

Tauranga City Council

Te rautaki āhuarangi mō Tauranga

**Tauranga Climate Action and
Investment Plan.**

Adopted 21 August 2023

Summary

As a growing coastal city, Tauranga faces a number of climate change challenges. We are already experiencing increased frequency of extreme weather events, prolonged drought periods, warmer temperatures and impacts from rising sea levels, such as coastal inundation and erosion.

With a large proportion of our population living on the coast, our changing climate is a significant concern. Māori communities are vulnerable with marae (Māori community meeting places), papakāinga (home base, village, communal Māori land) and urupā (burial grounds) often located in areas prone to climate change impacts. Changing seasonal rainfall patterns and increased frequency of hot, dry weather will affect the rivers that supply Tauranga City with drinking water during a period where demand is increasing through significant population growth. Increased frequency of extreme weather events causing damage to critical infrastructure and supply chains has implications on community and business connectivity.

In recent years Tauranga City Council (TCC) has undertaken a number of initiatives to reduce greenhouse gas (GHG) emissions and manage the effects of climate change. However, additional urgent action is needed now if we are to mitigate the impacts of climate change and become a climate resilient city.

This Climate Action and Investment Plan (Climate AIP) outlines the actions that TCC will take towards the city-wide goal in Tauranga Taurikura (TCC's Environment Strategy) for a '*low emissions and climate resilient city*' by focussing on two main climate adaptation and climate mitigation goals:

As a City, we understand our risks and are ready and prepared to adapt to a changing climate.

As a City, we will work towards reducing our greenhouse gas emissions in line with national net-zero commitments.

Although this Climate AIP focuses mostly on the actions of TCC, it will take a collaborative effort from TCC, businesses, industries, tangata whenua, central government and the community to make the changes needed.

Contributing to the global climate crisis response now means Tauranga can be on the right side of history.

Te Taiao; He anga whakahaere

“Ka ngaro ka ngaro, Ka ea ka ea Te Toka a Tirikawa”

“Though it is submerged and lost, the rock of Tirikawa will always reappear again”

Our local korero (narratives) and purākau (stories) offer a wealth of knowledge and wisdom that can guide us in creating solutions to protect our environment now and into the future.

At the base of Mauao there stands a rock called Te Toka a Tirikawa (North Rock) that has withstood the crashing waves of the ocean for many generations. The story of Te Toka a Tirikawa features a visitor who travels to Tauranga Moana (the greater Tauranga area) seeking advice from a residing Tohunga (Expert) on how to become a successful toa or warrior. The visitor never lost sight of the vision of waves breaking on Te Toka a Tirikawa and eventually became a warrior in his homelands.

In a world that is facing the threat of climate change, the story of Te Toka a Tirikawa is more relevant than ever. It provides a powerful message of resilience, endurance and a deep reverence for the natural world and the interconnectedness of all things. As we face the challenges of climate change, it is essential that we look to the wisdom and knowledge of our ancestors and draw on the knowledge and values that underpin Te Ao Māori (the Māori worldview) and Mātauranga Māori (Māori knowledge and perspective).

The framework on the next page illustrates a Te Ao Māori worldview, highlighting the interconnected relationship between people and their environment (Te Taiao). This framework serves as a guide to inform and shape decision-making, actions and behaviours, with the goal of aligning them with the overarching objectives of the Climate AIP.

Appendix 1 provides further perspectives and descriptions on the framework (Anga Whakahaere), including the values and aspects of Te Taiao. These were co-developed with representatives of the Te Rangapū Mana Whenua o Tauranga Moana Partnership (an autonomous body made up of 17 representatives from each of the hapū and iwi in the TCC area).

Manaakitanga Rangatiratanga Kaitiakitanga Whanaungatanga Wairuatanga Tūmanako Te Reo Māori



Mana Motuhake

Capacity to be responsive, responsible and authoritative.



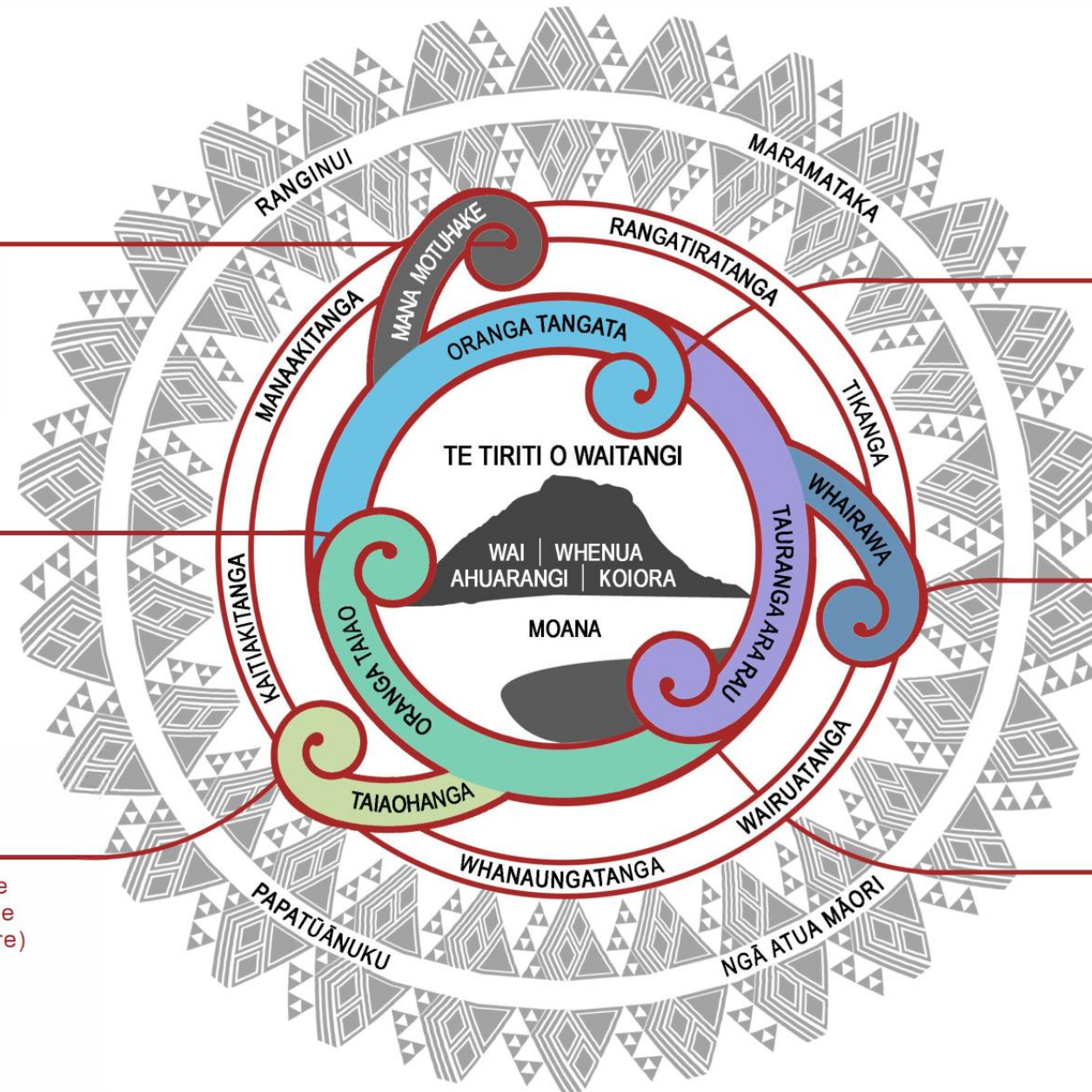
Oranga Taiao

Healthy land, including recognizing and respecting the mana of Papatūānuku and nurturing her.



Taiaohanga

The built environment including the collection of physical and inanimate objects (buildings and infrastructure) that humans live within.



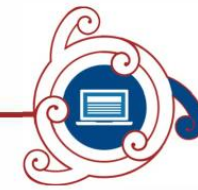
Oranga Tangata

All the component parts of the make up of healthy people and intrinsically connected to Oranga Taiao and vice versa.



Whairawa

Financial sustainability, economic health and business strategy.



Tauranga Ara Rau

The transport system and the network around us.



Te Taiao

<p>Koiora Communities and grouping of all living things.</p>	<p>Āhuarangi Climate over time and the changes experiences through seasons and macro changes.</p>	<p>Whenua From a Māori perspective the whenua is the placenta of Papatūānuku and the birth of ngā Atua Māori.</p>	<p>Wai The water, the earthly lifeblood. Specifically the tears of both Ranginui and Papatūānuku in lamenting their separation.</p>
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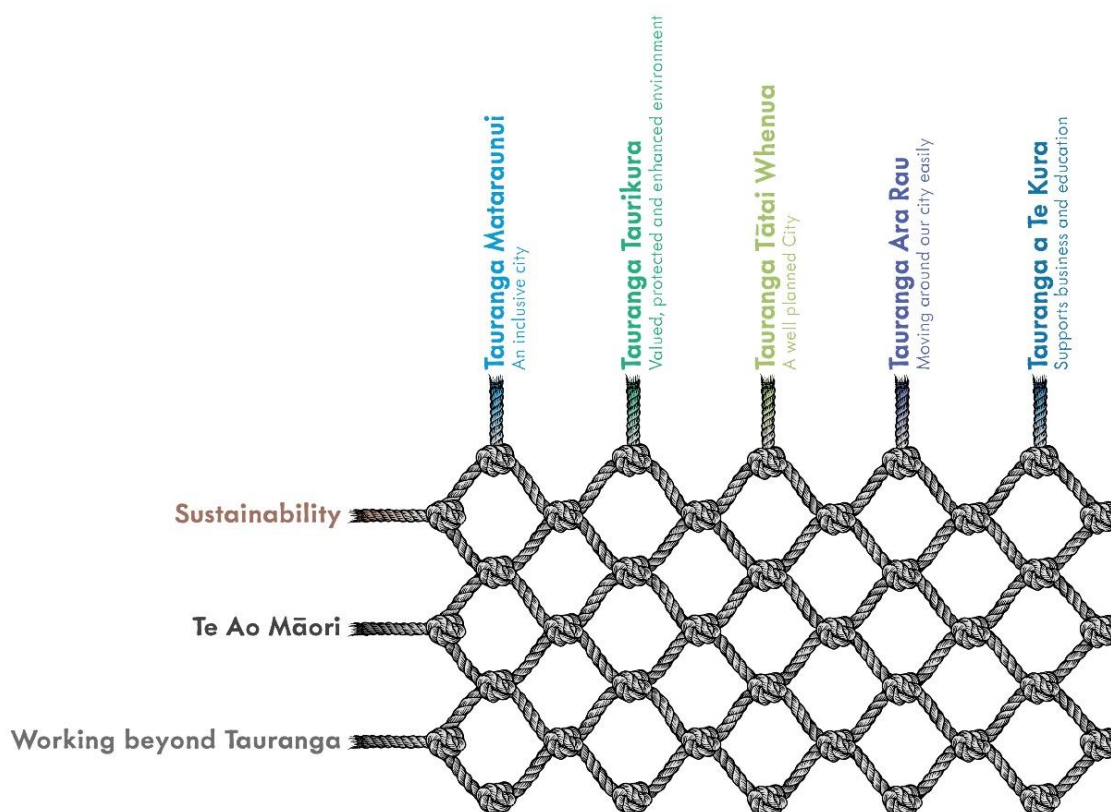
Tō tātau mahere mō te tāone whānui

PART 1 – OUR CITY-WIDE PLAN – Background and context

1. Te tauamata ia o tēnei mahere ki waenga i te Rautaki Waitara o TCC.

Where this plan fits in the TCC Strategic Framework.

Our Direction is Council’s strategic framework, which shows how everything we do contributes to achieving the vision for Tauranga. Our Direction is visually represented by the kupenga (a type of fishing net), which weaves together Council’s five community outcomes (what we are trying to achieve for our communities) and three approaches (how we will do everything):



Council has one primary strategy for each community outcome. Primary strategies set out our goals and high-level actions to deliver on that community outcome. Our action and investment plans (AIPs) set out what we will do to deliver on each of our primary strategies. Many AIPs contribute to more than one primary strategy, and often also contribute to delivery of other AIPs. For more information, go to: [Our Direction](#). The Climate AIP delivers primarily on our Tauranga Taurikura – Environment Strategy but has crossover with all other strategies, plans and community outcomes¹. The Climate AIP has informed development of the Tauranga City Council 2024-2034 Long-Term Plan (LTP)² budget.

¹ These include the Nature and Biodiversity AIP, City Centre AIP, Tauranga Events AIP, Accessible Tauranga AIP, Western Bay Transport System Plan, Priority One Business Plan, Our Public Places Strategic Plan, Waste Management and Minimisation Plan, Spatial Plan.

² The LTP sets council’s direction and establishes the work that will be delivered to the community over the next 10 years, as well as setting out how that work will be funded.

2. Te paenga taumata o te tāone o Tauranga i āiane

Where we are now

Mitigating and adapting to Climate Change

In recent years TCC has undertaken a number of initiatives to reduce greenhouse gas emissions and better understand the effects of climate change. These have included changes to the domestic waste system, accessible streets programme, streetlight LED investment and mapping of natural hazards, including climate change hazards, across Tauranga City.

TCC believe additional urgent action is needed to address climate change. As a city we must understand where we are now in order to set the direction for our future.

What we know:

- The levels of carbon dioxide, methane and other greenhouse gases in the atmosphere are increasing.
- The earth's temperature is changing at a rate unprecedented in recent history.
- Limiting climate change will require immediate and substantial reduction of greenhouse gases (mitigation).
- The effects of climate change will continue even after emissions are reduced and we need to manage and adjust to the impacts of a changing climate (adaptation).
- The climate system is very complex and there are uncertainties about future changes and impactful tipping points – knowledge is still evolving.

Mandates to act

Internationally and nationally TCC has mandates to act to reduce greenhouse gas emissions.

International

The Intergovernmental Panel on Climate Change (“IPCC”)³ has shown that globally emissions need to reduce by 50% by 2030 to reduce the worst impacts. The latest IPCC report⁴ states that *“human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people ... Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected”*.

Aotearoa New Zealand is party to a number of global agreements committing us to reduce greenhouse gas emissions and transition from the use of fossil fuels⁵.

Aotearoa New Zealand

Aotearoa New Zealand passed a Zero Carbon amendment to the Climate Change Response Act in 2019, which sets a target for all greenhouse gases except for biogenic methane (methane from agriculture and waste) to reach net zero by 2050.

³ The IPCC is the United Nations body for assessing the science relating to climate change

⁴ https://report.ipcc.ch/ar6syr/pdf/IPCC_AR6_SYR_SPM.pdf

⁵ <https://www.mfat.govt.nz/en/environment/climate-change/working-with-the-world/building-international-collaboration/>

The Ministry for the Environment published the Emissions Reduction Plan (ERP)⁶ and National Adaptation Plan (NAP)⁷ in 2022, outlining central government’s roadmap to decarbonise Aotearoa New Zealand and enhance our nation’s climate resilience, respectively. The ERP and NAP both emphasise that local government has an important role to play in addressing climate change, particularly when it comes to land use decisions. However, central government acknowledges they will be required to provide substantial support, including by setting clearer policy direction and providing resource assistance over the coming decades.

Mitigation – reducing our city’s emissions

Tauranga City emissions footprinting⁸ began five years ago and shows that Tauranga’s greenhouse gas emissions have been trending upwards. The COVID-19 pandemic provided a small relief in Tauranga’s footprint however it has since bounced back to higher emissions than pre-COVID-19 levels. Over 75% of this footprint comes from transport emissions. For the first time, marine transport emissions were included and equated to about half of the transport emissions.

Appendix 2 contains a more detailed analysis of Tauranga’s greenhouse gas footprint.

Calculating an initial science-based target

Through the development of this plan, we have sought to understand what an initial science-based target for emissions reduction would look like for the city. A science-based target is intended to show what a city’s ‘fair share’ contribution is to achieve a global 1.5°C emissions trajectory as a mid-point (2030) to achieving net zero by 2050.

It should be noted that calculating an initial science-based target does not mean that we are proposing to adopt that target as a realistic and achievable target for the city. Instead, it has been prepared for the purpose of understanding the reduction required over the 2030 and 2050 timeframes.

Modelling showed a significant gap between the ideal goal represented by the initial science-based target (amended for the removal of marine freight emissions) extrapolated out to ‘net zero by 2050’ and the modelled potential emissions reductions for the city.

Appendix 2 contains further exploration of a science-based target.

Adaptation

Climate adaptation describes the processes and actions required to reduce the impacts of climate change on infrastructure, the natural environment, people, and their economic wellbeing. Tauranga is already vulnerable to climate induced hazards including slips, flooding, coastal erosion, and inundation. Climate change will exacerbate the consequences of these hazards and introduce new impacts.

As a coastal city that is under significant growth pressure, coastal hazards are significant⁹. A lot of the city’s critical infrastructure is located on the coast, including wastewater treatment plants, access roads, ports and airport. These risks (among others) mean that there is a need to hold conversations

⁶ <https://environment.govt.nz/publications/aotearoa-new-zealands-first-emissions-reduction-plan/>

⁷ <https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/>






⁸ <https://www.tauranga.govt.nz/Portals/0/data/living/climate-change/files/tauranga-community-carbon-footprint-report-2022.pdf>

⁹Over 2,800 buildings are identified as having ‘High’ risk of coastal inundation under a future (2130) 1% AEP event scenario - Tonkin & Taylor (2020) Tauranga City-wide Natural Hazards Risk Assessment. Coastal erosion is also ‘likely’ to affect over 450 properties by 2130

across communities around the impact of climate change on people’s homes and businesses and how Tauranga City is going to respond and fund the measures needed for change.

Changing seasonal rainfall patterns and increased frequency of hot, dry weather will affect the rivers that supply Tauranga City with drinking water. The added demand through significant population increases means that water scarcity and increasing water restrictions is likely in the future.

The graphic below¹⁰ demonstrates projected climate changes for Tauranga over the remainder of the century.

Climate hazard/variable	RCP 4.5 (2090)	RCP 8.5 (2090)	Sub-district variation
Air temperature 	↑ 1-1.5°C	↑ 2.5-3°C	Consistent mean temperature increases within Tauranga area
Hot days (>25°) 	↑ 30-40 more hot days	↑ 60-90 more hot days	As a coastal city, Tauranga experiences relatively large increases in number of hot days
Drought 	↑ 100-120 mm of Potential Evaporation Deficit (PED)	↑ 160-180 mm of PED	↑ ↑ Tauranga is located within an area with relatively high projections of PED (which indicates an increased potential for drought).
Rainfall 	↑ 8-10% increase in autumn rainfall ↓ 8-10% decrease in spring rainfall	↑ 2-15% increase in autumn rainfall ↓ 15% decrease in spring rainfall	Extreme rainfall events across the region are projected to become three times more frequent under RCP 8.5.
Sea level rise 	↑ 0.55 m	↑ 0.74 m	Vertical land movement (VLM ³) may influence the effect of sea level rise on adjacent inland areas as follows: <ul style="list-style-type: none"> • Tauranga typically + 1 to + 1.6mm/yr (uplift) • Tauranga Harbour +/- 1mm/year (neutral);

³VLM has the potential to change the effects of sea level rise, with subsidence increasing the depth and bringing forward the timing of sea level rise impacts, and uplift decreasing the effective depth and pushing out the timing of observed sea level changes. VLM rates, sourced from NZSeaRise⁴, have been developed using datasets that are short relative to the duration of this assessment⁵. Precise levelling data for specific sites over extended time periods may provide increased confidence in the rate of vertical land movement over the time periods considered in this assessment.

⁴ Maps – NZ SeaRise Programme

⁵ Ministry for the Environment. 2022. Interim guidance for voluntary climate change mitigation. Wellington: Ministry for the Environment.

Appendix 2 contains more context, including further information on the natural hazards resilience project that assesses risks for key infrastructure.

The Important Role of our Community

Community engagement has told us that our communities are concerned about climate change and are taking actions themselves to mitigate its effects¹¹. The consistent theme from our communities is very strong appreciation for our natural environment. It is a key reason why people choose to live in Tauranga City.

¹⁰ RCP = Representative Concentration Pathway. Source: Bay of Plenty Regional Climate Change Risk Assessment – Volume 2: District Summaries (Tonkin & Taylor, April 2023) – downloaded from <https://www.boprc.govt.nz/environment/climate-change/regional-risk-assessment>.

¹¹ In the 2022 Quality of Life Survey, 76% of respondents were ‘A Little Worried, Worried or Very Worried’ about the impact of climate change on Tauranga City. The biggest climate related actions being taken by the community are around managing waste (76%), purchasing choice (61%) and food actions (55%).

Actions by TCC, combined with individual changes in behaviours and action at a 'grass-roots' level, will move us towards meeting our collective goals. Ultimately this plan needs every individual in Tauranga to be a climate leader to achieve the outcomes sought.

We **ALL** have the opportunity to be a climate leader by taking actions such as:

- Reducing emissions, energy, and waste.
- Reconditioning homes to make them water and energy efficient, and resilient to weather events.
- Reducing food waste and separating recycling and organic matter from landfill waste (or growing our own food).
- Raising awareness on climate action, care for the environment and restoring the mauri (life principle, life force) of our waterways.
- Shifting mode of travel to more sustainable modes such as walking, cycling, transit, carpooling, car sharing, and electric vehicles.
- Working from home on occasion or taking the bus to the office.
- Being examples of how each small change can have a positive global impact.

Appendix 3 contains more detailed information about actions that individuals and businesses can take to be climate leaders.

More advantages of climate action

Tauranga City has the opportunity to be steadfast, creative, and entrepreneurial about our response to climate change. Positive outcomes are numerous and include:

- We can help protect and adapt our homes and businesses, lessening the direct cost of things like repairs and insurance and the associated negative health and wellbeing impacts.
- We can unlock significant co-benefits through our decision making; including green infrastructure that provides access to nature to support health and wellbeing as well as acting as carbon sinks and enhancing resilience.
- Demonstrating Tauranga as a low carbon and resilient city can support our local businesses to be competitive in global markets where low carbon goods and services are in demand.

3. *Te urunga o ā mātau whaingā – ka pēhea mātau e whakarerekē* Incorporation of our three approaches – how we will do things differently.

Te Ao Māori



We commit to integrating key Māori concepts into how we work, to work in partnership with mana whenua and to strengthen relationships with tangata whenua of Tauranga Moana. The Anga Whakahaere framework forms a key part of this Climate AIP.

What this will look like in practice:

- Regular meetings and information sharing with Te Rangapū Mana Whenua o Tauranga Moana and specific mana whenua groups as appropriate.
- Develop measures and indicators with Iwi aligned with mātauranga Māori (Māori knowledge) that are relevant to the outcomes of this plan.
- Support Tangata Whenua to build capacity as kaitiaki (guardians) of their rohe.

Sustainability



We commit to delivering our projects and services in a holistic manner, protecting and enhancing our city for the future and considering the environmental, social, cultural, and economic impacts of everything we do.

What this will look like in practice:

- In order to be kaitiaki for a better tomorrow, we will build climate resilience in Tauranga by embedding climate risks in our decision-making and service delivery. To avoid the most harmful impacts of climate change, we will work with regional and central government, industry, community groups, and the public to reduce emissions in our city.
- We will ensure this work is fair and inclusive, delivering equitable outcomes and leaving no one behind in the way we shape our better tomorrow.

Working beyond Tauranga



We commit to working collaboratively, building constructive partnerships with our key stakeholders and considering the impacts of what we do, and don't do, on not just our city but also our region and country. We acknowledge our role as the largest city in the Bay of Plenty region and the connections we have beyond the city boundaries.

What this will look like in practice:

- Working with regional and national partners, including Bay of Plenty Regional Council, who have a joint role in some of the actions in this space.
- Working with neighbouring councils to provide a holistic response to climate change.
- Working harder on cross-team collaboration *within* TCC, as this is also critical for success.

For more information about TCC's three approaches, including our Te Ao Māori principles, see: <https://www.tauranga.govt.nz/our-future/our-direction>

Part 2 – TCC ACTIONS AND INVESTMENTS

4. *Te whakatutuki – ngā hanga ka whakarerekē*

Actions / Implementation – what we will do differently

This section lists the actions and approaches TCC will take to set us on the pathway to achieve the goals in Tauranga Taurikura for a '*low emissions and climate resilient city*'. The actions are divided across six areas of Mana Motuhake (Leadership), Tauranga Ara Rau (Transport), Taiaohanga (Land use and Built Environment), Oranga Tangata (People and Communities), Whairawa (Business) and Oranga Taiao (Environment).

Actions were developed following consultation on ambitions for Tauranga City with representatives of Te Rangapū Mana Whenua o Tauranga Moana and representatives from special interest groups and business. They include TCC's priority actions for each area, the TCC led and funded actions and additional city-wide actions that, through collaboration, TCC will be involved in and support. It should be noted that the order in which actions are listed within the priority actions **does not reflect their order of importance**.

Funding and financing

It is also worth noting that not all actions need to be funded by TCC. TCC will continue to explore viable alternative approaches to funding and financing the plan, including working closely with central Government to unlock joint funding and considering the use of transparent, beneficiary pays alternative funding models (including Variable Road Pricing).

Sustainability projects (such as green buildings, clean transport, renewable energy, biodiversity restoration, affordable housing and more) can also benefit from lower interest rates on borrowing from the Local Government Funding Agency (LGFA). Councils with an active corporate climate emissions reduction plan with science aligned targets may also be rewarded with a further reduced cost of LGFA borrowing. These factors will be included in further exploration of funding mechanisms and structure for this plan.

Interpretation of action tables and alignment with Long Term Plan -

KEY to symbols and abbreviations used within the action tables that follow:

Proposed timeframes – timeframes are proposed in alignment with long-term plan periods:

- Immediate starting 2023 (i.e. 1 July 2023 – 30 June 2024).
- Short term 2024-2026.
- Medium term 2027-2029.
- Longer term 2030 onwards.

Indicative costs – unless already committed to, costs are indicative only. Investigation of future project costs will be undertaken as part of developing the 2024-2034 Long-term Plan:

- \$ Less than \$0.5 million.
- \$\$ \$0.5 million to \$2 million.
- \$\$\$ \$2 million to \$5 million.
- \$\$\$\$ More than \$5 million.

Symbols and terms:

- **LTP** refers to the 2024-2034 Long-term Plan (currently under development).
- **Priority actions** are being considered for inclusion in the Draft LTP if additional funding is required. If no additional funding is required, priority actions are to be implemented as soon as possible. It is unlikely that all priority actions will be able to be funded within this LTP.
- **Funded / Partially Funded / Unfunded** signifies the funding status in relation to the working draft LTP as at July 2023. This funding status will be updated to reflect final decisions once the LTP is adopted in April 2024. Some actions may be funded or partially funded by other organisations.

General notes:

- Identification of partners does not constitute a financial commitment.
- Lead agencies are highlighted in **bold**.

A. Mana Motuhake Leadership

Aspiration: TCC demonstrates climate change leadership, working in partnership with mana whenua and communities.

Tauranga toa taumata rau – Tauranga of the many resourceful peaks – *the peaks represent the facets of leadership that can be tapped in to between Council and ahi-kā (people of the home).*

Outcomes			
TCC will show leadership in climate action, demonstrating determination, advocacy, and commitment.	TCC partner with mana whenua and influence our community to drive climate adaptation and carbon reduction initiatives and enable behavioural change	TCC are trusted leaders for the people of Tauranga by demonstrating results and providing clear and transparent communication on our own carbon reduction pathway and progress.	TCC incorporate climate change into our decision-making processes, long term plans and investments.

Contributions from TCC and others - TCC will continue to work with the regional and neighbouring district councils on areas such as their climate plans, spatial planning, and public transport provisions. Through service provision and local infrastructure decisions, Tauranga should be integrated with its neighbours, and have actions driving us toward the same climate positive direction.

TCC require the public to work with us on carbon reduction initiatives and engage in discussions around climate adaptation measures that may be needed. TCC require genuine partnerships to embed resilience and sustainability into our communities.

Central government is already playing a role in setting national carbon emission reduction budgets and providing guidance for sector-specific emission reduction plans. Central Government need to build on their current commitments to accelerate climate adaptation and climate mitigation through policy settings, funding support, and financial mechanisms to support local government to incentivise the low carbon transition in Tauranga and enhanced resilience.

	Actions and programmes of work	Proposed timeframes	Indicative cost ¹²	Who
Priority Actions				
1	Develop a localised Climate Change Risk and Vulnerability Assessment (to work out what the risks are and who will be vulnerable) to build on the regional assessment developed by Bay of Plenty Regional Council (“BoPRC”).	Immediate	\$ - Funded	TCC, BOPRC
2	Evolve the Climate AIP to better understand likely future carbon emissions as things change (population growth, changes in behaviours, etc), and establish a communications plan to clearly advise what we can do to make a difference.	Immediate	\$ - Funded	TCC and Partners
3	Identify where additional climate monitoring information is needed to ensure AIP goals are reached, and introduce relevant monitoring as needed.	Immediate	\$ - Funded	TCC
4	Include climate change risks and opportunities in TCC decision-making processes (through the development of processes/tools as required).	Immediate	\$ - Funded	TCC
5	Include climate change risks in the change management plan for rollout of the Risk Management Framework across TCC, enabling all business units to identify and assess relevant risks, with a view to identifying amendments for potential inclusion in future versions of Risk Framework as appropriate.	Immediate	Staff time only	TCC
6	Pursue measurement of embodied carbon (carbon emitted during construction), including construction materials, construction operations, transportation and earthworks, to reduce embodied impacts of high-carbon assets.	Short term	\$ - Funded	TCC
7	Complete a Tauranga City-wide carbon footprint at least every two years and report publicly.	Short term	\$ - Funded	TCC
8	Develop measures and indicators with Iwi aligned with mātauranga Māori (Māori knowledge) that are relevant to the outcomes of this plan.	Medium term	\$ - Funded	TCC
9	Include climate resilience and low carbon asset management strategy in asset management planning for TCC assets.	Immediate	\$ - Funded	TCC
10	Review relevant existing TCC strategies, policies, plans, and manuals, to identify opportunities to embed climate goals.	Immediate	\$ - Funded	TCC
11	Regularly review results from climate monitoring and report results to a decision-making committee that has iwi representation (and to Te Rangapū Mana Whenua o Tauranga Moana Partnership).	Short-term	\$\$ - Funded	TCC, mana whenua

¹² Indicative cost column also identifies funding status within the working draft 2024-2034 Long-term Plan, as at July 2023. Any change in funding status will be identified in this table once the LTP is adopted in April 2024.

	Actions and programmes of work	Proposed timeframes	Indicative cost¹²	Who
12	Establish a TCC Rangatahi (youth) Climate Action advisory group and/or connect regularly with school and youth community climate groups to ensure rangatahi input.	Immediate	\$ - Funded	TCC
Other TCC Led Actions (not currently prioritised)				
13	Measure annual costs of maintenance and repairs from extreme weather events (including drought) for TCC assets and operations.	Immediate	\$ - Unfunded	TCC
14	Explore with Bay Venues Ltd opportunities to use public facilities as a showcase to tell best practice climate change and sustainability stories.	Short-term	\$ - Partially funded	TCC, Bay Venues
15	Advocate, as appropriate, to Central Government for increased investment and support for climate initiatives.	Short-term	Staff time only	TCC
Other Tauranga City-Wide Actions				
16	Develop a Tauranga / Bay wide Climate and Circular Economy forum to identify and screen opportunities, facilitate collaboration, and incubate ideas on a climate resilient and low-carbon future.	Short-term	\$ - Externally funded (Priority One / Beca)	TCC, BOPRC, Priority 1, WBOPDC, Iwi, University of Waikato, Te Whatu Ora

B. Tauranga Ara Rau Transport.

Aspiration: Our transport system is low-emission, climate resilient and better connected.

Tēnei a Tauranga, ka hiki i te ara – This is Tauranga, driving forward – *this is a play on words from a local saying derived in times of war. The context of urgency is used to gather toward a common transport goal.*

Outcomes			
Tauranga City's people use a variety of public transport, walking, biking, and micro-mobility transport modes.	Tauranga City has a connected network of safe active transport corridors that are resilient to climate change.	Tauranga City's public transport network is low carbon, convenient and well connected.	Tauranga City communities understand that transport is the biggest contributor to emissions and that behaviour change is required to make a collective difference.

Contribution from others: To achieve the reduction in transport emissions needed we all are required to change our transport behaviours, for example by using the public transport network and paths for walking and cycling. Partnership and collaboration with BoPRC, Western Bay of Plenty District Council and Waka Kotahi will also be key to taking a systemic and coordinated approach to transport emissions reduction.

Marine freight has been included in the regional emissions inventory for the first time. These emissions are associated with fuel use of vessels as they travel between the Port of Tauranga (the Port) and other ports¹³. Port of Tauranga are exploring how to reduce the emissions at the Port where there is direct responsibility¹⁴. The Port is also a key partner in supporting emissions reduction from land transport to and from the Port, such as freight optimisation, moving freight from road to rail and being ready to enable land freight companies to transition to low or zero emissions road fleet. Marine freight companies will be expected (supported by international research, innovation, collaboration and investment), to improve the efficiency of vessels and move to low carbon or zero emission fuels.

Central government will play a crucial role in supporting our low carbon transport future. Funding will accelerate research and development on low carbon freight solutions, regional passenger transport solutions, and enable an equitable uptake of zero emissions and electric vehicles. The ERP provides a transport 'route map' out to 2035, indicating actions central government will be taking to support uptake of zero emissions and electric vehicles, decarbonisation of freight, and improved active and public transport infrastructure. The NAP indicates the critical actions central government and relevant crown entities will take to ensure a resilient transport network. Actions include, for example, development and implementation of the Waka Kotahi Climate Adaptation Plan, and the integration of adaptation thinking into Treasury decisions on infrastructure investment.

¹³ Please refer to the Tauranga City Community Carbon Footprint on how the emissions have been calculated and apportioned in Tauranga, noting the benefits of the goods moved in and out of the port benefit the communities across and outside the Bay of Plenty.

¹⁴ The electricity, fuels and waste generated from the Port are reported in the energy and waste areas of the city wide carbon footprint. Marine freight emissions are only associated with the movement of vessels in and out of the port.

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
Priority Actions				
17	<p>Deliver actions identified in the study on travel demand and behaviour change in Tauranga, for instance:</p> <ul style="list-style-type: none"> • Expanding the Travel Safe programme to assist more schools and workplaces to encourage sustainable transport modes. • Supporting workplaces and visitor attractions to develop travel plans and improve 'end of trip' facilities (i.e. showers, lockers, bike/scooter parking). • Improving links to parking management across the city to better manage needs and requirements of businesses and customers. • Supporting the development of safe travel infrastructure. 	Short Term	\$\$ - Funded	TCC
18	Update transport planning to identify how to reach 'vehicle kilometres travelled' targets and emission goals set by central government.	Immediate	\$\$ - Funded	TCC
19	<p>Deliver on-the-ground transport projects that support growth and emissions reduction, including:</p> <ul style="list-style-type: none"> • Route and bridge resilience. • Walkways and cycleways. • Bike parks in the city centre. • Park-and-ride opportunities. • . • Providing infrastructure to allow additional housing and amenity in existing parts of the city. 	Short-term	\$\$\$\$ - Funded	TCC, BoPRC, WBoPDC, Waka Kotahi, Ministry of Transport
20	<p>Explore the possibility of a road charging system¹⁵ / variable road pricing for Tauranga, including through –</p> <ul style="list-style-type: none"> • Community consultation • Continuing discussions at a national level • Progressing further technical work as appropriate, subsequent to community and national feedback 	Short-term	\$ - Unfunded	TCC

¹⁵ Potential benefits of a road charging system for Tauranga include reduced congestion and delays, reduced vehicle kilometers travelled and carbon emissions, increased mode shift to public transport and walking/cycling, improved network optimisation, and a revenue source to reinvest in further land transport improvements.

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
21	Support the public EV charging infrastructure plan with partners for all centres (to be included in the implementation plans for the TCC Parking Strategy and funding provided).	Medium Term	\$\$ - Partially Funded	TCC, BoPRC and partners
22	Incorporate climate risk considerations into road asset management planning (i.e., use of materials that withstand heat stress, drainage etc; establishment of long-life concrete roundabouts).	Short Term	\$ - Funded	TCC
23	Collaborate with BoPRC and the community to assess gaps in public transport service provision and develop strategies to increase public transport uptake.	Short Term	\$ - Externally funded (BoPRC)	TCC and BoPRC
24	Investigate options to improve capacity, reliability of travel times, and multi-modal opportunities on Tauranga's arterial road network.	Short Term	\$\$ - Funded	TCC
Other Tauranga City-Wide Actions				
25	Support BoPRC to electrify the bus fleet by BoPRC developing a bus fleet transition plan, including bus charging infrastructure.	Short Term	\$\$\$\$ Unfunded / Externally funded (BoPRC)	BoPRC
26	Support central Government as required to further explore the feasibility of passenger rail service from Tauranga ¹⁶ .	Medium term	\$ - Unfunded	TCC, central government
27	Ensure public transport is provided to all council and Bay Venues public facilities, including Mercury BayPark.	Short term	\$ - Unfunded	TCC, BoPRC

¹⁶ At the time of writing (July 2023) Government was considering the report presented by the Select Committee re "Inquiry into the future of inter-regional passenger rail in New Zealand" <https://selectcommittees.parliament.nz/v/6/3f66b447-9b3b-492e-8857-08db7c2fcfb3> which included a recommendation that a scoping study for Auckland-Tauranga passenger rail services be progressed

C. Taiaohanga

Land use and Built Environment

Aspiration: Our built environment and land development planning is low-emission and resilient.

Ngā mano wai, kōputahi ki Tauranga moana – The tributaries that lead to Tauranga harbour – *the built environment is informed by each corner of the natural environment contributing to the larger body of water/land.*

Land Use and the Built Environment includes buildings, infrastructure and utilities and the way Tauranga City uses and develops land. It accounts for the second largest emissions area for Tauranga City.

Outcomes			
Tauranga City's urban development is informed by an understanding of climate risk and provides resilient and localised communities	TCC manage our waste resources effectively, recover and reuse our materials and utilise energy recovery in a circular economy model.	TCC understand the challenges and opportunities for the built environment and deliver outcomes for the natural environment through infrastructure planning and decision making.	Homes and buildings are energy efficient and healthy and are constructed using low carbon building products and sustainable designs.

Contribution from others: The SmartGrowth Strategy is an important document that outlines how our community is planned and developed into the future. Our planning rules need to reflect the risks of climate and the impacts our urban development has on carbon emissions.

Landlords, home builders and developers are also part of the solution and will need to deliver resilient and low carbon housing and buildings. As one of Aotearoa's fastest growing areas, new housing will be needed and there will be a focus on compact urban form, using low carbon building materials and designs, and resilient buildings. There will also be a significant need for retrofitting and upgrading existing building and housing stock to be more resilient and energy efficient driven by homeowners and landlords, supported by technical expertise and labour.

The NAP emphasises that local government have a critical role to ensure development occurs in the right locations. However, the NAP acknowledges that central government will need to provide clearer guidance for local government on land use decisions and managed retreat. The ERP identifies that central government will be responsible for providing the necessary policy frameworks and tools to support land use and infrastructure decisions in line with emissions reductions. Resource Management Act reform and Three Waters reform are expected to provide this direction for both resilience and emissions reduction.

Collaboration between regional council, central government and the primary sector is also needed to decarbonise and improve the resiliency of agriculture, horticulture and forestry including enabling the outcomes from central government processes such as He Waka Eke Noa (Primary Sector Climate Action Partnership) within Tauranga and the Bay of Plenty.

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
Priority Actions				
28	High level community awareness programme on the impacts of climate change on the city and long-term adaptation options, including managed retreat, for those parts of the city most at risk. (Linked to actions 31 and 48).	Short Term	\$ - Funded	TCC
29	Progress the Mount North Flooding and Stormwater Adaptation Project to address stormwater issues in the Mount North catchment. The project will use Dynamic Adaptive Policy Pathways (DAPP) methodology ¹⁷ .	Immediate	\$ - Funded	TCC
30	Implement the SmartGrowth Strategy which involves, among other things, creating an urban design panel, publishing urban design guidelines, and finishing off flooding and increased housing density City Plan changes.	Immediate	Various – funded in appropriate budgets	TCC
31	Develop guidelines around what low carbon and resilient developments look like, how this can be achieved, and which highlights benefits for developers and tenants.	Short Term	\$ - Funded	TCC, Partners and Developers
32	Community awareness programme on the benefits of urban intensification / compact urban form and its suitability to many different lifestyles. (Linked to actions 27 and 50).	Short Term	\$ - Unfunded (funding for actions 27 & 50)	TCC
33	Set a resource efficiency and waste minimisation policy to ensure that all TCC projects >\$2 million manage and minimise construction and demolition waste.	Short term	\$ - Funded	TCC
34	Identify and establish sub-regional waste infrastructure required to further reduce waste to landfill	Immediate	\$\$\$\$ - Partially funded	TCC (and potentially others)
35	Fund a community resource recovery centre and waste minimisation education centre.	Medium term	\$\$ - Funded	TCC
36	Include additional climate risks such as heat, humidity, drought and fire in TCC's Infrastructure Resilience Program.	Short term	\$\$ - Partially funded	TCC
37	Investigate wastewater treatment plant sites, to understand detailed natural hazards/climate change risks and prepare specific adaptation plans.	Short Term	\$ - Funded	TCC

¹⁷ The Dynamic Adaptive Policy Pathways (DAPP) approach develops a series of actions over time (pathways). It is based on the idea of making decisions as conditions change, before severe damage occurs, and as existing policies and decisions prove no longer fit for purpose. (Source: Auckland Council [website](#))

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
38	Further develop the Western Corridor (Tauriko, Te Papa peninsula, through to Mount Maunganui) as a potential rapid public and alternative transport route.	Immediate	\$\$\$\$ - Partially funded	TCC, Partners and Developers
39	Complete existing urban transformation projects to enable improvements to the likes of housing choice and efficient transport options resulting in healthy and connected communities.	Immediate	\$\$\$\$ - Funded	TCC
40	Explore further options to incentivise sustainable buildings.	Short term	\$ - Staff time initially	TCC
Other TCC Led Actions (not currently prioritised)				
Infrastructure				
41	Identify how whole-of-life emissions of TCC infrastructure can be reduced through minimising the embodied carbon (the amount of carbon emitted during construction) of buildings and infrastructure, investigating low carbon building materials and where to use them best, demonstrating how assets will be adaptable to climate change, and demonstrating flexibility to suit multiple needs/purposes.	Short term	\$ - Unfunded	TCC
42	Convert the remaining 120 bespoke streetlights to complete the LED streetlight project.	Medium term	\$\$ - Unfunded	TCC
43	Implement a streetlight dimming programme.	Short term	\$ - Unfunded	TCC
Water and wastewater				
44	Establish a tool to help assess whole of life emissions from three waters infrastructure at early asset planning and concept design stage.	Immediate	\$\$ - Unfunded	TCC
45	Develop a business case to invest in recuperative thickening on Chapel Street wastewater treatment plant to reduce waste and increase capture of methane.	Short term	\$\$\$ - Unfunded	TCC
46	Undertake onsite emissions measurement of the wastewater treatment plants to facilitate clearer actions to improve process efficiencies and identify if and where further investment can reduce emissions.	Short term	\$\$ - Unfunded	TCC
47	Conduct energy audits for TCC owned or partially owned facilities and assess renewable energy generation and use on water and wastewater assets.	Short term	\$\$\$ - Unfunded	TCC

D. Oranga Tangata

People and Communities

Aspiration: Our communities understand climate change, are low-emission and climate resilient

Tauranga toi moana, Tauranga toi tangata – a resilient and healthy waterway, breeds a resilient and healthy people – *the symbiosis of people and natural environment are how we remain informed in this relationship, and how we maintain and perpetuate each other’s health.*

Outcomes			
Tauranga City values environmental protection and restoration. TCC and our communities work together to develop a low carbon and resilient city.	TCC support our communities to connect and enhance social cohesion, cultural diversity and community engagement.	Our communities contribute to a circular economy, including resource efficiency and environmental restoration.	Tauranga City’s people are healthy, use our open spaces, and grow their own food.

Contributions from others: Communities will need to plan for their local risks and display kotahitanga (togetherness, unity, common thinking) and whakapapa (genealogical connections). To build a culture of resource and energy efficiency, local carbon behaviours and embedding adaptation will need all of Tauranga to act as climate champions. Through collaborating with different groups, community, disabled persons and interest groups, marae, faith groups and through schools, Tauranga City can develop collective understanding and action. Appendix 3 sets out actions that individuals and community can take.

Central government will need to support communities to be resilient to climate impacts. Key objectives in the NAP include providing data, tools, and frameworks to help with better informed decision making. Central Government has a role in supporting vulnerable communities, supporting when populations are disrupted or displaced by climate risks and having a resilient health sector to support those impacted by climate change.

The ERP notes that local government has an important role to play in engaging with communities and driving behaviour change to meet emissions reduction goals. The ERP also acknowledges that local government will require support and guidance from central government to build capacity and capability, including the provision of tools to enact change.

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
Priority Actions				
48	Undertake a climate change risk and impact assessment for vulnerable communities and develop adaptation plans for high-risk areas (a drill-down from action 1).	Immediate	\$\$ - Funded	TCC, Iwi and other community groups
49	Support (through grant funding and other methods) community groups and networks to drive low carbon and adaptation initiatives.	Short-term	\$\$\$ - Partially funded	TCC
50	Create a programme of community events to advocate low carbon and resilient behaviours.	Immediate	\$\$ - Partially funded	TCC in conjunction with BoPRC, Envirohub and other community groups
51	Develop behaviour change and communication programmes to outline steps TCC is taking to reduce emissions, provide education programmes within schools, and introduce tools to help the community on their own climate journey.	Short-term	\$ - Funded	TCC, FutureFit
52	Enable better risk-informed decision-making by individuals by continuing to advise land risk information to the community and by addressing gaps in natural hazard modelling.	Immediate	\$ - Funded	TCC
53	Build adaptive capacity in our communities by fostering community networks, partnerships and healthy living initiatives.	Medium term	\$ - Unfunded (Action 48 funded)	TCC
54	Explore options for reducing the vulnerability of the community and iwi through advice and identifying funding opportunities on disaster response and climate adaptation.	Immediate	\$ - Funded	TCC, Mana Whenua
55	Support community and iwi-led adaptation planning through funding (see action 48), access to hazard/exposure information (and relevant guidance such as national adaptation toolkits, etc) and exploration of further support needed.	Medium-term	\$\$ - Partially funded	TCC
56	TCC to coordinate and partner with Te Whatu Ora to take a 'health in all policies' approach to maximise the co-benefits of climate action on health and wellbeing outcomes and vice versa.	Immediate	\$\$ - Funded	TCC, Te Whatu Ora

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
57	Provide support and funding as appropriate (through the Community Grants Fund) to the implementation of Mana Kai Mana Ora – WBoP Food Sovereignty & Food Security Plan and/or other organisations working toward growing food locally and ensuring food security. This may include helping communities to establish community gardens and community pantries as well as exploring other actions such as planter boxes to encourage and educate around growing food.	Short-term	\$\$ - Partially funded	TCC, other agencies
Other TCC Led Actions (not currently prioritised)				
58	Explore the potential benefits of creating a digital replica of Tauranga City to help TCC and communities understand the risks of climate change and determine the most effective measures to address risk.	Short-term	\$\$\$ - Unfunded	Local govt, iwi, stakeholders
59	Link climate change to life empowerment programmes (such as housing schemes, skills development, and employment creation) in a way that strengthens the ability to adapt and withstand the impacts of climate change.	Short-term	\$ - Unfunded	TCC, other agencies
Other Tauranga City-Wide Actions				
60	Develop an understanding of potential consequences of climate migration for Tauranga City and assess the readiness of Tauranga to allow for incoming climate migrants.	Long term	\$ - Unfunded	TCC, Pasifika in the Bay, Ministry of Foreign Affairs and Trade, Ministry for Pacific Peoples

E. Business - Whairawa

Aspiration: Low-emissions and resilient businesses thrive in a circular economy.

Tauranga tukurua, tukutahi – Bountiful Tauranga, together – *this speaks of Tauranga’s collective potential to lead and thrive in a circular economy with minimal environmental impact.*

Outcomes			
Low emission and circular business models thrive, providing environmental outcomes for Tauranga City.	Tauranga City’s businesses innovate and are competitive in local, national, and international markets.	Consumers value local businesses that support our community with local food, goods, and services.	Tauranga City’s supply chains are resilient and low carbon.

Contribution from others: TCC will investigate and promote circular economy and sustainable business opportunities to drive innovation. TCC will work with Priority One¹⁸ (and other business sector groups) to support improved circularity and resilience, carbon reduction, and adaptation planning. Central government has also signalled through the ERP actions that achieve wider benefits, such as moving from a linear to a circular economy and development of the bioeconomy¹⁹.

The NAP outlines central government objectives to support sectors, businesses, and regional economies to adapt. Critical actions for central government include delivery of the NZ Freight and Supply Chain strategy (by 2028) and continuing to deliver the Sustainable Food and Fibre Futures Fund out to 2028.

Regionally, Priority One has developed four key themes to support local business these include: Transport; Waste; Energy; and Land. These themes focus on areas where significant educational benefits, or emissions and waste reductions can be achieved. Each theme has targeted projects that are connected locally and nationally (where appropriate) like the EECA Regional Energy Transition Accelerator.

¹⁸ Priority One is the Western Bay of Plenty’s economic development organisation, established in 2001 by the Tauranga and Western BOP business community in partnership with TCC and WBOPDC

¹⁹ A circular economy reduces material use, redesigns materials, products and services to be less resource intensive, and recaptures ‘waste’ as a resource to manufacture new materials and products rather than being driven solely by generation of profit. A bioeconomy means reusing biological resources from land and sea to produce food, materials and energy.

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
Priority Actions				
61	Develop business support programmes for carbon reduction and climate adaptation.	Immediate	\$ Funded (Priority One)	TCC, Priority One and business groups
62	Stocktake circular economies in Bay of Plenty and identify gaps and opportunities for collaboration across the region.	Immediate	\$- Funded	TCC, Priority One and business groups
63	Education and events to help build awareness, capability, and engagement with strategic projects. <ul style="list-style-type: none"> • Project specific workshops and events to build business capability. • Project specific research reports. • Industry collaboration to support the development of regional roadmaps. • Implement a Learning Management System to increase the scale of education within regional businesses. 	Immediate	\$ Funded (Priority One)	TCC, Priority One, business groups and central government
64	<i>Transport – mode shift</i> – project to educate audiences around mode shift and encourage alternative modes of transport through a collaboration with local businesses and councils. Delivered through a pop-up hub to showcase ‘mode shift’ via micro-mobility innovations and associated infrastructure that are accessible now, to influence large impact and safe multi-modal behaviour shift across communities in the region.	Immediate	\$ Funded (Priority One / Partner sponsorships)	TCC, WBOPDC, BOPRC, Priority One and business groups
65	<i>Transport - Hydrogen X</i> - development of a consortium of companies to develop and implement a Hydrogen fuel strategy for heavy vehicle transport adoption for Tauranga.	Immediate	\$ Funded (Priority One) \$\$\$ Government	TCC, Priority One, business groups and central government
66	<i>Waste - Circular Economy Project (CEP)</i> – TCC to continue investigation, in partnership with BOPRC and WBOPDC, around opportunities to develop circular approaches to waste for three key sectors: <ul style="list-style-type: none"> • Construction and Demolition. 	Immediate	\$ Funded (TCC,	TCC, WBOPDC, BOPRC,

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
	<ul style="list-style-type: none"> • Healthcare. • Food and Beverage manufacturing. <p>This project will allow all councils to better understand future waste infrastructure needs for the sub-region and build a baseline of the present and future needs to develop greater circularity in WBOP.</p>		WBOPDC, BOPRC)	Priority One and business groups
67	<p><i>Energy</i> - Regional Energy Transition Accelerator (RETA).</p> <p>The RETA programme involves working across medium and large energy users and those who supply energy to reduce the carbon footprint of industrial processes. Supporting the WBOP region to inform the EECA (Energy Efficiency and Conservation Authority) RETA BOP programme to drive carbon reductions through decarbonisation projects that enable industry to switch fossil fuel operations.</p> <ul style="list-style-type: none"> • High quality information gathering. • Connecting to GIDI (Government Investment in Decarbonising Industry) Fund and a regional decarbonisation roadmap for industrial process heat users. 	Immediate	\$ Funded (Priority One, BOPRC, EECA)	Priority One, business groups and central government
68	Explore developments such as Rangiuru Business Park and the CBD Blueprint which present opportunities to apply circular economy and decarbonisation principles to our region, and also explore the opportunity to link Te Ao Māori principles under Land Use and Built Environment.	Immediate	\$ Funded (Priority One) \$ Unfunded	TCC, Priority One, business groups and central government
Other Tauranga City-Wide Actions				
69	Communicate resources and provide support for businesses to baseline their greenhouse gas footprint, set emission targets, and develop carbon reduction roadmaps.	Immediate	\$ Funded (Priority One)	TCC, Priority One, Local Businesses

F. Oranga Taiao

Natural Environment

Aspiration: Healthy ecosystem services that mitigate the impacts of weather- and climate-related hazards and lower emissions.

Tauranga tū moana, ākinga hau, ākinga tai – Tauranga staunch against dangers, weather and tides – *Tauranga history retells of the resilience of the natural landscape and waterways, so much so Māori cultivated knowledge systems because of the inherent corpus within the environment.*

Outcomes			
Tauranga City's natural environment flourishes providing a carbon sink and natural resilience.	Urban environments enhance biodiversity and improve the health and wellbeing of our people and communities.	TCC contribute to the regeneration of our native wetlands and plantings.	Tauranga City considers the water cycle holistically to minimise impacts on the environment and increase our resilience to climate change.

Contribution from others: Both the NAP and ERP outline the importance of working with nature to build resilience and reduce emissions. Crown entities have a role in enhancing biodiversity and reducing biosecurity risks and Central Government sets national policy around freshwater management and carbon sequestration. The Bay of Plenty Regional Council also plays a key role in protecting and enhancing natural environments.

Nature and Biodiversity Action and Investment Plan:

A number of actions under this theme (Natural Environment) will primarily be delivered under TCC's Nature and Biodiversity Action and Investment Plan, which has been developed at the same time as the Climate AIP. **However, actions which are weighted towards achieving climate change action are listed below.**

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
Priority Actions				
70	Work with BOPRC to promote the assessment of the carbon sink potential of the Tauranga harbour that improves biodiversity and carbon capture (blue carbon).	Short term	\$ - Partially funded	BOPRC led, academia and Partners
71	Increase the utilisation of publicly owned land for Nature Based Solutions such as enhancing existing, and creating new, wetlands.	Short term	\$ - Funded (Staff time)	TCC
Other TCC Led Actions				
72	Review open spaces, wetlands and plantings in the city through the lens of carbon capture, adaptation, resilience and environmental services (re-evaluation could protect wetlands, soils, and open spaces, and lead to discussions about the future needs of the city in regard to climate change).	Medium term	\$ - Unfunded	TCC
Relevant actions in other Action & Investment Plans (Priority actions – Funded)				
1	<p><i>Review and investigate potential updates the City Plan to include objectives, policies and rules to:</i></p> <ul style="list-style-type: none"> <i>Give effect to the NPS-IB once gazetted to increase indigenous vegetation cover.</i> <i>Identify Ecological Linkage Opportunities on the planning maps and requirements to restore indigenous vegetation in these areas (e.g. in riparian margins).</i> <i>Provide incentives to retire or plant land not suitable for development.</i> <p><i>Update City Plan maps to include a new overlay for Ecological Linkage Opportunities in areas identified in the Ecological Connectivity Plan (to be developed, refer action 13).</i></p>	<i>See Nature & Biodiversity AIP.</i>		
2	<i>Increase overall canopy cover equitably across city, including along street corridors, ideally in line with the 3:30:300 rule (regardless of whether native or exotic).</i>	<i>See Nature & Biodiversity AIP.</i>		
3	<i>Pursue accreditation for Tauranga under the Biophilic Cities Partnership, and potentially as a Tree City of the World.</i>	<i>See Nature & Biodiversity AIP.</i>		
4	<i>Implement wider restoration of areas identified in the Ecological Connectivity Plan (to be developed, refer action 15), commencing with restoration and planting outlined in Reserve Restoration Plans and Landscape Concept Plans and prioritising neighbourhoods where there is currently less urban cover.</i>	<i>See Nature & Biodiversity AIP.</i>		

	Actions and programmes of work	Proposed timeframes	Indicative cost	Who
5	<p><i>Collaborate with BOPRC to undertake a detailed assessment of the impact of climate change on natural ecosystems within Tauranga and prepare an adaptation plan for priority risks of ecosystems on public land. Taking a staged approach, focusing on Special Ecological Areas first.</i></p> <p><i>Note: to protect ecosystems themselves from climate change: assessment, then developing GIS maps (3 yearly consultancy report & maps).</i></p>	See Nature & Biodiversity AIP.		
10	<p><i>Assess the Vegetation and Tree policy 2014 to establish if a refresh/review is required and ensure it takes into account how it can contribute to reducing the urban heat island effect.</i></p>	See Nature & Biodiversity AIP.		
11	<p><i>Develop and implement a vegetation monitoring framework and programme with spatial monitoring and ground truthing to ascertain current urban forest cover (native, exotic or mixed) across the whole city and track changes over time.</i></p>	See Nature & Biodiversity AIP.		
12	<p><i>Consider innovative ways to incentivise developers to provide green outcomes and integrate biophilic principles in their developments.</i></p>	See Nature & Biodiversity AIP.		
13	<p><i>Review the Infrastructure Development Code (IDC) and Urban Design Guidelines to align with City Plan update/plan change and:</i></p> <ul style="list-style-type: none"> • <i>Require more space for trees to mature within developments.</i> • <i>Include biophilic principles.</i> 	See Nature & Biodiversity AIP.		
15	<p><i>Develop an Ecological Connectivity Plan for Tauranga, covering both public and private land, to:</i></p> <ul style="list-style-type: none"> • <i>identify locations of existing taonga (treasures) or threatened flora and fauna species, places of importance to mana whenua, areas where groups are active, and</i> • <i>identify potential routes and methods to improve connections between, and ecological values of, these areas while also providing equitable access to nature.</i> <p><i>Use the Ecological Connectivity Plan for Tauranga to inform areas to be identified in new Ecological Linkages Overlay in the City Plan.</i></p> 	See Nature & Biodiversity AIP.		

5. Te mana whakaere me ōna whakaritenga

Governance, review, and monitoring

Roles and responsibilities

Governance - The Group Manager: Infrastructure has overall responsibility for managing and delivering on this plan over time.

Process – Council’s Corporate Planning team is responsible for managing review, monitoring and reporting processes associated with this Plan.

Content – Council’s Sustainability & Waste team is responsible for undertaking updates to the Plan and coordinating other contributors to the review. Specific Council teams, as identified in the monitoring table below, are responsible for providing monitoring content as required.

Review

This plan will be reviewed every three years prior to developing the draft Long-term Plan.

Monitoring

Progress monitoring and reporting will be done annually. This will include an actions status update as well as overall progress towards the aspirations of the plan, informed by the measures of success identified in the following section of this plan.

6. *Ngā pae o angitū* Measures of Success

An early assessment of measures across each category is set out in the table below. The action tables above (under Leadership) also include commitments to review our measures and obtain additional information as required, including developing measures aligned with mātauranga Māori.

Success looks like	Measures	Responsible TCC team
Leadership	Report on progress against implemented actions and collate key indicators/measures: <ul style="list-style-type: none"> Percentage of immediate actions underway or completed by Dec 2023. Percentage of short term actions underway or completed by Dec 2025. Percentage of medium term actions that have a clear programme / plan for completion by Dec 2024. 	Sustainability & Waste.
	Two yearly assessments of GHG emissions: <ul style="list-style-type: none"> Tauranga City wide community footprint. TCC operational and embodied emissions. 	Sustainability & Waste.
	Value of TCC assets that have been assessed against climate risk and natural hazards during the past 5 years.	Sustainability & Waste.
	Value of TCC assets at risk that have adaptation measures in place.	Sustainability & Waste.
	Percentage of projects over \$1m that consider climate change impacts in Project Charter.	Sustainability & Waste.
	Total value of contracts using Broader Outcomes targets in procurement.	Sustainability & Waste / Procurement.
Transport	Tauranga City vehicle VKT by private car, light commercial and heavy commercial vehicles.	Transport.
	Number of/ percentage of households within 400m of a public transport service stop with a service at least every 30 mins during peak times.	Transport.
	Percentage active travel as a percentage of total passenger travel (Pkm or trips TBC).	Transport.
	Measure public attitudes to Public Transport (BoPRC LTP performance measure re bus patronage satisfaction).	Transport / BoPRC.
	Percentage of public transport trips to estimated total trips.	Transport.
	Proportion of public transport network to total transport network (kms).	Transport.
	Increase in Tauranga City vehicle VKT by electric vehicle.	Transport.

Success looks like	Measures	Responsible TCC team
	Percentage development through intensification and % development on green field sites.	City Planning & Growth.
	Percentage of houses/buildings in a mapped natural hazard area.	City Planning & Growth.
	Reduction in waste in line with targets in Waste Management and Minimisation Plan 2022-2028 (including improvement in recycling of construction and demolition waste).	Sustainability & Waste.
	Water consumption per Capita percentage leakage from network.	Waters.
Community	Percentage of people or groups engaged with climate change actions based on the Quality of Life survey.	Strategy & Growth.
	Number of hapū and iwi management plans incorporating climate change considerations.	Sustainability & Waste.
	Number of people using Future Fit to measure their personal carbon footprints.	Sustainability & Waste.
	Number of climate action or climate adaptation events.	Sustainability & Waste.
	Funds invested into community led climate change projects or initiatives.	Sustainability & Waste.
Business	Number of businesses actively implementing new climate actions including - <ul style="list-style-type: none"> • Emissions reduction plan - measuring CO₂ footprint to standard with emissions reduction targets. • Waste reduction processes – measure waste footprints of businesses. • Mode shift change. 	Sustainability & Waste / Priority One.
Nature and Biodiversity	Measures from Nature & Biodiversity Action & Investment Plan - <ul style="list-style-type: none"> • <i>The proportion of native vegetation cover in urban areas and across the city.</i> • <i>The connectedness of vegetation.</i> • <i>The proportion of vegetation canopy cover ... and its distribution by neighbourhood.</i> • <i>New developments incorporate biophilic principles in their designs.</i> 	Spaces & Places / Environmental Planning.

Appendix 1 – Te Taiao and Te Reo Māori glossary

The concept of Te Taiao (environment) refers to the way people live in communities with respect for their wider environment. The notion encompasses an understanding of climate change and its effects on collective outcomes.

Kupu (Word)	Perspective	Outcome	TCC Te Ao Māori Framework perspective
Āhuarangi – <i>Te rangiwhāwhātanga ā-āhuarangi, me ōna hurihanga i roto i ngā marama o te tau.</i>	Climate over time and the changes experienced through seasons and macro changes.	Understand better the relationship that we, Māori and Pākehā, have with Te Taiao the land, water and āhuarangi (climate) and how communities thrive within.	N/A
Whenua – <i>Ki tā te Māori, ko te whenua te ewe o Papatūānuku, te orokohanga hoki o Ngā Atua Māori</i>	From a Māori perspective the whenua is the placenta of Papatūānuku (Earth mother, from whom all living things originate) and the birth of Ngā Atua Māori (The Māori Gods of the natural world).		Built into the concepts within Kaitiakitanga as a focus and other values underneath that.
Wai – <i>Te wai, he toto. Inarā, ko ngā roimata a Ranginui rāua ko Papatūānuku hei tangi i tō rāua wehenga.</i>	The water, the earthly lifeblood. Specifically the tears of both Ranginui (Atua of the sky and husband of Papatūānuku, from which union originate all living things) and Papatūānuku in lamenting their separation.		Built into the concepts within Kaitiakitanga as a focus and other values underneath that.
Koiora – <i>Ngā kohikohinga o ngā kaiao katoa</i>	Communities and grouping of all living things.	Analogous to human collections such as cities, towns and villages and the recognition that we are all in the same boat and journeying in the same direction.	

Glossary of other Te Reo Māori terms used in document

Ahi-ka	People of the home.
Ahurutanga/haumarutanga	A strong duty of care and safety for our people.
Hapū	Subtribe, large natural grouping.
Iwi	Tribal affiliation.
Kaitiaki	Guardian, environmental protector.
Kaitiakitanga**	Environmental protection, stewardship.
Kaupapa	Central purpose.
Korero	Narratives.
Kotahitanga	Togetherness, unity, common thinking.
Mana Motuhake	Capacity to be responsive, responsible and authoritative.
Mana whenua	Authority or rights over land or territory, jurisdiction over land or territory.
Manaakitanga**	Generosity, support.
Māramataka	Māori lunar calendar.
Marae	Māori community meeting places.
Matauranga Māori	Māori worldview.
Mauri	Life principle, life force.
Ngā Atua Māori	The Māori Gods of the natural world.
Pākehā	New Zealander of European descent.
Papakāinga	Home base, village, communal Māori land.
Papatūānuku	Earth Mother, whom all living things originate.
Purākau	Stories.
Rangatahi	Youth.
Ranginui	Atua of the sky and husband of Papatūānuku, from which union originate all living things.
Rangatiratanga**	Right to exercise authority, chiefly autonomy.
Tangata Whenua	Native inhabitants, indigenous.
Tauranga Moana	The greater Tauranga area.
Tauutuutu	Reciprocity.
Te ao Māori	The Māori worldview.
Te Rangapū Mana Whenua o Tauranga Moana Partnership	An autonomous body made up of 17 representatives from each of the hapū and iwi in the Tauranga City Council area.
Te Reo Māori	Māori language.
Te Toka a Tirikawa	North Rock.
Tikanga**	Best practice.
Toa	Warrior.
Tohunga	Expert.
Tumanako	Aspirations, hopes
Urupā	Burial ground
Wairautanga	Spirituality
Whanaungatanga**	Kinship, common connections
Whakapapa	Ancestry, genealogy, lineage, descent or connection
Whakataukī	Proverb or significant saying,

** represent Our Values (Te Rangapū values adopted by TCC)

Appendix 2 – Further Mitigation and Adaptation context

Greenhouse gas emissions

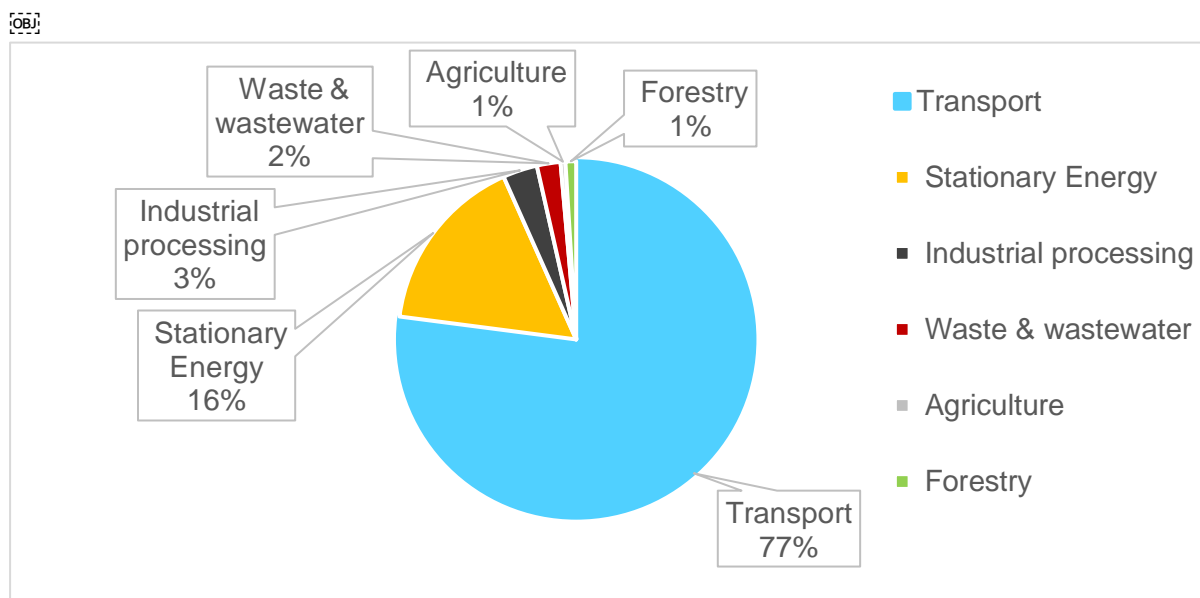


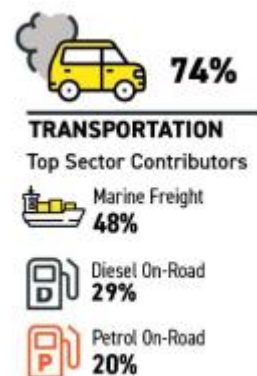
Figure 1. Tauranga City Carbon (Greenhouse Gases) footprint for FY21 – modified to use granular road transport information from the Transport System Plan (TSP²⁰).

In the 2020/2021 financial year Tauranga City generated around 1,600,000 tonnes of carbon dioxide equivalent (tCO₂e). This represents approximately 2% of the national greenhouse gas footprint.

Over 75% of the footprint comes from transport emissions. For the first time, marine freight emissions were included (emissions from ships as they travel between the Port of Tauranga and other ports, both domestically and internationally) and equated to about half of the transport emissions.

Stationary energy was the second largest emissions sector, this accounts for the generation of electricity for use by industry, businesses and households and in the direct production of industrial heat.

Transport as a major emissions source for Tauranga has been a focus for TCC in recent years. Through projects like Smart Growth and the Urban Form & Transport Initiative, a transport model has been created and validated²¹ for the western Bay of Plenty sub-region. The transport modelling provides more specific information on the purpose and how people and things move around Tauranga City (Vehicle Kilometres Travelled by different vehicle types). This work has been done collectively with Western Bay of Plenty District Council, Bay of Plenty Regional Council and Waka Kotahi. Using this method provides more granular information to better inform transport



²⁰ The TSP modelling assesses what type of vehicles are on the road and why they are travelling. The city-wide community footprint assesses emissions based on fuel sales in the city and cannot explain if that fuel is combusted in the region and by what vehicles. The TSP information once apportioned per capita between Tauranga and Western Bay is slightly higher than the fuel sales-based method.

²¹ Validation involves populating the model with current and historical data and assessing the modelled outputs against observed on-the-ground outcomes.

decision making, however the transport emissions cannot be easily split between district and city boundaries, this has been estimated using population weighting from the two areas. This modelling has supported the development of the **Tauranga City transport emissions tool** to estimate the emission implications of different transport projects and proposals, and the mix of outcomes needed to reduce travel demand and emissions, such as mode shift to public transport and active modes or electrification of the fleet.

The transport emissions tool has demonstrated that reaching government targets for emissions reductions by 2035 will require all practicable interventions to occur, and that council has limited influence over those interventions having the greatest impact. The key findings from the transport emissions tool are that:

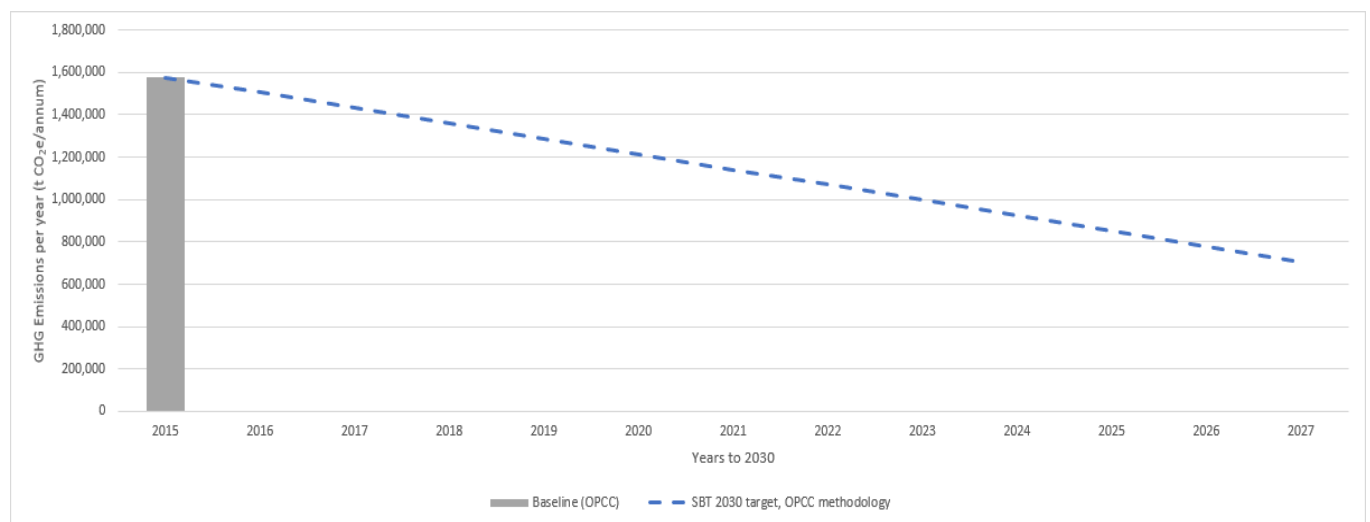
- Increased working from home has very little impact on emissions reduction.
- While significant mode shift (including 15% bus kilometres travelled, up from a base of 1.3% in 2018) will reduce vehicle kilometres travelled²², it has limited impact on emissions.
- Improved technology (e.g. electric vehicle uptake; improved fuel efficiency) supports a considerable reduction in emissions (but not in vehicle kilometres travelled).

Further information about the transport emissions tool can be found in a report to Council’s Strategy, Finance & Risk Committee on 3 October 2022 and available [here](#) on Council’s website.

Calculation of science-based target

In order to explore a science-based target we have followed the WWF One Planet City Challenge (“OPCC”) methodology.

As illustrated in the chart below, following the OPCC methodology would result in a target of 55.2% reduction in emissions across the city by 2030, from a 2018 baseline.



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²² A separate government target within the National Policy Statement on Urban Development

²³ Based on using the data from the Tauranga Community Carbon Footprint report (excluding biogenic emissions from biofuels as per the Community Carbon footprint total) for all emissions sources except road transport which has used a per capita apportionment of travel demand from the Transport System Plan (TSP) modelling. All effort has been made to interpret the Community Carbon Footprint data accurately, however in some cases there is a lack of transparency. Further work may be needed to finalise the baseline for each method.

Future emissions modelling compared to the science-based target

Through the development of this plan, we also sought to understand the potential gap between the initial science-based target and a realistic reduction in future emissions. To identify potential future emissions we modelled four key scenarios related to two major variables: the inclusion or otherwise of population growth, and the inclusion or otherwise of emissions from marine freight.

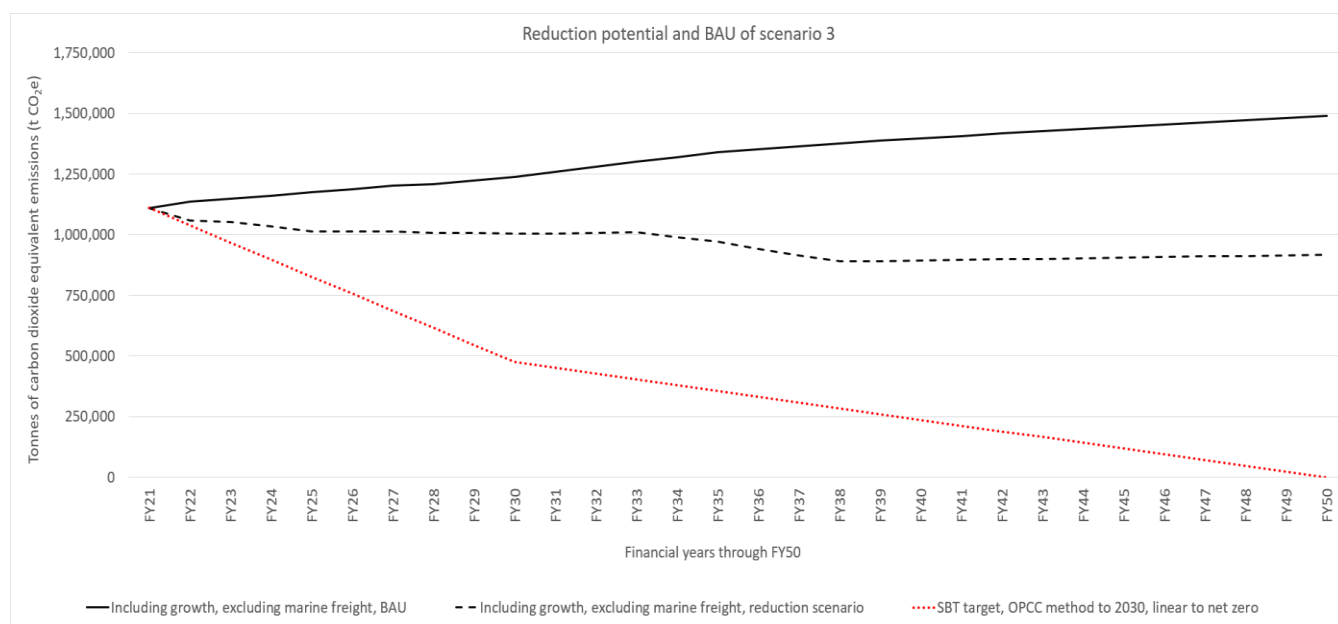
		Marine Freight emissions	
		Included	Excluded
Population growth	Included	Scenario 1	Scenario 3
	Excluded	Scenario 2	Scenario 4

For modelling purposes, Scenario 3 was selected as being most relevant to Tauranga’s circumstances.

- Population growth is assumed and should be included (though due to the limited, projected, and conservative nature of the modelling, scenarios with growth are likely to over-estimate business as usual emissions).
- Marine freight emissions make up a significant proportion of the city’s and region’s carbon footprint but because there is limited local control on these emissions and because there is no internationally or nationally agreed methodology to fairly allocate those emissions, they have been excluded.²⁴

The chart below illustrates the **significant gap** between:

- The ideal goal represented by the initial science-based target (amended for the removal of marine freight emissions) extrapolated out to ‘net zero by 2050’, and
- The modelled potential emissions reductions for the city.



²⁴ In undertaking the modelling, assumptions relating to road transport demand and emissions (the largest source of Tauranga’s emissions) are consistent with the transport emissions modelling that underpins the Transport System Plan (TSP). This includes better and more granular information than the Tauranga Community Carbon Footprint data.

The difference between the business-as-usual situation (the solid black line) and the modelled reduction scenario (the dotted black line) includes the following key assumptions²⁵:

- Working from home increases by an additional 20% of potential in 2030, 50% of potential in 2035 and 75% of potential in 2050 (estimated at around 15% of the workforce beyond those currently WFH) from 2018 levels.
- Vehicle occupancy increases from an average of 1.225 people per vehicle in 2018 to 1.325 people per vehicle by 2050.
- Modal shift changes of:

Mode	2018	2030	2035	2050
Private car.	81%	68%	58%	42%
Light commercial vehicle.	16.5%	16%	17%	18%
Bus.	1.3%	10%	15%	20%
Cycle.	0.6%	3%	5%	10%
Walk.	0.8%	3%	5%	10%

- Electric and hybrid vehicles increase to 30% of the fleet by 2035.
- The regional bus fleet converts to 100% electric by 2035.
- A 35% shift of freight from road to rail by 2035 and 50% by 2050.
- Electric and hydrogen freight vehicles increase to 35% of the freight fleet by 2035 and 55% of the freight fleet by 2050.
- Biofuels to make up 10% of all fuel used as per the (now removed) biofuel mandate.
- Greening of the national electricity grid to 97% renewable by 2035 in line with the Climate Change Commission’s advice to government.

Natural Hazards Resilience project

Through the Tauranga City Natural Hazards Resilience Project, TCC understand the risks to some key infrastructure including Tauranga City’s three waters network ‘critical assets’, transportation network and selected bridges. Some projects to increase the resilience of high-risk infrastructure have already been factored into the 2024 LTP. Further work is needed to develop a broad understanding of climate change impacts on social vulnerabilities, the natural environment and the economy of Tauranga.

In 2020 Council undertook a consolidated assessment²⁶ of the impact of a number of natural hazards, many of which are exacerbated by climate change. While the city is constantly growing and changing, the potential scale of impacts of the modelled natural hazards is likely to remain of a similar magnitude.

²⁵ The transport-related assumptions are consistent with the Transport Emissions Projection Tool presented to Council’s Strategy, Finance & Risk Committee on 3 October, 2022

²⁶ Tauranga City-wide Natural Hazards Risk Assessment, Tonkin & Taylor, April 2020

The table below presents a summary of the results of the city-wide risk assessment.

Hazard	Current climate	Future climate
Coastal inundation	High risk	High risk
Coastal erosion – inner harbour	Medium risk	High risk
Coastal erosion – open coast	Low risk	Medium risk
Tsunami	Medium risk	High risk
High groundwater	Medium risk	High risk
Liquefaction and lateral spread	High risk	High risk
Slope instability	Low risk	n/a

Appendix 3 – Personal actions that individuals and businesses can take

There is a significant amount of information available about the individual steps and actions that people, households, and businesses can take to reduce emissions and become climate leaders. The following are some ideas, there are many more:

- Understand your own carbon footprint by using an online tool like FutureFit
- Reduce your energy emissions (and often your energy bills) by:
 - Turning power off when appliances or lights are not needed
 - Purchasing low-energy appliances when the time comes to renew
 - Insulating your home to reduce heating or cooling costs
 - Opening the windows to cool a house rather than using air conditioning
 - Switching from gas to electricity
 - Installing solar panels
 - Switching to LED lighting and installing occupancy sensors
 - Changing the HVAC (Heating, Ventilation and Air Conditioning) set temperature points based on the season.
 - Double glazing the windows to reduce the extra solar gains/HVAC load
 - Regularly maintaining HVAC and other space heating or cooling equipment
 - Having smart meters to access real time data and reduce unnecessary usage
 - Using conventional drying techniques rather than using an electric dryer
 - Encouraging your household to take shorter showers
 - Ensuring your hot water cylinder and pipes are insulated
 - Installing a solar-powered hot water system
 - Washing your clothes in cold water
- Reduce your waste to landfill by:
 - Purchasing less – think before you buy
 - Repairing or reusing items where you can, instead of upgrading to new items
 - Hiring or borrowing tools that you only need occasionally
 - Buying second-hand and thoughtfully re-homing belongings you no longer need
 - Using your own reusable shopping bags and fruit/vegetable bags
 - Using reusable drinking bottles and cups, reducing single-use items
 - Reducing food waste
 - Composting food waste, or using the council-provided kerbside food-waste collection service
 - Using the council-provided kerbside recycling collection service
 - Signing up to the optional council-provided garden waste service
 - Using public recycling bins where available
 - Taking other recyclables to the Te Maunga transfer station
 - Avoiding unnecessary packaging, for instance by getting groceries from refill stores
- Reduce your transport emissions by:
 - Switching to more sustainable modes such as walking, cycling, scootering, using the bus, or car-pooling
 - Purchasing an electric or hybrid-electric vehicle
 - Looking after your car – checking tyre pressure, motor oil, and driving smoothly will help you use fuel more efficiently
 - Working from home
 - Choosing not to fly where it's an option

- Food-shop sustainably by:
 - Purchasing local and seasonal foods from a farmers' market, for instance
 - Growing your own fruit, vegetables and herbs (and sharing if you have an abundance)
 - Eating more plant-based meals
 - Making the most of leftovers
 - Supporting community organisations that collect and distribute unwanted foodstuffs
 - Using your re-useable cup for takeaway coffee
- Clothes-shop sustainably by:
 - Considering the origin and manufacture of the clothes you purchase
 - Avoiding 'fast fashion' – try to get more mileage out of the clothes you buy
 - Buying second-hand
 - Donating your own quality used clothes to second-hand or charity stores rather than throwing them away
- Take part in climate conversations by:
 - Sharing your story about health, financial, and environmental benefits of climate-friendly actions to encourage others
 - Providing feedback to local, regional, and national decision-makers to share how you feel about climate change
 - Learning about climate change solutions by watching documentaries, reading news articles, listening to podcasts, and reading books
- Care for the natural environment by:
 - Planting native trees on your property or in the community
 - Joining a community planting day
 - Removing plant and animal pets from your property to care for local biodiversity
 - Conserving water all year round

Appendix 4 – Glossary and References

Term	Definition
Adaptation	Adjustment to actual or expected climate and its effects.
Adaptive capacity	The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC, 2014).
Assets	‘Things of value’, which may be exposed or vulnerable to a hazard or risk. Physical, environmental, cultural, or financial/economic element that has tangible, intrinsic or spiritual value (see Taonga) (Ministry for the Environment, 2019).
Biodiversity	The variability among living organisms from terrestrial, marine, and other ecosystems. Biodiversity includes variability at the genetic, species, and ecosystem levels (IPCC, 2014).
Capital	Capital can be defined as tangible and intangible items that are highly valued. Four capitals are defined by the treasury’s Living Standards Framework. These are natural, human, social, and financial/physical.
Cascading effects (of climate change)	Effects that flow on from a primary hazard, to compound and affect other systems in a dynamic sequence.
Climate	Usually defined as the average Weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization. The relevant quantities are most often surface variables such as temperature, precipitation and wind. Climate in a wider sense is the state, including a statistical description, of the climate system (IPCC, 2014).
Climate change	A change in the state of the climate that can be identified (eg, through statistical tests) by changes or trends in the mean or the variability of its properties, and that persists for an extended period, typically decades to centuries. Climate change includes natural internal climate processes or external climate forces such as variations in solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC, 2014).
Consequence	The outcome of an event that may result from a hazard. It can be expressed quantitatively (eg, units of damage or loss, disruption period, monetary value of impacts or environmental effect), semi-quantitatively by category (eg, high, medium, low level of impact) or qualitatively (a description of the impacts) (adapted from Ministry of Civil Defence & Emergency Management, 2019).
Disaster	Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to

Term	Definition
	satisfy critical human needs and that may require external support for recovery (IPCC, 2014).
Driver	An aspect that changes a system. Drivers can be short term but are mainly long term in their effects. Changes in both the climate system and socio-economic processes including adaptation and mitigation are drivers of hazards, exposure, and vulnerability. (MfE, 2019).
Elements at risk	People, values, taonga, species, sectors, assets etc that are potentially vulnerable to climate change impacts.
Emissions	The production and discharge of substances that are potentially radiatively active (ie, absorb and emit radiant energy) in the atmosphere (eg, greenhouse gases, aerosols) (MfE, 2019).
Exposure	The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected by a change in external stresses that a system is exposed to. (IPCC, 2007).
Extreme Weather event	An event that is rare at a particular place and time of year. Definitions of rare vary, but an extreme weather event would normally be as rare as or rarer than the 10 th or 90 th percentile of a probability density function estimated from observations. By definition, the characteristics of what is called extreme weather may vary from place to place. When a pattern of extreme weather persists for some time, such as a season, it may be classed as an extreme climate event, especially if it yields an average or total that is itself extreme (eg, drought or heavy rainfall over a season) (IPCC, 2014).
Frequency	The number or rate of occurrences of hazards, usually over a particular period (MfE, 2019).
Greenhouse gas (GHG)	Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H ₂ O), carbon dioxide (CO ₂), nitrous oxide (N ₂ O), methane (CH ₄), and ozone (O ₃) are the primary greenhouse gases in Earth's atmosphere.
Hazard	The potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources (IPCC, 2014). Hazard usually refers not only to climate-related physical hazards (such as floods or heatwaves) but also to evolving trends or their gradual physical impacts (IPCC, 2014).
Impacts (consequences, outcomes)	The effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services, and infrastructure due to the interaction of climate changes or hazardous

Term	Definition
	climate events occurring within a specific time period and the vulnerability of an exposed society or system. (IPCC, 2014).
Land use	The arrangements, activities, and inputs made in a certain land-cover type (a set of human actions). Also relates to the social and economic purposes for which land is managed (eg, grazing, timber extraction, and conservation). (IPCC, 2014).
Mitigation	A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC, 2014).
Nature Based Solutions (NBS)	Working with nature in a way that meets some of the urgent challenges facing society (including climate change). NBS involves actions to protect, restore and manage ecosystems and their functions either alone, or in conjunction with engineered solutions and are particularly important in urban environments.
Resilience	The capacity of social, economic, and environmental systems to cope with a hazardous event, trend, or disturbance by responding or reorganising in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation (IPCC, 2014).
Risk	The potential for consequences where something of value is at stake and where the outcome is uncertain, recognising the diversity of values. To address the evolving impacts of climate change, risk can also be defined as the interplay between hazards, exposure, and vulnerability (IPCC, 2014).
Sponge City	The sponge city concept involves extensive areas of wetlands and forests in an urban setting that in extreme rain events will soak up water, conversely during extended periods of drought they become a source of water)
Three waters	Drinking water, wastewater, and stormwater.
Transition	The move to a lower-carbon economy. In this plan, it also refers to transitions relating to equitable and resilient outcomes in the face of physical climate risks.
Vulnerability	<p>The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC, 2014).</p> <p>Assessing vulnerability is broader than conventional risk assessments. It includes indirect and intangible consequences on the four wellbeings, and adaptiveness and adaptive capacity (e.g., communities, whānau, hapū, and iwi may be resourceful and adaptive, but may lack the resources, insurance access and mandate or capacity to adapt) (MfE, 2019).</p>