

WRC's Climate Action Committee has the responsibility to consider both scientific evidence and mātauranga Māori when informing strategic leadership on climate change mitigation and adaptation in the Waikato Region.<sup>25</sup>

The Council incorporates the legislative requirements of Treaty of Waitangi settlements into its day-to-day business processes, aiming for iwi partnerships to become 'business as usual'. The council will continue to work with its iwi partners to implement Treaty settlements including implementing joint management agreements, advancing the Vision and Strategy for the Waikato River. The two Māori councillors advocate for Māori and Māori issues within the region.

Further work to grow the Māori economy in ways that address climate challenges are outlined in section 18 of the roadmap below.

<sup>23</sup> Climate Change Iwi Leadership Group. 2016. ETS Review Submission- Priority Matters

<sup>24</sup> Waikato Regional Council. 2017. Māori engagement framework – He ritenga mahitahi – A guide for Waikato Regional Council staff. Hamilton: Waikato Regional Council <https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/11340016-Maori-Engagement-Framework-Guide.pdf>

<sup>25</sup> Waikato Regional Council Climate Action Committee. 2020. Climate Action Committee: Open Agenda. <https://www.waikatoregion.govt.nz/assets/Open-Agenda-CAC-20-Feb-2020.pdf>

## 7. WRC ROLE AND LEGAL RESPONSIBILITIES

The actions made by the Waikato Regional Council are pivotal to a successful regional climate response. WRC's overarching roles include:

- Governance, management and allocation of natural resources (land, air, geothermal, freshwater, and coastal marine areas);
- Strategic planning at the regional scale delivered through regulatory, and non-regulatory instruments;
- Provision of land drainage and flood protection services that require design, ownership, operation and maintenance of regional-scale infrastructure
- Transport planning and provision of public transport services;
- Regional-scale assessment of and response to, natural hazards (e.g. floods, earthquakes, and tsunami);
- Biosecurity and biodiversity activities;
- Obtaining, storing, and evaluating environmental and economic information; and
- Managing catchments in a holistic way.<sup>26</sup>

Given recent amendments to the RMA, in addition to climate change, the WRC must add “emissions reductions plans” and “national adaptation plans” to the list of matters to have regard to when making and amending regional policy statements, regional plans, and district plans.

The strongest expression of the WRC's policy response to climate change comes from the Regional Policy Statement.<sup>27</sup> In addition to provisions within the Regional Policy Statement, the Waikato Plan recommends the development of “a comprehensive climate change response strategy” with the Waikato Regional Council as the lead agency.<sup>28</sup> WRC sees this Climate Action Roadmap as an important first step to enable the delivery of a wider collaborative and comprehensive climate change response strategy.

<sup>26</sup> Waikato Regional Council. 2016. 2015/16 Annual Report Pūrongo ā-tau. Hamilton: Waikato Regional Council <https://www.waikatoregion.govt.nz/assets/PageFiles/46488/Section%201%202015-16%20Annual%20Report.pdf>

<sup>27</sup> Waikato Regional Council. 2018. The Waikato Regional Policy Statement - Te Tauākī Kaupapahere Te-Rohe O Waikato. Hamilton: Waikato Regional Council <https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/RPS-Regional-Policy-Statement/WaikatoRegionalPolicyStatement2016.pdf>

<sup>28</sup> The Waikato Plan. 2017. Waikato Plan: Building champion communities, together. pp.83 <https://www.waikatoplan.co.nz/assets/Waikato-Plan/About-the-plan-/Waikato-Plan-full.pdf>

## PART 2: ROADMAP PATHWAYS

### 8. WRC AMBITION AND PATHWAY GOALS

Many activities are already underway to inform climate action in the Waikato Region. This Roadmap is specifically centred on the WRC response. We acknowledge that drawing down emissions and adapting to a changing climate will rely on sustained engagement of all sectors of society to work collaboratively to mutually agreed targets.

Following the 2015 Paris Agreement, Local Government New Zealand upgraded its position on climate change to commit to climate change mitigation, adaptation, and collaboration. In July 2017, WRC became a signatory to the Local Government Leader’s Climate Change Declaration and the Leaders’ Declaration on Climate Change.<sup>29</sup>

Until recently, the WRC’s regional climate change role was limited to supporting adaptation measures, whilst emissions reductions were set by central government. However, proposed amendments to the RMA mean that districts, cities, and regions need to consider greenhouse gas reduction targets as part of their response strategies. Reduction goals need to be informed by concepts such as the “carbon law”,<sup>30</sup> dialogue with Māori partners and other stakeholders, and supported by well-designed integrated regional actions. The region’s reduction goals should contribute to New Zealand’s overall goals of:

- 100% renewable electricity by 2035;
- 90% of rivers to be swimmable by 2040;
- Predator free by 2050; and
- Carbon neutral economy by 2050.

<sup>29</sup> Local Government New Zealand. 2017. Local Government Leaders’ Climate Change Declaration. Wellington: LGNZ <https://www.lgnz.co.nz/assets/Uploads/0827d40e5d/Climate-Change-Declaration.pdf>

<sup>30</sup> Researchers have proposed a solution for the global economy to rapidly reduce carbon emissions, arguing that a carbon roadmap, driven by a “carbon law” could catalyse disruptive innovation. The “carbon law” offers a flexible way to think about reducing carbon emissions. It can be applied across borders and economic sectors, as well as both regional and global scales.

Rockström J, Gaffney O, Rogelj J, Meinshausen M, Nakicenovic N, Schellnhuber H. 2017. A roadmap for rapid decarbonization. *Science*, 355(6331): 1269-1271. doi.org/10.1126/science.aah3443

To progress this work, contributions from each sector, expected future developments, and magnitude of reduction opportunities need to be assessed by WRC. The most comprehensive approach for the region will be to include all IPCC sectors<sup>31</sup> in the goal boundary, particularly high-emitting sectors. Sectoral goals may be adopted to focus mitigation efforts and resources on a high-emitting sector.

A combination of short- and long-term goals consistent with an emissions trajectory that phases out greenhouse gas emissions in the long-term would also be a reasonable approach.

## 9. WRC IN-HOUSE PATHWAY

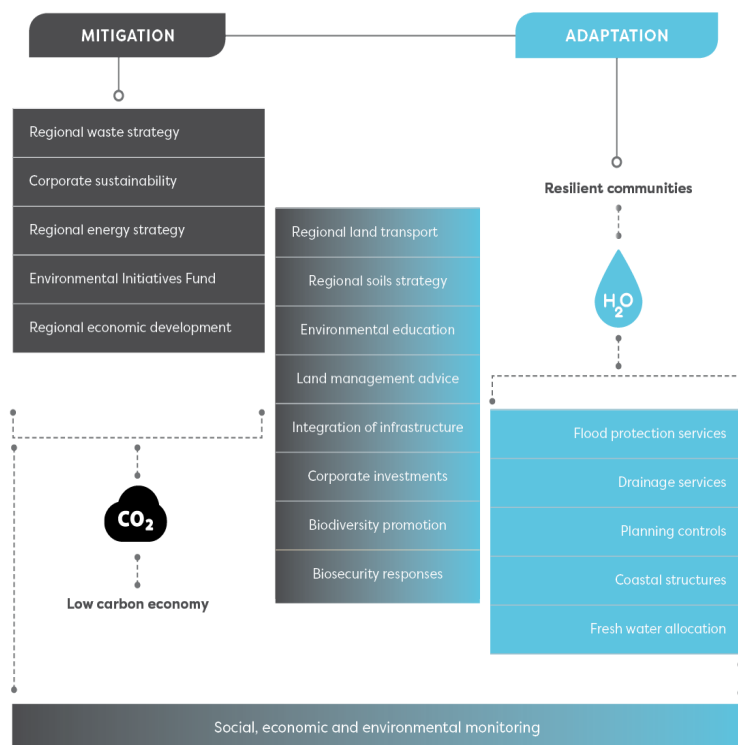
WRC's current activities are numerous, extending across the mitigation and adaptation spheres. An overview of existing regional activities is illustrated in Figure 4.

<sup>31</sup> Arent D, Tol R, Faust E, Hella J, Kumar S, Strzepek K, Tóth F, Yan D. 2014. Chapter 10: Key economic sectors and services. In: Climate change 2014: Impacts, adaptation, and vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field C, Barros V, Dokken D, Mach K, Mastrandrea M, Bilir T, Chatterjee M, Ebi K, Estrada Y, Genova R, Girma B, Kissel E, Levy A, MacCracken S, Mastrandrea P, White L (eds.)]. United Kingdom and New York: Cambridge University Press: 659-708 [https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap10\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap10_FINAL.pdf)



Figure 4. Climate change mitigation and adaptation activities in the region

## REGIONAL ACTIVITIES



### 9.1 WRC'S EMISSIONS AND WORK PROGRAMMES

An organisational value of WRC is sustainability and an aim of the Council is to integrate approaches to sustainability in all of its activities.<sup>32</sup> As part of its commitment to improving its sustainability performance, the Council's executive leadership team is committed to reducing CO<sub>2</sub> emissions intensity by 2% per year from the 2016-17 base year, and reporting on their progress, through participation in the Toitū carbonreduce™ scheme.<sup>33</sup> In the 2018-19 year, CO<sub>2</sub> emissions were 30% lower than the base year and the reduction targets will be reviewed in 2021.<sup>34</sup>

<sup>32</sup> Carty-Melis C. 2019. Emissions management and reduction plan: Toitū carbonreduce and Toitū carbonzero programme 2018-19. Waikato Regional Council. [https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/EMRP\\_1819\\_Waikato-Regional-Council\\_CM-CZ\\_Org\\_3.pdf](https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/EMRP_1819_Waikato-Regional-Council_CM-CZ_Org_3.pdf)

<sup>33</sup> Toitū Envirocare: <https://www.toitu.co.nz/what-we-offer/carbon-management>

<sup>34</sup> Carty-Melis C. 2019. Emissions management and reduction plan: Toitū carbonreduce and Toitū carbonzero programme 2018-19. Waikato Regional Council. [https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/EMRP\\_1819\\_Waikato-Regional-Council\\_CM-CZ\\_Org\\_3.pdf](https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/EMRP_1819_Waikato-Regional-Council_CM-CZ_Org_3.pdf)

The plan details several initiatives to achieve a 45% reduction in carbon dioxide by 2030. The intention of the plan is to reduce emissions to net-zero by 2050.

Waikato Regional Council's Climate Action Committee has recommended endorsing a far more ambitious but highly achievable greenhouse gas emissions reduction plan for the council's in-house activities. The new plan will achieve a 70% reduction by 2030 of WRC's own emissions, compared to the current goal of 45%, and will exceed the Paris Agreement goal required to limit global warming to 1.5°C. (a 53% reduction for WRC). As a priority, the Waikato Regional Council will also engage sector experts to advise on setting ten yearly Science Based emissions reduction Targets.<sup>35</sup>

Finally, WRC is also committed to developing climate change guideline documents to assist council staff in their roles. Currently for example, there are no specific climate change related practise notes or guidelines to assist Resource Use Directorate officials when exercising discretion in the assessment of resource use applications. Nor are there any regionally applicable practice notes to assist regional planners design policy and advocate rules in their duty to have particular regard to the effects of climate change.

## 9.2 WRC'S FUNDING AND GRANT DECISIONS

The Environmental Initiatives Fund provides contestable funding to community groups to progress biodiversity initiatives. The Fund, created through targeted rates, generates an income of \$1 million to \$1.5 million per year. There is an opportunity for the criteria for funding to be reviewed to favour projects that have a demonstrated ability to increase ecosystem resilience to climate change impacts. This could be accompanied by a rubric for assessment staff use to determine the most climate-proofed project. Including those that contribute to positive carbon sequestration performance.

## 10. SUSTAINABLE INVESTMENT PATHWAY

In the early 1990s, WRC sold Port of Tauranga and Port of Auckland shares and invested the proceeds. Returns from the investment are channelled through the Investment Fund which funds projects, finances internal borrowings, and reduces the overall level of rates.<sup>36</sup> The Statement of

<sup>35</sup> Science Based Targets: <https://sciencebasedtargets.org/#>

<sup>36</sup> Waikato Regional Council. 30 June 2015. Council Agenda <https://www.waikatoregion.govt.nz/assets/PageFiles/46250/Council-Agenda-30-June-2015.pdf>

Investment Policy and Objectives (2016) sets out a framework for the appropriate management of the Investment Fund. The investment goals and performance objective are:<sup>37</sup>

- Investment goals
  - To ensure the assets of the Fund are invested prudently and consistent with the Council’s mission, vision and rules;
  - To provide a Rates Subsidy and set aside funds for regional and economic development.
- Performance objective (medium term 5-10 years)
  - A real return of at least 4% per annum over a ten-year period.

The Statement of Investment Policy and Objectives also contains a sustainable investment clause:

*Consistent with its policy commitment to “endeavour to develop its investment practices consistent with evolving thinking regarding the significance of environmental, social and governance factors within decision-making process”, the Council has elected to invest 50% of its global equity exposure in a sustainable strategy and will assess the success of this step over time with a view to additional steps as appropriate. pp.150*

While the effect of climate change on the risk to corporate investments is not explicitly included in the statement or in the Council Treasury Risk Management Policy,<sup>38</sup> the need to assess the effect of climate change on the risk to corporate investments will be included in the review of the SIPO and Council Treasury Risk Management Policy for inclusion in the 2021-2031 LTP.

In December 2015, the Task Force on Climate-related Financial Disclosures was established by the Financial Stability Board.<sup>39</sup> The role of the Task Force was to design climate-related financial disclosures for use by insurers, investors, lenders, and other stakeholders, that were consistent and

<sup>37</sup> Waikato Regional Council. 2016. Statement of Investment Policy and Objectives – Waikato Regional Council. Accessed from Strategy and Policy Committee Agenda 29 March 2017

<https://www.waikatoregioncdemg.govt.nz/assets/WRC/Community/Council-Meetings-and-Agendas/Strategy-and-policy-committee/Agenda-Package-Strategy-Policy-Committee-29-March-2017.pdf>

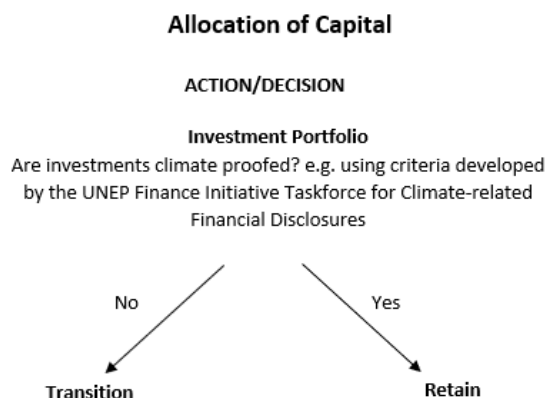
<sup>38</sup> For the Treasury Risk Management Policy, see page 172-180:

<https://www.waikatoregion.govt.nz/assets/PageFiles/11874/Appendix.pdf>

<sup>39</sup> Established in 2009 by the G20 nations, the Financial Stability Board has the key role of promoting reform of international financial regulation and supervision <https://www.fsb-tcf.org/>

voluntary.<sup>40</sup> The recommendations from the Task Force are increasingly being used by organisations so that they can transparently identify the impacts of climate-related risks and opportunities (Figure 5).

Figure 5. Decision Tree for the allocation of capital from the Investment Fund <sup>41</sup> (p.25)



In October 2019 the Ministry for the Environment and the Ministry of Business, Innovation & Employment released a discussion document<sup>42</sup> that localised the Finance Stability Board initiative before introducing legislation to make climate risk transparent for investors.

## 10.1 RESPONSE AND COMMITMENTS

In recent decades, sustainable investment<sup>43</sup> has evolved substantially. This trend is not accidental. It is, rather, an implicit acknowledgement that investment must evolve if it is to contend with the major challenges of the 21st century.

<sup>40</sup> Task Force on Climate-related Financial Disclosures. 2017. Final report: Recommendations of the Task Force on Climate-related Financial Disclosures. Switzerland: Financial Stability Board. <https://www.fsb-tcf.org/wp-content/uploads/2017/06/FINAL-2017-TCFD-Report-11052018.pdf>

<sup>41</sup> Waikato Regional Council Climate Action Committee. 2020. Climate Action Committee: Open Agenda. <https://www.waikatoregion.govt.nz/assets/Open-Agenda-CAC-20-Feb-2020.pdf>

<sup>42</sup> Ministry for the Environment & Ministry of Business, Innovation & Employment. 2019. Climate-related financial disclosures – Understanding your business risks and opportunities related to climate change: Discussion document. Wellington: Ministry for the Environment <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/Climate-related-financial-disclosures-discussion-document.pdf>

<sup>43</sup> The term “sustainable” investment is used here to capture the full range of approaches variously referred to as ESG Integration, stewardship, responsible investment, impact investment, negative or positive standards setting, and solutions, along with other variations on this vocabulary.

To further future proof its corporate investments WRC is committed to:

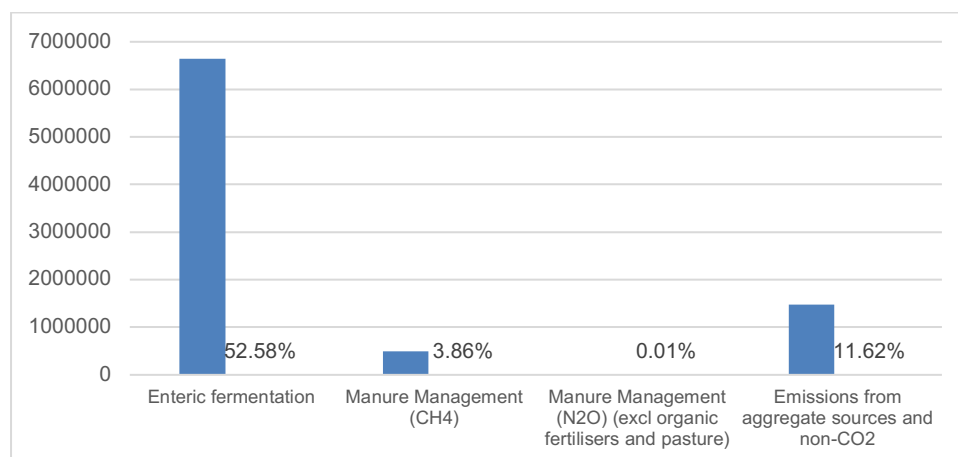
- Amending its Treasury Risk Management Policy to include climate change risks in its general objectives;
- Amending the Treasury Risk Management Policy to specifically request an audit of fund managers and to review those who have an exposure to climate change (e.g. location, activity or supply chain links, component manufacture in flood plains, dependency of increasing price of fossil fuels etc);
- Transitioning investments from higher risk to lower climate risk products over the next year; and
- Investigating a pathway to climate positive, and ultimately regenerative investments.

## 11. AGRICULTURE AND SOILS PATHWAY

Agriculture continues to be the largest contributor to the total gross emissions for the Waikato region (69%). Forestry removed a net volume of 5.5 million tonnes CO<sub>2</sub>e or about 44% of the total gross emissions.

The majority of emissions (83% or 7.1 million tonnes CO<sub>2</sub>e) were generated by methane emitted from enteric fermentation and manure management of farmed animals. Overall, approximately 56% of Waikato Region’s gross emissions are related to methane and this represents a significant challenge for the region.

Figure 6. Agricultural emissions by source, Waikato Region 2018/19 (% from total gross emissions)



On a planetary scale, soil is the second largest carbon store or sink after the oceans. Soils contain twice as much carbon as in the atmosphere and three times the content of vegetation.<sup>44</sup> The size of the soil carbon store means that soils have a significant role in mitigating (or exacerbating) the effects of climate change.

Some land use and soil management practices can ameliorate the effects of climate change.<sup>45</sup> For example, regenerative agriculture is a land management practice that helps to mitigate climate change through the rebuilding of organic matter in the soil and restoring degraded soil biodiversity.<sup>46</sup> These practices include actions that potentially:

- Generate soil and improve their fertility and health;
- Improve soil water retention and increase water percolation and clean water runoff;
- Increase the health, resilience, and biodiversity of the ecosystem and
- Sequester rather than emit CO<sub>2</sub>.

## 11.1 RESPONSE AND COMMITMENTS

WRC is committed to working with the agricultural sector to develop integrated farm plans to reduce emissions, increase biodiversity and improve water quality.

More work is also required in the Waikato Region to further establish the benefits of regenerative agriculture to regional climate change mitigation targets and adaptation resilience. The farmer owned industry organisation Beef + Lamb NZ is currently undertaking a global study into the New Zealand specific advantages of regenerative agriculture and subsequent opportunities for farmers to extract more value from sheep and beef products.

<sup>44</sup> Batjes N, Sombroek W. 1997. Possibilities for carbon sequestration in tropical and subtropical soils. *Global Change Biology* 3(2): 161-173 <https://doi.org/10.1046/j.1365-2486.1997.00062.x>

<sup>45</sup> IPCC. 2019: Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [Shukla P, Skea J, Calvo Buendia E, Masson-Delmotte V, Pörtner H-O, Roberts D, Zhai P, Slade R, Connors S, van Diemen R, Ferrat M, Haughey E, Luz S, Neogi S, Pathak M, Petzold J, Portugal Pereira J, Vyas P, Huntley E, Kissick K, Belkacemi M, Malley J, (eds.)]. In press [https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM\\_Updated-Jan20.pdf](https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf)

<sup>46</sup> Regenerative Agriculture Initiative & The Carbon Underground. 2017. What is Regenerative Agriculture? <http://2igmzc48tf4q88z3o24qjfl8.wpengine.netdna-cdn.com/wp-content/uploads/2017/02/Regen-Ag-Definition-2.23.17-1.pdf>



It is the intention of the region to bring together interested and knowledgeable parties to determine how to achieve primary sector emissions reductions through scientifically supported practices including regenerative agriculture. This work will also seek to identify and document co-benefits with an end goal of developing an integrated package of climate relevant practices for land owners and managers.

In addition to the above, the region is also committed to the inclusion of soil management into formal resource management plans and farm management practices. For example:

- Preparing a regional scale Land Use Strategy for projected future climate conditions that will inform the review of The Waikato Plan;
- Addressing peat management and the climate change component in the wider review of the Waikato Regional Plan;
- Maintaining soil carbon by preferencing certain carbon positive practices (e.g. no-till cultivation, direct drilling of seeds, the addition of biochar to thin mineral soils);
- Understanding that the soil sequestration of carbon through biochar not only offers a means of mitigating climate change but also delivers moisture and nutrient retention co-benefits; and
- Researching the carbon storage capacity of the various soils in the region and the current carbon storage deficit of those soils (i.e. storage current minus storage capacity).

Finally, linkages between climate change and mental health are particularly relevant to the Waikato Region and its agricultural communities. Further work could also be undertaken in acknowledging the physical and mental health implications that a changing climate can have on rural communities, such as the impacts of flooding and inundation, and onset of severe droughts.

## 12. BIODIVERSITY PATHWAY

New Zealand's biodiversity and natural landscapes are being affected by climate change which is putting pressure on our wildlife and wild places. Plant and animal pest invasions in particular are among the biggest threats to our region and in recent years we have seen an increasing number of new pests that require attention.

The most important climate change driver for pest species invasions is considered to be temperature, modified by rainfall humidity and wind. This may have the effect of creating conditions that are more conducive to the establishment of invasive species or the spread of those already here but with restricted distribution. Several freshwater pest species can also be expected to increase their range and numbers in response to reduced flows and elevated water temperatures, in particular fish such as koi

carp and *Gambusia*. These species can adversely affect native biota or degrade water quality and contribute to bank erosion by feeding that releases sediments.

In general, the biosecurity functions and roles are split between central government (Ministry of Primary Industries) and regional councils. Central government is primarily responsible to prevent new pest species from entering the country through boarder surveillance and controls, while regional councils are responsible for managing pest species that are already established. This spilt means WRC is able to prepare a bespoke pest management approach that is targeted to circumstances, needs, capacity and expectations of the regional community.

The best ways to create resilience and enhance biodiversity in a changing climate include but are not limited to:

- Limiting the clearance of existing areas of indigenous vegetation
- Reducing threats (e.g. pest species) to existing habitats
- Restoring and maintaining existing natural ecosystems - Restore with indigenous species
- Reconnecting areas of existing habitat and creating new habitat.

## 12.1 RESPONSE AND COMMITMENTS

To enhance biodiversity in a changing climate WRC is committed to:

- Researching and recognising the carbon storage role in forests.
- Recognising the effects climate change has on the target species and adapt management strategies accordingly, e.g. seasonal shifts in life cycles and therefore effectiveness of control programmes.
- When reviewing the Regional Pest Management identifying the preferred climate conditions of each pest species (plant or animal) to determine where it may be likely to expand its range and target responses.
- Support increased inter-regional and central government commitment, including funding to establish climate change implications and effective responses to kauri die-back disease, potentially through the Upper North Island Strategic Alliance.

## 13. AFFORESTATION PATHWAY

Land use trends have not favoured New Zealand forestry in recent years. Due to conversion of forests into farms, the volume of CO<sub>2</sub> removals by New Zealand forests reduced from about 30 million

tonnes in 1990 to 22 million tonnes in 2017, a 27% decrease in negative emissions. Meanwhile, the expansion and intensification of pastoral agriculture has driven a 13.5% increase in agricultural emissions over the same period.<sup>47</sup>

That being said, there is a range of current initiatives promote the planting of forest species to increase carbon stocks as living sinks. They include but are not limited to The New Zealand Emissions Trading Scheme, Trees That Count, and the One Billion Trees Fund.

The central government goal of planting 100 million trees per annum for ten years (The One Billion Trees Fund) will have significant implications for regional development, employment, and will as a co-benefit provide carbon sink. These commitments, if followed through on will see a million hectares planted out nationally in the next decade. Half of the proposed area represents existing replanting, but the other half is new planting. Some of this afforestation will potentially be on land too erodible to ever harvest. Planting on erodible land with trees has the co-benefits of increasing catchment resilience, by reducing storm driven run off, sedimentation and adsorbed pollutants entering waterways while at the same time reducing the load from pastoral sources that will be more significant at low flow/droughts when waterways are stressed.

Following the ratification of the Paris Agreement, the New Zealand government asked the Productivity Commission to enquire into how the country will transition to a low emissions economy. The barriers to sequestering carbon in New Zealand forests were specifically addressed and the resulting passage from the Council's submission called for a relaxing of criteria, or for a bespoke section on linear land parcels (riparian margins) and for wetlands:

*Operationally, the complex rules in Emissions Trading Scheme and permanent forest sink initiative are likely a barrier to small scale foresters and landowners from engaging in the schemes, planting more forests and sequestering more carbon.*

*An area that Council has long held views is the need to expand the opportunities for bio-sequestration leveraging the co-benefits of catchment security (soil conservation), biodiversity enhancement and water quality improvements. This could be achieved through a relaxation of forest definition criteria in the Climate Change Response Act allowing smaller and/or linear parcels to be eligible for recognition under the Emissions Trading Scheme and the Permanent Forest Sinks Initiative. An alternative could be to generate a bespoke definition that covers riparian planting and*

<sup>47</sup> Ministry for the Environment (MfE) and Statistics New Zealand (Stats NZ), 2019. Environment Aotearoa 2019. Wellington: NZ Government, p.224.

*associated wetlands and make these eligible for recognition under the Emissions Trading Scheme and the Permanent Forest Sinks Initiative.”<sup>48</sup>*

## 13.1 RESPONSE AND COMMITMENTS

The Waikato Regional Council has the opportunity to proactively identify areas for afforestation that will provide the best return for freshwater quality outcomes and for community resilience and safety. Care will need to be exercised as an increase in wildfires is also projected for the northern and eastern parts of the region. This can be minimised through good design of forests but also of species used and a combination of protection and production forests.

WRC acknowledges that the establishment of new forests not only delivers climate-related benefits through carbon sequestration and climate adaptation, but also diverse environmental and social benefits. These include, and are not limited to, habitat for native biodiversity, erosion control, avoided sedimentation, flood mitigation, improved water quality, green job opportunities, and the exercise of kaitiakitanga.

## 14. DRAINAGE AND FLOOD PROTECTION PATHWAY

WRC manages flood protection and land drainage assets across the region, developed over the last 80 years and primarily consisting of stopbanks, pump stations and floodgates. Climate change is likely to increase flood risk due to sea level rise, more frequent and more intensive storm events, and higher water tables. This will place pressure on the council’s assets and their services when WRC also seeks to reduce carbon emissions from operating its pump stations.

The liability the region faces from coastal inundation has also been identified nationally by NIWA for the Parliamentary Commissioner for the Environment, as disproportionately high in both the number of land parcels affected and the total areal extent.<sup>49</sup> Adding to this issue is the fact that 95% of the region’s natural wetlands (typically a carbon sink) have been drained to allow a change of land use –

<sup>48</sup> Payne V. 2017. Submission from Waikato Regional Council on the Productivity Commission – Low-emissions economy, Issues Paper August 2017. pp 2-3 <https://www.waikatoregion.govt.nz/assets/WRC/Community/whats-happening/policy-submissions/Submission-to-Productivity-CommissionLow-Emissions-Economy-Issues-paper-September-2017.pdf>

<sup>49</sup> Bell R, Paulik R, Wadwha S. 2015. National and regional risk exposure in low-lying coastal areas: Area extent, population, buildings and infrastructure. Hamilton: Prepared for the Parliamentary Commissioner for the Environment by National Institute of Water & Atmospheric Research Ltd. <https://www.pce.parliament.nz/media/1384/national-and-regional-risk-exposure-in-low-lying-coastal-areas-niwa-2015.pdf>

usually pastoral and urban use. Added to this is the fact that wetlands tend to be groundwater discharge zones so once started, the process pumping needs to be continuous, otherwise the land will naturally revert back to wetland.

Another issue is that while central government has funded drainage has allowed land to be farmed, the drainage and pastoral land use accelerates the loss of peat soils. The Waikato Regional Policy Statement seeks to achieve a balance between drainage and the long-term protection of peat soils for future generations. Drained peat soils are a net carbon source irrespective of the land use going on above it.

Assuming current land use is able to be maintained, drainage activity by WRC will be required in perpetuity and the costs of providing this service will increase with time, potentially becoming more than the present land use can financially sustain. Management options include subsidising the service from outside the drained locality by other regional sectors, or increasing the value of developments though land use change to be able to afford the service. Increasing development in drained areas would also increase the residual risk from flooding.

## 14.1 RESPONSE AND COMMITMENTS

- WRC is committed to determining whether the current infrastructure and flood protection schemes are fit for purpose, which it is addressing via the WRC's Sustainable Infrastructure project.<sup>50</sup>
  - Considerations include but are not limited to, the emissions associated with the construction and the operation of the infrastructure (which can be substantial).
- Drainage of soil, particularly peat soils changes emissions characteristics from a net carbon sink to a source. This should be quantified and added (appropriate scope) to the annual corporate emissions inventory as it is under the direct control of the WRC.
- One of the greatest modifiers of soil condition and its ability to impart resilience in the face of a changing climate is land use. To this end, a regional scale land use strategy is required to assist transition to a more resilient society. The pathway would require a regional scale land use strategy fit for the future which would underpin a review of the Waikato Spatial Plan.

<sup>50</sup> Waikato Regional Council 2019-2020 Chief Executive Key Performance Indicator 5.0 A Decision-making Framework to support Waikato's long-term Infrastructure Strategy Discover# 15505411

## 15. COASTAL COMMUNITIES PATHWAY

In its Fifth Assessment Report, the IPCC provided more certainty that global sea levels are projected to rise an additional 0.3 metres by mid-century.<sup>51</sup> This rise is understood as a result of climate conditions and global emissions at the time the report was released, meaning that nothing can be done to stop it, rather, the only available response is for communities to adapt. This report also projected a one metre sea level rise by the end of the century based upon a rising emissions scenario. This aspect of the report has been criticised for not including emerging understandings on the stability of Antarctic ice sheets, and hence their contribution to rising sea levels. It is therefore considered to be a low estimate.

Coastal erosion is a natural and ongoing process that occurs when the sea wears away the land. Some shorelines undergo short term periods of erosion but then recover (i.e. build out again) while other shorelines may continuously erode with no cycle of recovery. In the future we're likely to see an increasing desire to protect increasingly at-risk properties from coastal erosion and inundation. Given sea level rise and other climate change-exacerbated factors, changes are occurring in multiple locations in the Waikato Region. A planned and considered response is needed to allow the entire region to transition to more resilient places.

Coastal inundation occurs when low-lying coastal land that is normally dry is flooded by the sea. In the Waikato Region it already occurs in many places under king tide and storm surge conditions. As base sea levels rise, and as severe storms happen on a more regular basis, inundation will occur more frequently. The effects of sea level rise are not confined to an increased frequency of coastal inundation. Sea level rise also affects groundwater levels in coastal aquifers<sup>52</sup>. This has the effect of:

- Increasing the water table that may adversely affect the structure, usability and integrity of buried infrastructure, especially relevant to public three waters services and to private septic tanks.
- Potentially affecting the foundations of infrastructure such as highways, rail and flood protection levees.

<sup>51</sup> IPCC. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. Geneva, Switzerland: IPCC <https://www.ipcc.ch/report/ar5/syr/>

<sup>52</sup> Masterson J, Garabedian S. 2007. Effects of sea-level rise on ground water flow in a coastal aquifer system. *Groundwater*, 45(2): 209-217. doi: 10.1111/j.1745-6584.2006.00279.x  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.458.171&rep=rep1&type=pdf>

- Potentially increasing liquefaction risk.
- A landward and upward shift in the position of the freshwater / saltwater interface of rivers which could increase the area of salt water inundation.
- Where streams are present, an increase in the water-table elevation may also increase groundwater discharge to streams and result in local changes in the underlying freshwater-saltwater interface.
- Increase the amount of groundwater needing to be drained from low-lying coastal lands.

There is also a real potential for the insurance industry to withdraw from selected parts of the many coastal and river settlements in the region, in the face of climate change risk.<sup>53</sup>

In March 2016 the WRC released the ‘Coastal Inundation Tool’.<sup>54</sup> The Tool brings together a range of sources (LiDAR elevations, aerial photos, sea level rise projections) on a web-based platform. It allows exploration of the inundation levels in a coastal area of choice using depth increments of 200mm. The aim of the Tool was to initiate community discussion on the implications of future sea level rise and to assist system-wide decision-making.

## 15.1 RESPONSE AND COMMITMENTS

In many situations, the only long-term mitigation action that will eliminate risk from the effects of sea level rise is retreat from existing developed areas prone to inundation and to insure that all new development and infrastructure address the effects of projected sea level rise. In intensively developed coastal areas or currently productive rural areas such as the Hauraki Plains, the socio-economic and cultural implications of retreat is a significant issue and will require careful consideration of transition pathways and timing.

Impact reduction measures such as engineered protection structures will provide a short-term respite from the effects of coastal inundation and associated erosion. However, these will only ‘buy time’ until a long-term strategy can be developed, agreed, and implemented. In many cases the externalities of seawalls and levees, are intolerable to the wider community and therefore likely to be challenged.

<sup>53</sup> Field, A., Hirsch, L., Mills, R., Norgrove, K. (2019). Strategic trends and implications: Waikato Region. Political, economic, social, technological, legal, and environmental analysis. A report prepared for Waikato Regional Council by Dovetail and The Lever Room.

<sup>54</sup> Waikato Regional Council. Coastal Inundation Tool. Available: <https://coastalinundation.waikatoregion.govt.nz/>

There is a need for the region to agree how to manage the cost of retreat, decommissioning, and potentially the abandonment of land or assets, due to the unaffordability of protection or maintenance.

WRC recognises that a whole-of-government-approach is essential to ensure an overarching response strategy can be developed which recognises the dynamic nature of risk and the increasing risk associated with our built environment legacy areas. To reduce the risk of climate-exacerbated natural hazards on developments in the coastal environment, and to ensure alignment with planning controls available to the five territorial authorities, WRC is committed to:

- Applying the central government approach of staged responses defined by clear and agreed trigger points under the Dynamic Adaptive Pathways Planning approach to local coastal issues.<sup>55</sup>
- Working with iwi and hapū communities in coastal and river locations, if WRC works with iwi and hapū to increase resilience, we increase New Zealand's resilience overall.
- Developing plans for locating lifeline distribution hubs (e.g. food distribution, hospitals, transport, telecommunications, emergency services) and their connecting infrastructure in low hazard areas and towns.
- Not allowing greenfield developments in areas known to be at high risk from natural hazards
- Periodically re-surveying the extent of the mean high-water spring tides in response to accelerating sea level rise; and ensuring the indicative Coastal Environment boundary is transferred to and mapped at the relevant scale into the five district plans with coasts.
- Engaging with relevant territorial authorities, affected communities, tangata whenua, and stakeholders to develop and agree upon a regional natural hazard and risk methodology that will among other things prepare risk matrices for each hazard and define intolerable risk.
- Engaging with central government climate change risk assessment and adaptation response development to ensure regional conditions and interests are included.
- Gathering appropriate and relevant hazard information by collation of existing information, identify gaps and fill to enable agreement with territorial authorities of prioritised areas for further work
- Developing a clear and actionable risk management policy framework for natural hazards that enables adaptation by stakeholders at all levels.

<sup>55</sup> <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/coastal-hazards-summary.pdf>



## 16. FRESHWATER ALLOCATION PATHWAY

Allocating freshwater is solely a regional council activity, in contrast to the other climate change driven water related issues. In saying that, the measured degradation in most of our lowland rivers points to the inevitable conclusion that for certain contaminants we have already over allocated the assimilative capacity of some waterways.

Two things will exacerbate this into the future – firstly, the nutrient load (a legacy of past land use intensification) and secondly, the projections of increased drought as low flows will last longer and become more severe. The implications of low rainfall and/or increased temperatures and wind (droughts) on water allocation have been introduced in the Waikato Freshwater Strategy with clear implications of:

- Less ability for the natural instream biota to tolerate lower flows .
- More demand for water
- The need to increase the resilience of township water supply and allow for growth with increasing efficiency
- Less ability for waterways to assimilate contaminants from point source discharges which will mean redesign of wastewater treatment plants to increase effluent quality or to remove discharges from waterways for extended periods / permanently. This has considerable financing implications for territorial councils and for council-owned freshwater supply and wastewater treatment companies.
- Potential land use change from high intensity water use such as pastoral agriculture (each kilogram of beef takes 15,500 litres of water, each litre of milk requires 900 litres of water) to horticulture, crops and forestry.

### 16.1 RESPONSE AND COMMITMENTS

Given the challenges faced regarding the allocations of freshwater into the future WRC is committed to:

- Ensuring surface freshwater allocations (quality and volume) are modelled using 30-year distributions thus creating a moving baseline that reflects a synthesis of changing land use and the climate change signal.
- Accounting for climate change induced hydrological conditions the Q5 for surface waters and recalculating these every five years for the preceding 30 year tranche.

- Recognising the change in rainfall projections and identifying opportunities to create storage at all scales (landscape to individual property) including identification of potential natural and engineered sites.
- Recycling water from treatment plants to grow energy crops to limit nutrient and other chemical contaminants into waterways from townships and industry during drought conditions.

## 17. ENERGY AND ELECTRICITY SUPPLY PATHWAY

The region is a major electricity provider, with natural resources containing energy (hydro, wind, geothermal) able to be used directly or converted into electricity for use in high demand centres, typically beyond the point of generation. About one-third of New Zealand’s installed generation capacity is in the region, consisting of one large thermal, nine geothermal and more than ten large hydro power stations, along with wind and many co-generation plants.

WRC policy already acknowledges the positive climate attributes of the mature, large scale (>50 megawatts) hydro-electric generation capacity in the region<sup>56</sup>, and that the generation infrastructure also has water distribution co-benefits that are able to respond dynamically to the projected changes in water availability in response to climate change influences. In addition, there are seven small hydro stations of less than three megawatts capacity.

The purpose of the Regional Energy Strategy is to assist future proofing the Waikato economy by reducing reliance on fossil energy sources for energy services (heating, lighting and motive power) by de-carbonising the economy and growing electricity from renewable sources. This is to be achieved within the envelope of ensuring security of supply to the region and nation.

The fundamental principle underlying the Regional Energy Strategy is to work on both the supply and demand sides of the energy equation. The strategy aims to facilitate the access, development and use of renewable energy sources within the region, and also to promote energy conservation and efficiency within the community. Another aim of the Regional Energy Strategy is to foster partnerships within the community for developing a series of pilot projects that can provide workable models of energy generation and energy efficiency which are scalable upwards into larger operations.

<sup>56</sup> Re1,450Mw installed capacity from Tongariro Power Development and Waikato River

Waikato Regional Energy Forum. 2009. Waikato Regional Energy Strategy.

<https://www.waikatoregion.govt.nz/assets/PageFiles/13327/Waikato%20regional%20energy%20strategy.pdf>

## 17.1 RESPONSE AND COMMITMENTS

- Providing for energy demand is one of the six significant issues already addressed in the current Regional Policy Statement.<sup>57</sup> The Policy Statement has prioritised the direct use of energy where applicable so as to minimise conversion and transmission losses. Central government has objectives and targets for renewable electricity generation recognising the need to focus on developing those sources. This creates a greater need to manage impacts on existing renewable electricity generation activities and promote new electricity generations from energy sources such as geothermal, wind, hydro, tides, wave energy, and possibly biofuels. Development of renewable energy resources results in a range of local and national benefits including those associated with increased security of supply and reduced greenhouse emissions.<sup>58</sup>
- The co-location of production forests and large geothermal development systems in the southern part of the region present an opportunity to create synergies between two renewable energy sources. Currently, most geothermal energy is converted to electricity and used away from the resource and the point of generation. Direct use of the geothermal energy (heat) is a more efficient use as there are no conversion losses and low transmission losses.
- It will also be important to ensure that consented and highly prospective wind turbine sites are not compromised with planting of forests near the turbines thus affecting their efficiency.
- Wave energy technology is a new and emerging field internationally and a potential area for further exploration in the region. To explore its application in the Waikato, potential wave resources could be mapped, and the feasibility of linking with existing land-based resources could be explored (such as transmission lines, port facilities, engineering repair workshops, and marine support technicians). This is equally applicable to large scale marine wind installations.
- There are other specific opportunities to use biofuel specifically grown to reduce regional greenhouse gas emissions. These include energy crops for industrial process heat and potentially for electricity generation. In order to offset greenhouse gas emissions from current fossil fuel use, biofuel crops:
  - must have a high calorific value and be fast growing,

<sup>57</sup> Waikato Regional Council. 2018. Issue 1.3 Providing for Energy demand. The Waikato Regional Policy Statement - Te Tauāki Kaupapahere Te-Rohe O Waikato. Hamilton: Waikato Regional Council  
<https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/RPS-Regional-Policy-Statement/WaikatoRegionalPolicyStatement2016.pdf>

<sup>58</sup> Ecotricity website: <https://ecotricity.co.nz/news/carbon-knowledge/>

- must be able to be harvested by mechanical means (easy terrain); and
- must be able to be grown in close proximity to the use so as not to negate the emissions advantage by long travel distances.

## 18. MĀORI ECONOMIC DEVELOPMENT PATHWAY

*Whatungarongaro te tangata toitū te whenua – As people disappear from sight, the land remains. It is beholden on us to work together towards a sustainable economic future for the generations to come.*

Māori perspectives on climate change are holistic and long term. A typical view is that “ngā tāngata (people), wai (water) and whenua (land) are inseparable”.<sup>59</sup> Economic well-being is considered to be intertwined with the environmental wellbeing with both critical for the wellbeing of our communities.

The Māori economy, therefore, must be developed within the context of issues such as sustainability and climate change, and likewise, environmental issues must influence our economic development. This unique holistic perspective is why the nature of Māori economic development is important not only for Māori, but for the future economic performance of the Waikato Region and New Zealand as a whole.

Māori in the region are a growing part of the regional and national workforce. In 2013, 21.9% (83,740) of the resident population in the Waikato Region identified as Māori compared to 14.9% nationally. Just over a third of Māori in the Waikato Region are in Hamilton city. As is the case nationally, Māori in the Waikato Region have a young age profile with 58% of the resident Māori population being under the age of 30.

The regional Māori asset based is just over \$6 billion. This represents approximately 15% of the national collective Māori asset base. Government policy and legislation has shaped the ownership and governance arrangements around the Māori asset base in the Waikato Region. As such, a substantial proportion of the asset base in the Waikato Region is held in collective ownership through Māori authorities such as trusts and incorporations, Treaty settlement entities and other Māori entities such as Rūnanga and not for profit organisations.

<sup>59</sup> The Waikato River Authority. 2019. Responding to Climate Change for the Waikato and Waipa Rivers.

## 19. TRANSPORT PATHWAY

Without active adaptive management, the long-term effects of climate change will make the Waikato Region's transport network less resilient and subject to more frequent road closures due to extreme weather events.

The road transport infrastructure in the Waikato Region is more than twice as exposed to sea level rise than anywhere else in the country. According to NIWA data, the Waikato Region has over 800 kilometres of local and arterial roads in the band between sea level and plus 1.5 meters above sea level.<sup>60</sup>

In the Waikato Regional context, these roads are predominantly around the low-lying Lower Waikato River and the Hauraki Plains, of which 22,148 hectares is currently below sea level.

On the back of strong population growth, greenhouse gas emissions from transport fuels have increased by nearly 70% from 1990 levels - and continue to do so. Overall, transport emissions make up 18% of New Zealand's gross emission profile, and 90% of that is due to road transport. Any increasing use of single occupancy motor vehicles will increase greenhouse gas and other harmful motor vehicle emissions.

Regionally the Waikato's 2018-19 Transport emissions were 2.0 million tonnes CO<sub>2</sub>e up 32% from the 2015-16 figure of 1.5 million tonnes. It is the largest sectorial increase over the previous survey period – attributable primarily to population increases.

The Regional Public Transport Plan is a tangible area where the Waikato Regional Council can influence public behaviour including patronage and fuel efficiency. However it can't do this well without basic information like the amount of fuel used by the alternatives to private transport. The service needs to be convenient and the story compelling. This can be enhanced by reporting on the success of policies in the Regional Public Transport Plan.

Contracts for passenger transport services are negotiated and let following the policy guidance in the Regional Passenger Transport Plan. The current passenger transport contracts for Hamilton were

<sup>60</sup> Bell R, Paulik R, Wadwha S. 2015. National and regional risk exposure in low-lying coastal areas: Area extent, population, buildings and infrastructure. Hamilton: Prepared for the Parliamentary Commissioner for the Environment by National Institute of Water & Atmospheric Research Ltd. pp109 <https://www.pce.parliament.nz/media/1384/national-and-regional-risk-exposure-in-low-lying-coastal-areas-niwa-2015.pdf>

awarded in 2016 and will last for nine years. They do not contain any requirements to provide fuel usage and/or fuel efficiency performance information.

## 19.1 RESPONSE AND COMMITMENTS

The Regional Land Transport Plan already has relevant climate change and resilience policies and implementation actions to achieve the objective of an:

*“Environmentally sustainable and energy efficient land transport system that is robust and resilient to external influence.”*

This objective translates into five priority areas, four of which have direct relevance to climate change to:

1. Develop a coordinated plan for increasing electric vehicle use in the region.
2. Provide energy efficient lower emission transport options as an alternative to the car.
3. Implement the Waikato Regional Stock Truck Effluent detailed business case.
4. Remain on top of future technology trends so the region is ready to move on opportunities.
5. Identify and address route security and resilience issues, including climate change related mitigation.

In addition to the action areas listed above, WRC is committing to include a fuel used requirement passenger transport contract reporting in the regional procurements as it is a service the regional council is directly responsible for providing. This has started by working with current contractors to get an estimate of the carbon implications of the current technology / fuel mix.

- Ensure that low emissions transport options available including a criterion in the next contract and provision for passing over information on emissions performance.
- Upon review of the current Waikato Regional Council Transport Activity Procurement Strategy<sup>61</sup>, insert provisions to ensure low carbon fuels are included alongside other relevant characteristics.
- Publicise the intergenerational and environmental benefits of walking and bike riding.

<sup>61</sup> The current strategy expires in 2018.

<https://www.waikatoregion.govt.nz/assets/PageFiles/39667/TransportProcurementStrategy2015.pdf>

In addition to the above, there is the possibility of The Waikato Plan facilitating the uptake of low emissions vehicles and expanding the charging network.

Taken together these actions will reduce exposure of the sector to the increasing costs of carbon emissions and enable the transition to low carbon transport fuels in a changing climate.

## PART 3: PROPOSED APPROACH AND CONCLUSIONS

### 20. PATHWAYS OF GREATEST LEVERAGE FOR WRC

This Roadmap document has proposed ten distinct pathways or levers for regional climate action. Each pathway is within WRC's sphere of influence and chosen for its significant benefits for climate mitigation and adaptation. Taken together these ten pathways pose a series of distinct commitments and activities that WRC will integrate across the organisation as a matter of priority.

1. Sustainable Investment Pathway
2. Agriculture and Soils Pathway
3. Biodiversity Pathway
4. Afforestation Pathway
5. Drainage and Flood Protection Pathway
6. Coastal Communities Pathway
7. Freshwater Allocation Pathway
8. Energy and Electricity Supply Pathway
9. Māori Economic Development Pathway
10. Transport Pathway

To successfully implement this Climate Action Roadmap, WRC faces a decision on where best to focus first to achieve maximum traction and impact. Clearly there are many actions that can and are being immediately taken in-house, and across procurement and planning activities. This broad focus will achieve an emissions reduction by targeting all facets of the organisation. The challenge with this broad focus will be to co-ordinate activities to ensure efficiency and continued focus.

In addition to committing to activities across the organisation given the extent of the challenge we face (as outlined in Part 1: The Lay of the Land), it's prudent for WRC to target specific pathways and areas with highest current emissions. The emissions profile of the Region indicates a specific opportunity to focus reduction efforts on the dual areas agriculture and afforestation.

The research summarised in this paper indicates that for Waikato to rapidly transition to a low-emissions future, forestry, land use, and land-use change should be areas of targeted focus.

From the forestry perspective, this targeted focus could involve an increase of forest area, but also a diversification of forest management systems in order to ensure that the right tree is in the right place for the right purpose. While the planting of trees provides numerous social and environmental benefits, New Zealand's forestry sector is dominated by one system: *Pinus radiata* monocultures under a clear-felling system, which accounts for 89%<sup>62</sup> of all planted forests. This system is suboptimal from both a climate mitigation and adaptation perspective, and the Council will undertake further work on the best opportunities for permanent carbon stores in the region. These permanent stores could also be utilised to offset and accelerate the drawdown in its own corporate emissions.

With agriculture comprising over two-thirds of Waikato emissions, specific focus in reducing emissions in this sector will produce outweighed returns. Increasing research and education in regenerative agriculture while stepping up soil management across the areas are two clear initial steps. The role of WRC in working with other organisations to support farmers to alternative, high value low emission land uses will also be important.

## 20.1 COLLECTIVE IMPACT

While this roadmap focuses on climate actions within WRC's sphere of influence it's clear that collective effort and partnerships are required to scale and accelerate response. Collective impact and multi-sector coalitions across organisations within the impact economy will likely be useful mechanisms to help solve system-level challenge such as climate change.

To bring about large-scale change, coordination among players or stakeholders is necessary to create synergy and have greater impact. To help solve complex problems such as climate change through a collective systems change approach, there is also a need for a shared vision and measurement systems as well as continuous communication.

<sup>62</sup> New Zealand Forest Owners Association, 2018. Facts and figures 2016/2017. Wellington NZ: NZFOA & MPI.



Collective impact is a tested model that allows multiple actors to understand the eco-system and build a shared vision while progressing multiple activities. The Waikato Wellbeing Project is an example of a collective impact initiative seeking to create systems change, through innovation, co-design and collective leadership to identify and agree common social, economic and environment problems and opportunities. Principles of collective impact are detailed in the figure below.

Figure 7: Collective impact principles



## 21. AREAS FOR FURTHER WORK

This Roadmap represents an initial effort by WRC to gather and refine its commitments and actions in both the mitigation and adaptation of climate change. WRC is clearly committed to advancing the climate agenda, as evidenced by the formation of the Climate Action Committee which has the responsibility to inform strategic leadership on climate change mitigation and adaptation in the Waikato Region.

Throughout the course of writing this document further opportunities, beyond those previously raised have been identified. These opportunities include but are not limited to:

### 1. Investigating innovative forms of climate finance and associated investment structures:

This means assessing a full range of mechanisms and models available to finance climate initiatives, such as ‘crowding in capital’ and blended value finance structures.

### 2. Developing a fit for purpose measurement approach:

The Waikato Wellbeing Project is focussed on a range of targets related to the UN Sustainable Development Goals. In addition to these high-level long-term goals there is a need to refine an agreed way to measure through both quantitative and qualitative approaches the impact of this Climate

Action Roadmap work. Standard and comparable measurement tools may also be made available by the Climate Change Commission.

### **3. Pursuing partnerships and opportunities particularly with the private sector:**

Today, there is a clear and growing movement for business to put people and planet alongside profit. There is an opportunity for Waikato iwi, business and community leaders to partner with the Council, moving forward a collective impact approach to solve identified specific challenges.

*‘Climate change, and transitioning to net carbon zero by 2050, is not something councils can address by themselves. All parts of society are required to manage the risks climate change presents.’*

*Alan Livingston, Waikato Regional Council and mayoral forum chair, September 2019.*

Rebecca Mills

Phone: +64 21 294 4783

Email: [rebecca@theleverroom.com](mailto:rebecca@theleverroom.com)

[www.theleverroom.com](http://www.theleverroom.com)

---

