



Auckland Plan 2050 Evidence Report Update

Environment and Cultural
Heritage

August 2022



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Auckland Plan, Strategy and Research Department

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Purpose of update

The Auckland Plan 2050 was adopted by the Auckland Council Planning Committee on 5 June 2018. It was accompanied by a set of evidence reports that provide foundational background information.

The purpose of this update is to provide additional information to the Auckland Plan 2050 Evidence Report: Environment and Cultural Heritage Outcome (June 2018) covering the period since the Plan's adoption to June 2022.

The Auckland Plan was created as a living plan that is able to reflect emerging or changing issues, as well as provide updated data and evidence.

An update to the digital Auckland Plan was completed in September 2022 on the basis of this evidence report update. This followed a memo to the Auckland Council Planning Committee setting out the key aspects to be updated.

Please refer to the Auckland Plan website, www.theaucklandplan.govt.nz for the most up to date version of the full plan.

The following updates have been made to the Environment and Cultural Heritage Outcome section to reflect new data and evidence:

Section	Summary of changes
Environment and Culture Heritage Explained	<ul style="list-style-type: none">• Described significant natural ecosystems• Need to address climate change and its impacts.
Direction 1 Ensure Auckland's natural environment and cultural heritage is valued and cared for	<ul style="list-style-type: none">• Added importance of relational values (belonging and identity).• Included mana whenua relationships with whenua (land), moana (ocean), wai (water), and waahi tapu.
Direction 2 Apply a Māori world view to treasure and protect our natural environment	<ul style="list-style-type: none">• Explained how Māori values and concepts describe inherent interrelationships between people, the environment and wellbeing, and importance of whakapapa and mātauranga Māori.
Direction 3 Use Auckland's growth and development to protect and enhance the natural environment	<ul style="list-style-type: none">• Added 'incorporate principles and designs that increase natural areas (including green spaces)'.
Direction 4 Ensure Auckland's infrastructure is future-proofed	<ul style="list-style-type: none">• Included need for Auckland infrastructure to be well-functioning.• Included need to address climate change impacts.
Focus area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices	<ul style="list-style-type: none">• Added Māori role as kaitiaki and importance of maintaining balance and harmony in natural world.• Added need to leave our natural places and cultural heritage in a better state than we found them.
Focus area 2 Focus on restoring environments as Auckland grows	<ul style="list-style-type: none">• Included protecting places of cultural significance and adding cultural design elements.• Noted the importance of using nature-based solutions as way to solve multiple problems and mitigate impacts of climate change.
Focus area 3 Account fully for the past and future impacts of growth	<ul style="list-style-type: none">• No change.
Focus area 4 Protect Auckland's significant natural environments and cultural heritage from further loss	<ul style="list-style-type: none">• Included descriptions of our significant natural environments and cultural heritage.

	<ul style="list-style-type: none"> Updated narrative to state Auckland is rich in natural ecosystems, landscapes and seascapes.
Focus area 5 Adapt to a changing water future	<ul style="list-style-type: none"> No change.
Focus area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes	<ul style="list-style-type: none"> No change.
Implementing Environment and Cultural Heritage Outcome	<ul style="list-style-type: none"> Included new key strategies e.g. Water Strategy, Te Tāruke-ā-Tāwhiri Auckland's Climate Plan, and Regional Parks Management Plan 2021

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1 Introduction

1.1 Summary

No change to [Auckland Plan 2050 Evidence Report: Environment and Cultural Heritage \(June 2018\)](#)

1.2 The Environment and Cultural Heritage Outcome

1.2 Outcome Description

New additions are shown in bold type:

Auckland's natural environment is the basis for our existence **and prosperity. It provides the clean air we breathe, the freshwater we drink, and the soil to grow food to eat.** It supports and enables all aspects of our society, economy, and culture (see for example WWF, 2016; EDS, 2016). **Our sources of drinking water come from important ecosystems in the Hunua and Waitakere Ranges Regional Parks and underground aquifers. Economic activities and sectors such as tourism, fisheries, agriculture, horticulture, and technologies depend on resources from our environment.**

It **positively** affects our health and wellbeing through the mental and physical interactions we have with it. The environment is also inextricably connected to our sense of identity and place and is a fundamental part of our shared cultural heritage, providing an anchor for the sense of belonging communities have to their place. **Tangata whenua and mana whenua identify themselves in relation to natural systems or landmarks and this expresses their deep physical and spiritual connections to place.**

Auckland's environment not only supports its people, it is also home to many special local ecosystems and is essential for the survival of both indigenous wildlife and species from across the world (Auckland Council, 2015; EDS, 2016; Forest & Bird, 2017). **The Auckland bioregion consists of large native forest-clad ranges, three significant coastal estuaries/harbours, 28 regional parks, Tīkapa Moana/Te Moananui-ā-Toi/Hauraki Gulf Marine Park, spectacular coastal landscapes, seascapes and beaches, and many rivers and streams. They create homes and habitats for the survival of indigenous wildlife and species – and as a result are areas rich in indigenous biodiversity.** We have a responsibility to ensure **these natural areas and our** natural environment is protected and cared for, both for **their relational values and** intrinsic values, and to sustain life for future generations.

1.2.1 Protection

Despite past efforts to protect and enhance the natural environment, it has been significantly stressed by the impacts of human activity (see for example **Auckland Council, 2021; Hauraki Gulf Forum, 2020; Auckland Council, 2015; EDS, 2016**).

1.2.2 Doing Better in the Future

Delete all current text – and replace with the following:

Real change requires new ways of thinking, and this will lead to new ways of acting and behaving. As Auckland grows and develops, we must do things differently. We must strive to achieve better environmental results through our decision making. How we value and see our place, and our place in the environment, also needs renewing because how we talk about our environment affects our behaviour.

Climate change is now recognised as a ‘climate emergency’ for the Auckland region and will require ‘transformational change in how we live, work and play’ (Auckland Council, 2020). Climate change will disrupt our natural ecosystems and their functioning, economy, business, transport, food and energy systems and community wellbeing. As a result, we must take action to reduce our greenhouse gas emissions and adapt to climate-related impacts on Auckland’s cultural heritage, human populations, and ecosystems.

1.3 Relationship to other outcomes in the Auckland Plan

Addition to Table 1:

- Belonging and Participation Outcome: The natural environment is inextricably connected to Aucklanders’ sense of identity, **quality of life**, and place
- Māori Identity and Wellbeing: Delete all bullet points and **replace with the following:**
 - **Māori are tangata whenua: people of the land, people who belong to the land. Māori are related to all living and non-living things in the natural world; they are a part of the land and identify themselves in relation to their environment (e.g. to maunga/mountain, awa/river, moana/ocean, marae, etc). Furthermore, the environment is a key determinant to wellbeing: mental, physical and spiritual wellbeing (Durie, 2020, 1987; Hauraki Gulf Forum, 2020; Kahui & Cullinane, 2019);**
 - **Mātauranga Māori, Māori knowledge, is embedded, located, and stored in land and waters, and is based on generations of place-based or nature-based observations and experiences. This knowledge continually**

evolves and expands, and has a variety of forms – waahi tapu, pūrākau (stories), maramataka (lunar calendar), Rongoā (medicines), and significant landmarks etc – and contributes significantly to our shared cultural heritage.

- **Te ao Māori values and principles of whakapapa, rangatiratanga, whanaungatanga, manaakitanga and kaitiakitanga offer an integrated approach to protecting and enhancing our treasured environments for future generations. Whakapapa creates the obligation of kaitiakitanga, requiring mana whenua to care for their environment and maintain balance or harmony. These values describe the inherent interrelationships or connectedness between Māori and te taiao (environment), wellbeing and sustainability.**
- **Homes and Places: Add a new bullet point:**
 - **Our environment is the source of drinking water for our homes and sink for our wastes and pollution (to air, landfills, and waterways). The intrinsic worth of our natural parks, waterways and forests can be viewed as ‘natural infrastructure’: areas that absorb and filter water, stabilise land and are biodiversity hotspots (and spectacular landscapes).**

2 Context

2.1 2012 Auckland Plan Direction

No change to [Auckland Plan 2050 Evidence Report: Environment and Cultural Heritage \(June 2018\)](#)

2.2 Relevant National and Council Policies, Strategies and Plans, Legislative Requirements

2.2.1 (NEW) Resource Management Reforms

The Resource Management Act (1991) is the principal legislation managing New Zealand's built and natural environments. A comprehensive review of the resource management system began in 2019. The Government has proposed the RMA (1991) be repealed and replaced with three new pieces of legislation:

1. Natural and Built Environment Act (NBA): integrated statute for land use and environmental protection that promotes positive outcomes for both natural and built environments, and ensures use, development and protection of resources occur within prescribed environmental limits.
2. Spatial Planning Act (SPA): how we plan for using land and the coast with a long-term and strategic view. Long-term spatial strategies will be required and will enable more efficient land development, improve housing supply and affordability, and climate change mitigation and adaptation; and
3. Climate Adaptation Act (CAA): supports the response to climate change by addressing complex legal and technical issues associated with managed retreat, funding, and financing adaptation.

An exposure draft of the NBA was released in June 2021 outlining the key aspects of the proposed Act. The Natural and Built Environment Bill and the Spatial Planning Bill will be introduced into the House in 2022. The Climate Adaptation Bill will be released later in 2022 or 2023.

2.2.2 Resource Management Framework

Three changes to Table 2:

National Policy Statement for Freshwater Management **2020**, and add the following new bullet points:

- **Give effect to Te Mana o te Wai (by involving and working with tangata whenua),**
- **Improve degraded water bodies, and maintain or improve all other water bodies using bottom lines,**

- **Expand the national objectives framework with two additional values (threatened species and mahinga kai), develop plan objectives that describe the environmental outcomes being sought, new attributes for ecosystem health, and tougher bottom lines for ammonia and nitrate toxicity, and**
- **Avoid any further loss or degradation of wetlands and streams**

Add **National Policy Statement for Urban Development 2020**, and include the following new bullet points:

- **Ensures all towns and cities have well-functioning urban environments that allow growth ‘up’ and ‘out’ in locations that have good access to existing services, infrastructure, and public transport networks**
- **Requirement to develop a future development strategy (FDS) that spatially identifies broad locations for development, and prepare a housing and business development capacity assessment (HBA)**

Add **Proposed National Policy Statement for Highly Productive Land (NPS-HPL)** and include the following bullet points:

- **NPS-HPL focuses on improving the way land that is highly productive for primary production is managed. It will recognise the values and benefits from the use of highly productive land for primary production, maintain its availability, and protect it from inappropriate subdivision, use and development.**
- **Will require Councils to identify in regional policy statements and plans highly productive land areas. The default classification system will be land classified as Class 1, 2 or 3 under the Land Use Capability (LUC) system – until a set of defined criteria is determined.**
- **Sets out considerations and requirements to be included in regional policy statements and plans and includes 2 key policies to guide decision making on a) plan changes to rezone highly productive land to an urban use, and b) resource consent applications for urban development and subdivisions on highly productive land.**

Add **Draft National Policy Statement for Indigenous Biodiversity (NPS-IB)** and include the following bullet points:

- **The draft NPS-IB applies to indigenous biodiversity on land (excludes the coastal marine area and aquatic systems). It has a foundational concept of ‘Te Rito o te Harakeke’ that refers to maintaining the integrity, recognising the intrinsic value and mauri, and people’s connections and relationships to and within indigenous biodiversity.**
- **The maintenance of indigenous biodiversity means at least no reduction in five features of indigenous biodiversity (e.g. size of populations, properties and**

functions of ecosystems and habitats, etc) and an effects management hierarchy is included

- **The objective is to protect, maintain, and restore indigenous biodiversity in a way that recognises tangata whenua as kaitiaki and people and communities as stewards, and provides for the social, economic, and cultural wellbeing of people and communities now and into the future. There are 17 policies to support this objective.**

2.2.3 (NEW) Three Waters (Delivery) Reforms

In July 2020 central government launched a Three Waters Reform Programme to significantly improve the performance and delivery of three waters (drinking, storm- and wastewater) services in NZ. The first step in the reforms was the establishment of Taumata Arowai (March 2021) – the new drinking water regulator (superseding the Ministry of Health). It will enforce drinking water standards and provide national oversight of the performance of waste and stormwater networks. The second stage of reforms is the establishment of four publicly owned water services entities that will deliver and operate the Three Waters infrastructure on behalf of the communities they serve. The Water Services Entities Bill was introduced to the House (Parliament) in June 2022. Auckland Council falls in Water Services Entity A, commonly referred to as Northern Water.

2.2.5 (NEW) Aotearoa New Zealand First National Adaptation Plan

New Zealand must adapt to the impacts and risks of climate change. The National Adaptation Plan (NAP) recognises that all New Zealanders have a role to play in creating a climate-resilient NZ. The NAP is a central government-led plan to enable all New Zealanders to prepare for and adapt to the impacts of climate change. It contains three goals: 1) reduce vulnerability to the impacts of climate change, 2) enhance adaptive capacity and consider climate change in decisions at all levels, and 3) strengthen resilience; and four priorities that underpin the plan: 1) enable better risk-informed decisions, 2) drive climate-resilient development in the right places, 3) lay the foundations for a range of adaptation options including managed retreat, and 4) embed climate resilience across government policy.

The NAP focuses on the five ‘outcome areas’ of natural environment, homes, buildings and places, infrastructure, communities, and economy and financial systems. Under the natural environment outcome area, there are three objectives (ecosystems are healthy and connected and biodiversity is thriving, robust biosecurity reduces risk of new pests and diseases spreading, and support working with nature to build resilience) and a list of critical actions that include implementation of: Department of Conservation Climate Change Adaptation Action Plan, New Zealand Coastal Policy Statement, National Policy Statement on Indigenous Biodiversity, a Water Availability and Security Programme, National Policy Statement on Freshwater Management, and actions by Biosecurity New Zealand.

The Homes, Buildings and Places outcome area addresses the impacts of climate change on cultural heritage and includes critical actions to support kaitiaki communities to adapt and

conserve taonga/cultural assets and will include developing a framework for assessing exposure and vulnerability of cultural assets/taonga, and guidance for disaster risk management for cultural heritage.

2.2.6 (NEW) Te Tāruke-ā-Tāwhiri Auckland’s Climate Plan

Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan was adopted in July 2020 (Resolution number ECC/2020/29) following Auckland Council unanimously declaring a Climate Emergency in June 2019. It has two goals:

- 50% reduction in regional greenhouse gas emissions by 2030, and net zero emissions by 2050; and
- adapt to the impacts of climate change.

As the development process of Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan closely followed the Auckland Plan 2050, there is good alignment between the plan’s priorities and the Auckland Plan as summarised in **Table 3**. As stated in the Auckland Climate Plan, the action on the priorities will deliver opportunities and benefits across all the Auckland Plan 2050 outcomes, not just Environment and Cultural Heritage. Furthermore, we must plan for uncertainty, taking a precautionary approach and preparing for the impacts of a continued ‘business as usual’ emissions pathway.

Table 3 Alignment between Te Tāruke-ā-Tāwhiri: Auckland Climate Plan and Auckland Plan

Te Tāruke-ā-Tāwhiri: Auckland Climate Plan	Auckland Plan: Environment and Cultural Heritage
<p>Priority 1 Natural Environment Oranga taiao, oranga tāngata: a healthy and connected natural environment supports healthy and connected Aucklanders. The mauri (life essence) of Tāmaki Makaurau is restored</p>	<p>Direction 1 Ensure Auckland’s natural environment and cultural heritage is valued and cared for Direction 2 Apply a Māori world view to treasure and protect our natural environment Focus Area 2 Focus on restoring environments as Auckland grows Focus Area 3 Account fully for the past and future impacts of growth Focus Area 4 Protect Auckland’s significant natural environments and cultural heritage from further loss Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes</p>
<p>Priority 2 Built environment A low carbon, resilient built environment that promotes healthy, low impact lifestyles.</p>	<p>Direction 2 Apply a Māori world view to treasure and protect our natural environment Direction 4 Ensure Auckland’s infrastructure is future-proofed Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices Focus Area 3 Account fully for the past and future impacts of growth Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss Focus Area 5 Adapt to a changing water future Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes</p>
<p>Priority 3 Transport A low carbon, safe transport system that delivers social,</p>	<p>Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcome</p>

Te Tāruke-ā-Tāwhiri: Auckland Climate Plan	Auckland Plan: Environment and Cultural Heritage
economic and health benefits for all.	
Priority 4 Economy A resilient, low carbon economy, guided by our kaitiaki values, that supports Aucklanders to thrive.	Direction 2 Apply a Māori world view to treasure and protect our natural environment Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes
Priority 5 Community and Coast Communities and individuals are prepared for our changing climate and coastline, and carbon footprints of Aucklanders have reduced.	Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices Focus Area 3 Account fully for the past and future impacts of growth Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss Focus Area 5 Adapt to a changing water future Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes
Priority 6 Food A low-carbon, resilient, local food system that provides all Aucklanders with access to fresh and healthy food.	Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices Focus Area 2 Focus on restoring environments as Auckland grows Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss
Priority 7 Te Puāwaitanga o te Tātai Intergenerational whakapapa relationships of taiao, whenua and tāngata are flourishing. The potential and value of Māori is fully realised. Māori communities are resilient, self-sustaining, and prosperous.	Direction 2 Apply a Māori world view to treasure and protect our natural environment Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss
Priority 8 Energy and industry A clean energy system that supports and provides for a resilient, low carbon Auckland.	

The plan contains 58 action areas and 179 actions (including specific actions for and with Māori) where Council has different levels of responsibility and control, reflecting the regional focus of the plan. Dedicated funding has been allocated to fund foundational actions and selected actions through the Council’s budgetary plans, but it should be progressively incorporated and embedded into everyday activities of the Council Group.

2.2.7 (NEW) Auckland Water Strategy 2022

The Auckland Water Strategy commits Auckland Council to protect and enhance te mauri o te wai – the life-sustaining capacity of water – and provides strategic direction and an organising framework to guide decision making, investments and activities across the Auckland Council Group (Auckland Council, Watercare, Auckland Transport and Eke

Panuku). The strategy contains seven over-arching challenges, two cross-cutting themes and nine strategic shifts.

The seven over-arching challenges are: protecting and enhancing the health of waterbodies and their ecosystems, delivering Three Waters services at the right time/place/scale as the city grows, having enough water for people now and in the future, reducing exposure to water-related natural hazard risk over time, affordability, improving how Council works with its treaty partners, and improving how Council organises itself. In addition, two cross-cutting themes of equity and affordability, and climate change, inform the strategic approach of the Water Strategy. This means activities and actions should be designed and delivered in ways that address both equity and affordability and climate change.

The nine strategic shifts are shown in Table 4 and show good alignment with the Auckland Plan 2050 environment and cultural heritage outcome. These strategic shifts represent new approaches and thoughtful proactive planning that enable Council to respond and better manage the listed challenges and themes.

Table 4 Alignment between Auckland Water Strategy and the Auckland Plan 2050

Auckland Water Strategy – Strategic Shifts	Auckland Plan: Environment and Cultural Heritage
<p>1 Te Tiriti Partnership The Council and mana whenua working together in agreed ways to agreed things</p>	<p>Direction 1 Ensure Auckland’s natural environment and cultural heritage is valued and cared for Direction 2 Apply a Māori world view to treasure and protect our natural environment Focus Area 2 Focus on restoring environments as Auckland grows Focus Area 4 Protect Auckland’s significant natural environments and cultural heritage from further loss</p>
<p>2 Empowered Aucklanders The Council working with Aucklanders for better water outcomes.</p>	<p>Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss Focus Area 5 Adapt to a changing water future</p>
<p>3 Sustainable allocation and equitable access Prioritising mauri when using water, to sustain the environment and people in the long term</p>	<p>Direction 1 Ensure Auckland’s natural environment and cultural heritage is valued and cared for Direction 2 Apply a Māori world view to treasure and protect our natural environment Direction 3 Use Auckland’s growth and development to protect and enhance the natural environment Focus Area 3 Account fully for the past and future impacts of growth Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss Focus Area 5 Adapt to a changing water future Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes</p>
<p>4 Regenerative Water Infrastructure Ensure Auckland’s water infrastructure is regenerative, resilient, low carbon, and increases the mauri of water. It</p>	<p>Direction 2 Apply a Māori world view to treasure and protect our natural environment Direction 3 Use Auckland’s growth and development to protect and enhance the natural environment Direction 4 Ensure Auckland’s infrastructure is future-proofed Focus Area 2 Focus on restoring environments as Auckland grows Focus Area 3 Account fully for the past and future impacts of growth</p>

Auckland Water Strategy – Strategic Shifts	Auckland Plan: Environment and Cultural Heritage
should be seen and understood by Aucklanders.	<p>Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss</p> <p>Focus Area 5 Adapt to a changing water future</p> <p>Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes</p>
<p>5 Water Security Create water abundance and security for a growing population through efficient use and diverse sources</p>	<p>Direction 3 Use Auckland’s growth and development to protect and enhance the natural environment</p> <p>Direction 4 Ensure Auckland’s infrastructure is future-proofed</p> <p>Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices</p> <p>Focus Area 5 Adapt to a changing water future</p> <p>Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes</p>
<p>6 Integrated Land use and Water Planning Integrated land use and water planning at the regional, catchment and site scale</p>	<p>Direction 1 Ensure Auckland’s natural environment and cultural heritage is valued and cared for</p> <p>Direction 2 Apply a Māori world view to treasure and protect our natural environment</p> <p>Direction 3 Use Auckland’s growth and development to protect and enhance the natural environment</p> <p>Focus Area 5 Adapt to a changing water future</p> <p>Focus Area 6 Use green infrastructure to deliver greater resilience, long-term cost savings and quality environmental outcomes</p>
<p>7 Restoring and enhancing water ecosystems Take catchment-based approaches to the health of water ecosystems</p>	<p>Direction 1 Ensure Auckland’s natural environment and cultural heritage is valued and cared for</p> <p>Direction 2 Apply a Māori world view to treasure and protect our natural environment</p> <p>Direction 3 Use Auckland’s growth and development to protect and enhance the natural environment</p> <p>Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices</p> <p>Focus Area 2 Focus on restoring environments as Auckland grows</p> <p>Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss</p> <p>Focus Area 5 Adapt to a changing water future</p> <p>Focus Area 6 Use green infrastructure</p>
<p>8 Pooling Knowledge Foster a shared understanding enabling better decisions for our water future.</p>	<p>Direction 1 Ensure Auckland’s natural environment and cultural heritage is valued and cared for</p> <p>Direction 2 Apply a Māori world view to treasure and protect our natural environment</p> <p>Focus Area 1 Encourage all Aucklanders to be stewards of the natural environment, and to make sustainable choices</p> <p>Focus Area 4 Protect Auckland’s significant natural environments and sites of cultural heritage from further loss</p> <p>Focus Area 5 Adapt to a changing water future</p>

Each strategic shift has a clear aim and a series of actions. The delivery of these actions is supported with an implementation plan (Auckland Council, 2022).

2.2.8 Further Environmental and Cultural Heritage Legislation

No change to [Auckland Plan 2050 Evidence Report: Environment and Cultural Heritage \(June 2018\)](#)

2.2.9 Auckland Council Strategies

Replace Table 4 with the following table:

Auckland Council Strategies	
Auckland Water Strategy 2022	A strategy to protect and enhance te mauri o te wai, the life-sustaining capacity of water. It addresses seven key challenges, has two cross-cutting themes (equity and affordability) and climate change, and 8 strategic shifts
Te Tāruke-ā-Tāwhiri Auckland's Climate Plan 2020	An all-of-Auckland, cross-sectoral climate change response and action plan for rapid and transformational change in how we live, work and travel. It sets two clear goals of reducing greenhouse gas emissions by 50% by 2030 and net-zero by 2050 and adapting to climate change impacts. The eight priority areas for action are natural environment, built environment, transport, economy, communities and coast, food, Te Puāwaitanga o te Tātai, and Energy and Industry
Auckland Design Manual	A tool for explaining the importance of good design and helping people to understand how to achieve good outcomes for their project. Of relevance to this paper, it guides the design and planting of parks and open spaces and the development of greenways plans.
SeaChange Tai Timu Tai Pari 2016	A collaborative Marine Spatial Plan produced by an independent working group and released in December 2016. SeaChange is non-statutory and non-binding on agencies. The plan sets an ambitious vision for the Hauraki Gulf, aiming to elevate the health of the Hauraki Gulf. The Hauraki Gulf Fisheries Plan Advisory Group (HGFPAG) was established in late April 2022 and will develop NZ's first area-specific fisheries plan – The Hauraki Gulf Fisheries Plan.
Tūpuna Maunga Integrated Management Plan 2016	Sets the direction for future management of the Tūpuna Maunga, including the protection, restoration, and enhancement of all the Tūpuna Maunga in an integrated manner.
Draft Regional Parks Management Plan 2021	An omnibus plan for the management direction, policies, and desired outcomes for 28 regional parks that cover around 41,000ha of public open spaces.

Regional Pest Management Plan 2020	Outlines a framework to efficiently and effectively manage or eradicate specified pests and harmful organisms in Tāmaki Makaurau/Auckland
Parks and Open Spaces Strategic Action Plan 2012	Sets a 10-year framework for managing Auckland’s parks and open space network over the next 10 years to implement the aims of the Auckland Plan.
<u>Indigenous Biodiversity Strategy 2012</u>	Sets strategic priorities for managing, funding, and improving outcomes for indigenous biodiversity in Auckland.
Urban Ngāhere (Forest) Strategy 2019)	Sets out a vision and three main objectives for improving and protecting Auckland’s urban forest.
Integrated Catchment Management plans	As part of Auckland Council’s implementation of the NPS-FM, are watershed-based plans designed to improve freshwater environments.
Waste Management and Minimisation Plan 2018	A plan to reduce waste and increase reuse and recycling of materials. Sets a zero-waste goal for 2040 and creation of community recycling center’s so we can turn waste into resources and better care for our environment.
<u>Open Space Strategic Asset Management Plan 2015 - 2025</u>	Recognises that as the city grows there will be increasing demands on our parks and open space networks. These places provide connection to the environment, places to recreate and are important contributors to people’s sense of place.
<u>Stormwater Asset Management Plan 2015 - 2045</u>	Determines how we manage our stormwater, supports the use of green infrastructure and minimisation of contaminants making it into the environment.
<u>Watercare Asset Management Plan 2016 - 2036</u>	Defines how and where drinking water and wastewater services are provided.

2.2.10 Summary

The national-level legislative and institutional changes will have a significant direct impact on Auckland Council through the possible removal of its water services delivery function, the creation of new planning documents via a regional planning committee and need for resilience-based investments to adapt to climate change.

At the regional level, the impacts of climate change have already been prioritised with an Auckland-wide Climate Plan and the importance of water and water security addressed with an Auckland Water Strategy.

2.3 Demographics and Trends Pertinent to Outcome

Update the table: Key Report: State of the Environment Report **2020**, and update the table as follows:

- Biodiversity:
 - **Between 1996 and 2018 while there was a significant loss (~1000ha) of indigenous land cover, there was a gain of 1601ha (to create a net gain of 656ha); productive soils are over-fertilised and compacted; large native forest areas in the Waitākere Ranges, Hunua Range and on Aotea/Great Barrier Island continue to have highest levels of native plant species richness and ecosystem diversity and lowest weeds and introduced birds. Urban forests are notable for their weediness. Te Hauturu-o-Toi/Little Barrier Island, Glenfern and Windy Hill on Aotea/Great Barrier Island and Hunua Ranges have the highest percentage of native birds.**
- Freshwater:
 - **Water quality is good at the top of catchments where land cover is largely native forest, and declines as the river meanders through productive rural areas and urban areas. There is nutrient enrichment, declining visual clarity, and generally high levels of *E.coli*. Most rural and urban streams had very high levels of *E.coli* but over half of these streams have improved over the last 10 years. Our dune and volcanic lakes are in poor shape due to high sediment and nutrient loads and invasive plant species.**
- Coastal:
 - **Water quality in open coastal sites and at harbour mouths are generally good while upper estuarine sites have poorer quality. Overall, half of the monitored sites had good to fair water quality, and approximately one quarter of sites had poor water quality. Elevated nutrient levels are most common issue regionally.**
- Air Quality:
 - **While air quality overall is good and improving, air quality in Queen Street is declining with increases in PM_{2.5}, PM₁₀ and NO₂. Greenhouse gas emissions have been increasing with the main contributor being transport (cars and light vehicles), steel production and energy sector**
- PM₁₀:
 - **The long-term trend is decreasing. There are occasional exceptional events (e.g. October 2019 building fire, and Australian Dust storms and bushfires) that lead to exceedances of NESAQ and Auckland Ambient Air quality targets.**

- **NO₂:**
 - **Vehicle emissions are the main source of NO₂ pollution. The long-term trend is decreasing, with short-term variability at roadside sites plateauing or increasing which coincides with increased traffic levels.**

2.4 Opportunities and Challenges

Delete the 3rd bullet point ‘The effects of climate change...’ and replace with:

- Climate change will have a significant impact on Tāmaki Makarau/Auckland which is a coastal region bordered by the Hauraki Gulf, Waitematā, Manukau and Kaipara harbours. Auckland will need to adapt to rising sea levels, long droughts, extreme storms, increased flooding, and increased exposure to natural hazards. An abundance of evidence is now available to support the need for transformational change to how we live, work and travel, which has informed the development of Te Tāruke-ā-Tāwhiri Auckland Climate Plan 2020.

3 Evidence

This is additional evidence since 2018 to support the Environment and Cultural Heritage Outcome.

3.6 (NEW) Climate Change and Tāmaki Makaurau/Auckland

In June 2019 Auckland Council declared that the Auckland region was facing a climate emergency and committed to:

- incorporate climate change considerations into work programmes and decisions
- provide leadership and advocate for greater central government leadership and action on climate change
- increase visibility of our climate change work
- lead by example in monitoring and reducing greenhouse gas emissions (GHGE), and
- include climate change impact statements on all council committee reports.

This climate emergency declaration was followed up with Te Tāruke-ā-Tāwhiri Auckland Climate Plan (TTaT/ACP) – an Auckland wide, cross-sectoral climate response action plan. The significance of climate change has been recognised as requiring ‘rapid and transformational change in how we live, work and travel’ (Auckland Council, 2020). Put differently, climate change will disrupt our economy, transport, food, and energy systems, our natural and built environments, and community wellbeing. Mazzucato (2021) says the

global climate emergency is the greatest problem of our time as it will dramatically change life for humans, animals, and plants on the planet.

TTaT/ACP sets two clear goals: reduce greenhouse gas (GHG) emissions (by 50% by 2030, and net zero by 2050) and adapt to climate change impacts. With transport being the main contributor to GHG emissions in Auckland, reducing emissions will require radical change to our transport networks and how we travel individually. Our energy needs and industry, representing the other two sources of GHG, will also need to decarbonise. According to Hickel (2020), reducing GHG emissions to net zero by 2050 is the single most challenging task that humanity has ever faced.

Our future climate will be different from today due to the amount of global warming (temperature increase) that has already occurred – and continues to occur. This warming will create changes such as temperature, rainfall, ocean temperatures, and sea level. These climate changes lead to changing risks and impacts from extreme heat days, increased flooding or droughts, sea level rise, extreme storm events, and exposure to natural hazards. The implications of these changes – being second, third or fourth-order effects – are ocean acidification, flooding, disrupting transport networks and water/wastewater functioning, droughts affecting municipal water supply, and extreme storms combined with higher sea levels flooding homes along low-lying coastal areas. With Tāmaki Makaurau/Auckland being a coastal region (3200kms of coastline), bordered by the Hauraki Gulf, Waitematā, Manukau and Kaipara harbours, the impacts and implications of climate change are very real.

We are therefore being called to adapt to the impacts and their implications: sea level rise, long droughts, extreme storms, increased flooding, and exposure to natural hazards. TTaT/ACP sets priorities for climate adaptation for our natural and built environments, transport, economy, communities, food, energy, and industries.

There is plenty of evidence that supports the need for transformational changes to how we live, work and travel. Latest New Zealand based research has signalled that the effects can slowly emerge, widen variability, be extreme or compounded (e.g. combined). That is, the impacts will not emerge in the same way (Cradock-Henry et al., 2020; Lawrence et al., 2020, 2018). We are being told the impacts and hazards interact, and cascade or move through connected systems: the impacts will affect urban systems, infrastructure, human activities, and financial sectors (Hughes et al., 2020; Bell et al., 2021; Paulik et al., 2020; Lawrence et al., 2020, 2018).

According to the IPCC (2022) the scientific evidence is unequivocal: climate change is a grave and mounting threat to human wellbeing and the health of our planet. People’s health, lives, and livelihoods, as well as property and critical infrastructure, including energy and transportation systems, are being increasingly adversely affected by hazards from heat waves, storms, drought, and flooding as well as slow-onset changes including sea level rise (IPCC, 2022).

The International Resources Panel (IRP, 2019) have stated that climate change and biosphere integrity are “core” planetary boundaries because the coevolution of life on Earth and the physical climate are defining aspects of the earth system. Due to the interactions and

feedbacks between life and climate, changes to either boundary have the potential to cause changes in the entire earth system.

O'Reilly (2017) describes climate change as a challenge that we must rise to meet, or we will suffer dire consequences. If catastrophic global warming does not occur, the steps we have taken to address it are still worthwhile. O'Reilly (2017) views adaptation and mitigation of climate change like an insurance policy: even if there is no climate change, or the consequences are not dire – and we have made big investments to avert it – we still win because we will have:

- transitioned to renewable energy,
- created a new source of jobs in dealing with climate change
- reduced dependence on oil from hostile and unstable regions
- mitigated economic losses and health effects from air pollution
- invested in new industries.

In short, O'Reilly (2017) believes we do better if we believe in climate change and act on that belief even if we turn out to be wrong. The worst outcome is we will have built a robust innovation economy. This is much more favourable than the alternative outcome: catastrophic climate change.

3.7 (NEW) Our Place in Nature: We are a part of Nature

Humans and non-human nature are interconnected and interrelated. The environment (the natural world, nature) is the context of everything we do: our daily living, our business, and our politics (Welden et al., 2021; Capra & Luisi, 2016). We have relationships with places and things, and this provides identity and a sense of belonging; we connect with natural places (e.g. swimming, fishing, tramping) and get physical, mental, and spiritual wellbeing. Furthermore, we have an existential dependency on nature for all the things necessary for human life, and survival (See also 'Spectrum of Values section'). Energy, water, nutrients, and other materials all come from our environment (IRP, 2019; Capra & Luisi, 2016; Raworth, 2017). Our economy is also deeply dependent on nature for energy and natural resources.

Science tells us nature, our natural world, is made up of living networks of microorganisms, plants and animals that continually interact with their physical surroundings, and this creates and maintains conditions conducive to life (Capra & Luisi, 2016). Giant, invisible regenerative feedback loops called natural cycles connect the living (e.g. animals) and non-living (e.g. rocks, oceans) parts. Living things are part of, and are shaped and transformed by, these giant cycles known as the water cycle, carbon cycle, nutrient cycles and energy webs and flows (Savory & Butterfield, 2016). Said another way, our environment has living and non-living things that are interlinked through a network of natural cycles.

People – human beings – are also living things. We therefore have a role to play in keeping non-human living things alive and to support nature's life-giving and regenerative cycles and processes that sustain and enable life (Birney, 2021; Capra & Luisi, 2016; Raworth, 2016; Senge et al., 2010). Raworth (2016) says today's 'generational design challenge' is for humans

to become full participants in regenerating earth's life-giving cycles so that they can thrive. We need people and nature to thrive together.

Our relationships and connections with nature – our place in nature – can be viewed collectively and individually. As a collective of people, as society, the environment is the context in which we live. Therefore, society is surrounded by or embedded in the larger system of nature (Welden et al., 2021; Biggs et al., 2021; Birney, 2021; Williams et al., 2017; Raworth, 2017; Capra & Luisi, 2016; Mead, 2014; Greer, 2011; Marcus et al., 2010; Senge et al., 2010). Put differently, society is deeply interconnected (i.e. inseparable) and embedded within nature and nature systems. Society, people, and nature are intertwined. (See the Systems Thinking section for further explanation)

As individual human beings, we are also embedded in nature which means we are a part of nature – we are one species among many others, or kin (MfE, 2022; Hickel, 2020; Capra & Luisi, 2016; Wahl, 2016; Senge et al., 2010). This is indeed the *te ao Māori* understanding and a common belief among all indigenous peoples (West et al., 2020; Morgan & Manuel, 2020; Kahui & Cullinane, 2019; Capra & Luisi, 2016; Wahl, 2016; Kimmerer, 2013; Whitt et al., 2001; Cajete, 2000). For Māori people, *whakapapa*, and the origins of life from Papatūānuku and Ranginui, teaches all living and non-living things are related. Māori, therefore, have kin relationships with all living things and see themselves as *tangata whenua* – people of the land, people born from the land, people who belong to the land, to nature (Kahui & Cullinane, 2019; Hauraki Gulf Forum, 2020; Lockhart et al., 2019; Henare, 2001; Durie, 1987). This view, of people being a part of the environment, is supported in NZ environmental reporting (MfE, 2022).

Western scientist Albert Einstein said 'A human being is a part of the whole, called by us 'Universe', a part limited in time and space. He experiences himself, his thoughts, and feelings as something separated from the rest - a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison and widen our circle of compassion to embrace all living creatures and the whole of nature in its beauty' (Kumar, 2013). Indigenous worldviews and *te ao Māori* have always had a 'wide circle of compassion' that embraces all living things.

3.8 (NEW) Our Spectrum of Values for the Environment

Values represent guiding principles, ideals, and judgements of what is important and grounds us in what we most care about. When it comes to natural environments, the purpose of values is to focus us on what is meaningful and important, and to guide and regulate our interactions, relationships, behaviour, conduct and to influence environmental management (Carney, 2021; Welden et al. 2021; Pascual et al., 2017; Mazzucato, 2018; Strickler, 2019; Artelle et al., 2018).

We hold a set of values – or multiple values – for our natural environments or nature (MfE, 2022; PCE, 2021; West et al., 2020, 2018; Chan & Satterfield, 2020; Chan et al., 2020, 2016; Maxwell et al., 2020; IPBES, 2019; Arias-Arevalo et al., 2018, 2017; Jax et al., 2018; Tadaki et

al., 2017; Pascual et al., 2017; Klain et al., 2017; Diaz et al., 2015; Harmsworth & Awatere, 2013). They are:

- intrinsic values ('of' nature): the inherent worth or right to exist for its own sake; this includes species, natural processes, ecosystems, and ecosystem services/functions
- use or instrumental values ('from' nature): practical use and benefits to people
- relational values ('with' nature): relationships and responsibilities between people and nature; these provide identity, sense of place, wellbeing, quality of life.

This shows we attach a range of meanings and importance to the natural systems that surround us. We can value nature for identity, wellbeing and belonging – and this creates responsibilities and an ethic of care. We also value nature for its own sake, and for the resources and benefits it provides for living and business. As stated by Mazzucato (2018) 'how we talk about things affects our behaviour'. Many authors argue that the full spectrum of values – in particular, non-instrumental values – need to be better expressed by institutions so that these values influence decision making, laws, policies and actions (Chan & Satterfield, 2020; Chan et al., 2020; Riechers et al., 2021; Leventon et al., 2021; Welden et al., 2021).

The recognition of non-financial and non-utilitarian values is vital to effective management. The people of Auckland have strong relational values with natural environments. The relationships people create between themselves, and the ocean, water, landscapes, and natural features create a sense of belonging and support mental and physical wellbeing. Māori people and the mana whenua of Tāmaki Makaurau have deep inalienable relationships with the land, coast and water (Hauraki Gulf Forum, 2020; Auckland Council, 2021, 2020) and from this comes their identity, wellbeing, culture and inherent responsibilities to protect and care for nature.

Achieving all three values simultaneously can be challenging and is best achieved by bringing new thinking, frameworks, and perspectives into play such as Holistic Management (Savory & Butterfield, 2016), Net-Positive Design (Birkeland, 2020), systems thinking (Design Council, 2020; Capra & Luisi, 2014; Senge et al., 2010; Senge, 2006; Ackoff et al., 2006), indigenous knowledge systems (MfE, 2020) and recognising ecosystems as legal persons (Kahui & Cullinane, 2019).

New frameworks being developed by Māori and mana whenua are leading the way with integrating multiple values in a coherent manner. Maxwell et al., (2020) provide He Waka Taurua model that recognises values of te ao Māori and western science for the holistic management of the marine environment. Kahui & Cullinane (2019) describe examples of Māori encapsulating the full set of relational, intrinsic, and instrumental values by representing significant ecosystems as legal persons as has occurred with the Te Urewera area and Whanganui River.

Furthermore, the Te Mana o te Wai framework for freshwater management (MfE, 2020) creates a values structure for water (wai) based on the deep relationship (whakapapa) Māori have with the land and water. This te ao Māori perspective means water is first and foremost for the environment/nature (intrinsic value), then it is for people to drink (instrumental), and

after those needs are met it can be used for industry/business use (instrumental). This expression of values – the order and integration – flows on to affect behaviour and decision making. Many authors have stated values are a deep leverage point and an ‘indirect driver’ of change (Chan et al, 2020; Riechers et al., 2021; Meadows, 2008, 1999). Deep leverage points are places to intervene in systems to bring about transformational change.

Our values associated with the environment are vitally important: they influence the way we treat the environment and how we live. The inclusion of relational values in policy making and decision making ensures we express:

- our dependence on the environment for wellbeing and prosperity
- our place in nature – that we are a part of, and embedded in, nature
- the responsibilities and obligations of care that flow from our relational values.

3.9 (NEW) Two-Eyed Seeing: The Power of mātauranga Māori and Western Science

The bringing together of indigenous and western knowledge (and ways of knowing) is enhancing our understanding of the world and has become a source of innovation and new opportunities (MfE, 2022; PCE, 2021; Durie, 2020, 2011, 2004; Maxwell *et al.*, 2020; Rayne *et al.*, 2020; Hauraki Gulf Forum, 2020; Mercier & Jackson, 2019; McAllister *et al.*, 2019; Hikuroa, 2017; Harmsworth & Awatere, 2013; Bartlett *et al.*, 2012). In Aotearoa New Zealand, we can observe our world and places with western scientific knowledge and mātauranga Māori. In doing so, we learn other ways of seeing and knowing, and we can’t unlearn that information. This means we possess new knowledge, more expanded views, and in the process we do not diminish the freedom of others (Sieden, 2011; Bartlett, 2011). Furthermore, learning to see the world anew and transcend dominant paradigms is a key leverage point for change (Bryant & Thomson, 2020; see section 3.10.4 for more on leverage points).

The concept or principle of ‘Two-eyed seeing’ (*Etuaptmumk*, of the Mi’kmaq Nation, Canada) describes the bringing together of different knowledge systems. It is ‘learning to see from one eye with the strengths of indigenous knowledge and ways of knowing, and from the other eye with the strengths of western knowledge and ways of knowing...and learning to use both these eyes together for the benefit of all’ (Rayne et al., 2020; Kutz & Tomaselli, 2019; Bartlett et al., 2012; Haig-Brown & Archibald, 1996). Two-eyed seeing recognises the distinct and whole nature of the indigenous eye and of the western eye – and asks that they work together for positive outcomes (McAllister et al., 2019; Knapp, 2013; Bartlett, et al., 2012; Bartlett, 2011).

A Māori equivalent of two-eyed seeing is captured in a whakatauki from Tā (Sir) Apirana Ngata where he advised future generations to hold fast to their te ao Māori values, knowledge and practices while learning new skills and knowledge to survive in a different and changing world:

‘E tipu e rea mō ngā ra o tōu ao, Ko tō ringa ki ngā rākau a te Pakeha hei ara mō tō tinana, Ko tō ngākau ki ngā taonga ā tīpuna Māori, Hei tikitiki mō tō māhuna ā ko tō wairua ki tō Atua nāna nei ngā mea katoa’

Grow up and thrive for the days destined to you, Your hands to the tools of the Pakeha to provide physical substance, Your heart to the treasures of your Māori ancestors as a diamond for your brow, Your soul to your God to whom all things belong’.

Durie (2020, 2010) states that science cannot be understood through the tools of mātauranga Māori, and equally mātauranga Māori cannot be understood through the tools of science – because they are two different bodies of knowledge, and each has their own integrity. Problems arise when the criteria adopted by one system of knowledge, such as science, are used to decide on the validity of another system that subscribes to different criteria. For example, trying to understand religious faith as if it should obey the rules of science leads nowhere. This does not mean religious faith has no validity. Similarly, because cultural views are not cast in scientific or technological jargon, it does not negate their relevance (Durie, 2010).

Two-eyed seeing has been occurring in Tāmaki Makaurau. Mātauranga Māori and western science has been joined together to greatly enhance our understanding, importance and management of the marine environment as seen in the State of our Gulf report (Hāuraki Gulf Forum, 2020), regional parks (Auckland Council, 2021), water (Auckland Council, 2022), climate (Auckland Council, 2020), and urban forests (Auckland Council, 2019). From this work the mana whenua o Tāmaki Makaurau are acknowledged as ‘an intimate part of the ecological and cultural fabric of the region’ (Auckland Council, 2020). They have shared the following concepts or principles of te ao Māori (Hāuraki Gulf Forum, 2020; Auckland Council, 2021, 2020; Spiller et al., 2015):

- Whakapapa: all elements, living and non-living, of the natural world are related through whakapapa from Papatūānuku, Ranginui and their children. This inter-relatedness between people and nature means Māori belong to (are a part of) nature
- Te ao Māori is structured around core Māori values of whakapapa (genealogy, connections), rangatiratanga (authority, self-determination), kaitiakitanga (guardianship), manaakitanga (care and respect), and whanaungatanga (interconnectedness of people).
- Mātauranga Māori is Māori knowledge systems and practices developed from te ao Māori worldview and experiences, and includes elements not detected by instruments. Much knowledge is found and stored in the land and is based on generations of place-based observations.
- Kaitiakitanga is an obligation that flows from whakapapa to mana whenua; it is the responsibility to care for their land and waters and to maintain balance/harmony in te taiao
- Tikanga – Māori customs and practices – has been passed from generation to generation to guide harmonious living and is built on mātauranga.
- Taurite is a principle of having reciprocal obligations and responsibilities to restore and maintain balance and harmony between people and nature.

Te ao Māori and mātauranga Māori broadens and deepens our understanding of the world, taiao (environment) and Tāmaki Makaurau. For Māori, everything in the environment is interrelated making mana whenua a part of nature (e.g. kinship with all other beings). This

whakapapa bestows responsibilities on mana whenua to care for the environment and maintain balance (kaitiakitanga). All mātauranga is understood within this whakapapa, relational framing (Hikuroa, 2020). Māori have various forms of knowledge (e.g. pūrākau – stories; waiata – songs; maramataka – lunar calendar; and place-names), draw knowledge from many sources and use multiple types of intelligence that include cultural and spiritual dimensions. This multi-dimensional knowing (physical, cultural, and spiritual) means Māori do not allow the rational and logical to exclude other ways of knowing (Solomon & Peach, 2021; Hikuroa, 2020; Spiller et al., 2015; Harmsworth & Awatere, 2013). Furthermore, in te ao Māori the environment and the resources associated with them have importance for sustaining the people physically, economically, culturally, spiritually and politically (Harmsworth & Awatere, 2013; Kawharu, 2010).

There are other examples of two-eyed seeing regarding the environment in New Zealand. The Environment Aotearoa 2022 report (MfE & Stats NZ, 2022) brings together mātauranga Māori and western science by describing the Matariki star cluster and then uses it to structure the entire report. The Wellbeing budgets and the environment report (PCE, 2021; Reid, 2021) delves into te ao Māori view of wellbeing and how it is intimately connected to te taiao, and the recognition of significant ecosystems as legal persons represents the merging of te ao Māori and western worldviews (Kahui & Cullinane, 2019). The Environmental Protection Agency (EPA) created a decision making framework using a waka hourua-partnership approach that weaves mātauranga and science together (Jones et al., 2020). Aotearoa New Zealand's National Adaptation Plan (MfE, 2022) for climate change includes the holistic Rauora Framework that represents the indigenous view of climate change. The exposure draft on the National Policy Statement for Indigenous Biodiversity (MfE, 2022) incorporates the concept of Te Rito o Harakeke to support the integrity and mauri, and relational and intrinsic values of terrestrial indigenous biodiversity.

The new approach for freshwater management, Te Mana o te Wai, brings a te ao Māori framework into policy (MfE, 2020). One can argue the ordering of values for freshwater is supported by western science. The intrinsic values of water can be represented by the water (hydrological) cycle and its processes of precipitation, evaporation, and penetration through the soil (Savory & Butterfield, 2016). The water cycle keeps water moving: between the atmosphere and land, flowing through rivers and streams, and flowing down through the soil into underground aquifers. An effective water cycle (intrinsic value) means there is water in natural environments such as river catchments and lakes that can also be used for humans to drink (instrumental value) and support economic activities (instrumental value). In other words, the water cycle is a giant feedback loop with a set of circular processes that continually generates and regenerates water. Protecting or ensuring an effective water cycle comes first for it is the source of all water.

3.10 (NEW) Systems Thinking: Seeing Wholes and Connections

Numerous researchers and academics are advising the major problems of our time – energy, environment, climate change, food security, financial security, social inequality, unemployment – are ‘systemic’. This means our problems are interconnected and interdependent: our social, environmental, and financial systems and associated crises are

interlinked and out of balance (Kellner, 2022; Biggs et al., 2021; Hickel, 2020; Mead & Landrum, 2019; Mead, 2018; Williams et al., 2017; Capra & Luisi, 2016; Wahl, 2016; Raworth, 2016; Liu et al., 2015; Ehrenfeld, 2013, 2008; Senge et al., 2010). Systemic problems, they say, can be addressed with systems thinking and system leaders (Senge et al., 2015).

Systems thinking is about wholeness, relationships, connections, and interactions. It is studying and managing whole systems without taking them apart so that we see and focus on the interrelatedness or interconnections between things (IRP, 2019; Wahl, 2016; Capra & Luisi, 2016; Senge et al., 2015, 2010; Senge, 2006; Schultz, 2009). It is a way to:

- see the larger systems around us and our place in them (putting things into context: stepping back and zooming out to see the bigger picture);
- identify the deeper (invisible) structures, patterns and cycles driving the larger systems and underlying our problem; and
- focus on the connections and relationships between everything.

Systems are everywhere. We have social, economic, political, cultural, and ecological systems. At a national level, we have health, education, and policing systems. At a regional and city scale, we have transport, water, wastewater, waste, and regulatory systems. All these systems are interconnected. Some systems are embedded or nested inside other systems. Within the largest system, the biosphere, or the natural environment, is human society, and within society is our economy (Mead, 2018; Williams et al., 2017; Raworth, 2017; Marcus et al. 2010; Senge et al., 2010). It is for this reason that social and ecological systems are considered inseparable and interdependent (Biggs et al., 2021; Auckland Council, 2020; Williams et al., 2017).

We live within – we are embedded in – natural eco-systems. We are surrounded by freshwater eco-systems, marine eco-systems, terrestrial eco-systems, and atmospheric/climate systems. All natural eco-systems have a set of underlying forces and regenerative cycles (ecological processes) that create conditions to support all life: the water cycle, carbon cycle, nutrients cycles and energy flows. Micro-organisms, plants, and animals are essential to ensuring these cycles are functioning effectively (Savory & Butterfield, 2016). These cycles do not exist in one ecosystem or one part of nature – they are systemic cycles, cycles of the whole system we call nature. For example, the water cycle involves the dynamic interactions between freshwater-marine-terrestrial-atmospheric ecosystems and their living and non-living elements. Therefore, when we see living things, we see relationships or connections; when we create relationships, we get networks; and whenever we see living networks in society or nature, we see cycles (Capra & Luisi, 2016).

Changes in society such as population growth, and changes in economic activity such as increased production and consumption, flow on to increased pressures and impacts on land, water, and biodiversity (IRP, 2019). A systems approach has been used by IRP (2019) to assesses natural resource use by creating linkages and feedback loops between all the components. They indicate the use of natural resources has consequences, and how society uses them determines environmental impacts, human wellbeing, and prosperity for national economies.

3.10.1 (NEW) Māori are natural System Thinkers

Te ao Māori values express strong interconnections between Māori people and their environment. Whakapapa describes the kinship between Māori and other living and non-living things and their origin from – and belonging to – the land (Reid, 2021; McAllister et al., 2019; Kahui & Cullinane, 2019; Hikuroa, 2017). Whanaungatanga refers to the interdependence between people and their environment and enables the knowing of people through their links to others and the natural world e.g. awa, maunga, moana (Durie, 2020). In Te Tāruke-ā-Tāwhiri Auckland Climate Plan, mana whenua o Tāmaki Makaurau seek the protection and preservation of whole living systems, and for maintenance, sustainability and regeneration of the whakapapa relationships that enable the wellbeing of these systems. Furthermore, the Māori wellbeing framework, Te Ora ō Tāmaki Makaurau, captures and connects wellbeing to the whenua (land) and taiao (environment) (Auckland Council, 2020).

Mātauranga Māori is holistic and place-based, being founded on observations of the world around them (Hikuroa, 2020; Morgan & Manuel, 2020; Durie, 2020). Durie (2020) describes how Māori learn from looking outward: by looking outside of themselves and beyond themselves. In other words, meaning for Māori comes from an outward (centrifugal) flow of energy and the making of connections with everything around them. Furthermore, Durie (2020) adds Māori recognise the environment as a key determinant to wellbeing and mental, physical and spiritual wellbeing are all connected.

Spiller et al. (2015) and Solomon & Peach (2021) describe how Māori draw knowledge from multiple sources and combine logic, intuition, ancestral knowledge, spirituality, and observations. Solomon & Peach (2021) describe a whakatauāki (proverb) of how Māori observed their environment (sky, land, and ocean) and used the observations and signs in the heavens, sun, moon, stars and winds together with the signs from the land, trees, plants, ocean tides, and fish movements to navigate and maintain wellbeing. This same whakatauāki opens Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan (Auckland Council, 2020).

4 Stakeholder Feedback

No change to [Auckland Plan 2050 Evidence Report: \[Outcome area\] \(June 2018\)](#)

5 Feedback from public consultation

No change to [Auckland Plan 2050 Evidence Report: \[Outcome area\] \(June 2018\)](#)

6 Conclusion

Appendix 1 Key partners and stakeholders engage

No change to [Auckland Plan 2050 Evidence Report: \[Outcome area\] \(June 2018\)](#)

Glossary

No change to [Auckland Plan 2050 Evidence Report: \[Outcome area\] \(June 2018\)](#)

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