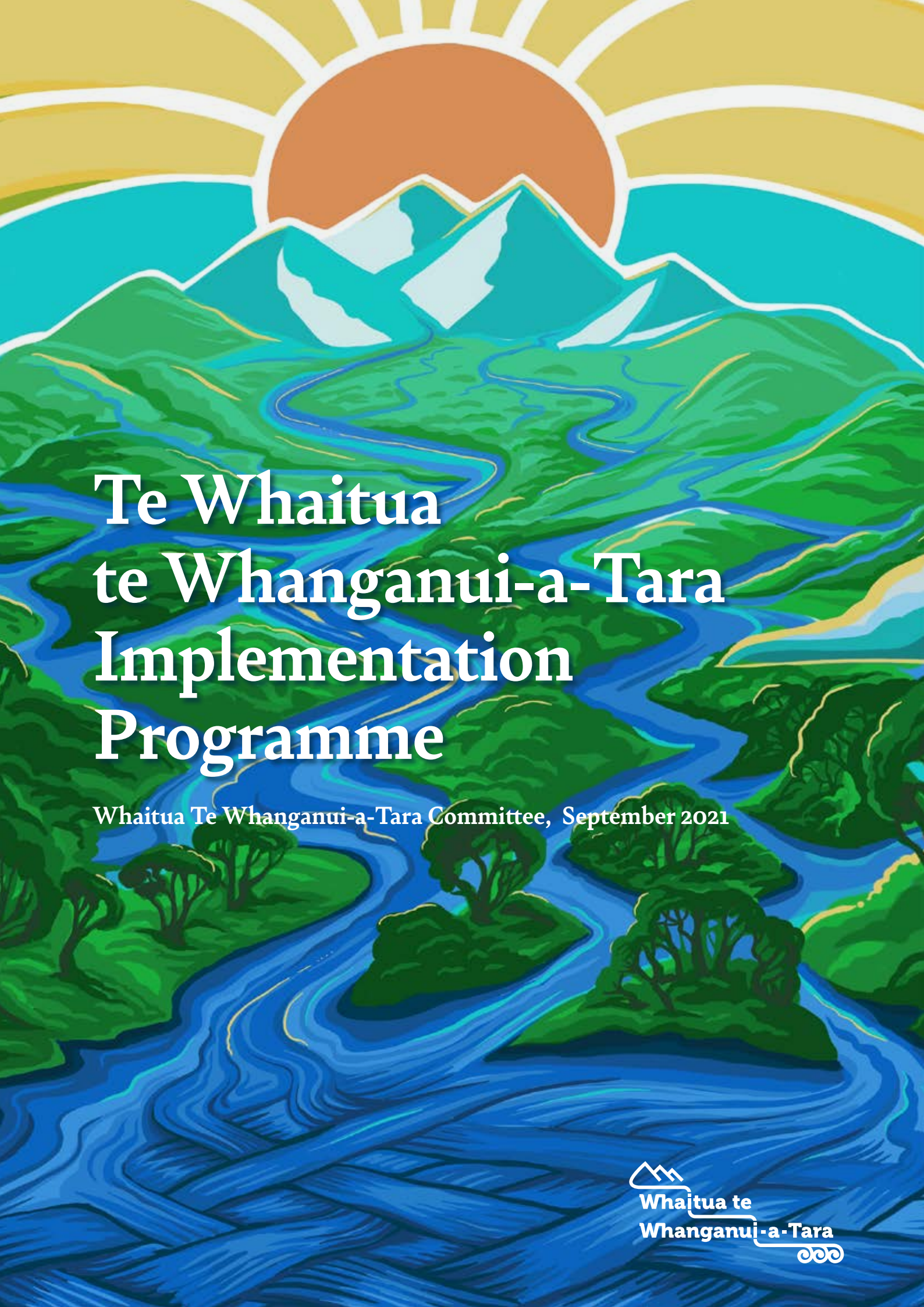

Te Whaitua te Whanganui-a-Tara Implementation Programme

Whaitua Te Whanganui-a-Tara Committee, September 2021

Whaitua te Whanganui-a-Tara

Our Story

In 2019, the members of the newly established Whanganui-a-Tara Whaitua Committee from Wellington, Upper Hutt and Lower Hutt, accompanied by Greater Wellington (Greater Wellington Regional Council) Councillors and staff members, gathered on Matiu Island to meet for the first time. Led by Taranaki Whānaui, with Ngāti Toa Rangatira at their side, a pōwhiri to welcome the committee was followed by a full day wānanga. This process would set the tone for what we wanted to achieve collectively for our communities, how we wanted to work together, and the partnership approach we wanted to demonstrate with Mana Whenua within our committee.

Collectively, we agreed to establish a way of working that would recognise a bicultural and culturally safe way of working that would authentically give effect to our job to restore Te Mana o te Wai ki Whanganui-a-Tara.

This, in turn, resulted in a uniquely bicultural operating framework grounded in te ao Māori principles and values that resonated perfectly with our work to protect the mana of our freshwater streams, rivers, lakes and wetlands.

The following outlines the committee's aspirations, values and operating principles that have guided how we have worked together over the past three years. Over time, members have departed, and new members arrived. However, our dedication to the purpose and way in which we have worked together remained the same. This Tiriti partnership approach was adopted by all members of Te Whaitua te Whanganui-a-Tara and represents a shared long-term vision for freshwater (Te Pūtake), sets the genealogy of the whaitua (Pepeha), and then identifies a set of protocols for how we intended to work with each other as a collective.

TE PŪTAKE/ THE ORIGIN

The mauri of Whaitua te Whanganui-a-Tara and the communities who live within it is nurtured, strengthened and able to flourish.

Kei te pūtake o te whaitua o te Whanganui-a-Tara tōna mauri mana motuhake... hei oranga mō te katoa.

TE WHAITUA MO TE WHANGANUI A TARA PEPEHA / TRADITIONAL STATEMENT DEFINING TE WHANGANUI-A-TARA REGION

No te kawa ora te mauri o te wai
From the ultimate life principles is the vitality of water.
Ka tupu te taurikura o ngā iwi, nga uri, ngā ruranga katoa
From this the nourishment of the iwi, their descendants and those who call this place home is provided.
Ko tātou katoa ngā tangata tiaki o ēnei wai!
For we all are the responsible guardians of these waters
Ngā wai o te Whaitua o Te Whanganui-a-Tara
The waters of the Te Whanganui-a-Tara Whaitua
E rere mai
Flow within the boundaries of
Turakirae ki Rimurapa
Turakirae to Rimurapa
Mai Rimurapa ki Remutaka
From Rimurapa to Remutaka
Mukamuka ki Te Ra Whiti
From Mukamuka to Te Ra Whiti
Pipinui ki te Ra Tō
To Pipinui across to te Ra Tō

NGĀ KAWA / THE PROTOCOLS

Te Kawa Ora/ The Natural Systems of Life

Ko te Te Whanganui a Tara Whaitua te mātāpuna o te ora: The waters give life.

The waters of Whaitua Te Whanganui-a-Tara are the source of spiritual and physical sustenance for all life within its waters and lands.

Te Kawa Wai/ The Natural Systems of Water

E rere kau mai ngā wai iti, ngā wai roa, ngā wai nui, ngā wai puna, ngā wai tuku kiri mai i ngā pae maunga ki Tangaroa: The waters flow from the mountains and hills to the sea.

Within Whaitua Te Whanganui-a-Tara is a living system of interconnected waterways, streams, rivers, springs and groundwater that flow from the hills to the sea.

Te Kawa Tiaki / The Protocols of Care

Ko tātou ēnei wai, ko tātou ngā tangata tiaki: We are these waters, we are responsible for their care.

The communities of the whaitua are united with, depend on and have responsibility for the waters of Whaitua Te Whanganui-a-Tara, the health of which is vital to all that live within it.

Te Kawa Honohono / The Protocols of Unity

Ngā manga iti, ngā manga nui e piripiri kau ana, ka tupu ngā awa, ka tupu te taurikura o ngā tangata katoa: The small and large streams that flow into one another form the numerous rivers, harbour and coast which provide nourishment for all.

The Te Whanganui-a-Tara Whaitua is woven from the land, the waters and the life within it. It transcends its component threads and cradles all who live within it.

Note that these statements are not a direct translation between te reo and English.

Partnership and shared leadership from the community up

The programme to restore and improve water quality and ecosystem health in Whaitua Te Whanganui-a-Tara is formed by two documents.

This Whaitua Te Whanganui-a-Tara Implementation Programme (WIP) has been developed and draws on the views of many people who call Te Whanganui-a-Tara home. It aims to ensure that all of our connections and values for freshwater and receiving coastal waters are sustained.

Te Mahere Wai is a Mana Whenua Whaitua Implementation Programme for Te Whanganui-a-Tara. It is a companion document that describes Mana Whenua values and establishes a Mana Whenua assessment framework, called Te Oranga Wai, for the measurement and management of freshwater, receiving coastal waters and mahinga kai in the whaitua. It represents a Te Tiriti o Waitangi partnership response to enhance the voices of local Mana Whenua – Taranaki Whānui and Ngāti Toa Rangatira.

It is important to acknowledge this unique approach that the committee has taken. The creation of a Mana Whenua enhancing and culturally safe space for Mana Whenua to discuss, debate and reconcile and develop a Mana Whenua voice signals a maturity for a Te Tiriti o Waitangi partnership model. It is a first of its kind for Te Upoko o te ika and our hope is that the process influences future policy development processes.

Both documents have been developed within a context of significant system change across New Zealand's public policy landscape, including the Resource Management Act 1991, local government reform and a new national direction to protect, improve and lift the mana of our freshwater rivers, streams, lakes and wetlands.

Both the WIP and Te Mahere Wai should be considered and actioned together because they share an inter-dependency of knowledge, information and priorities.

The committee collectively agree that the implementation of both reports will require collaboration between the Crown, Greater Wellington, territorial authorities (local councils) and Mana Whenua. This will mean the sharing of power and resources, enabling stronger Te Tiriti o Waitangi partnerships. Importantly, we are strongly of the view that Greater Wellington will need to act quickly to build its organisational capability and confidence to fulfil its Tiriti obligations, responsibilities and commitments, starting with authentic relationships with iwi and Māori.

Foreword from co-chairs

Louise Askin

Sam Kahui

The waters of Te Whanganui-a-Tara are central to our lives. They define the landscapes we cherish, provide life and wellbeing to all living things, including us who live in Wellington, Lower Hutt and Upper Hutt. We want to see their mauri (life force) restored - as healthy waterways and connected communities.

We acknowledge those who have worked for decades as kaitiaki in our urban and rural environments, working for healthy wai (water) at many levels. Those at the grass roots who have planted streambanks, removed rubbish from our awa (rivers) and our foreshore, those who have led change within their businesses and communities, and those who have campaigned for stronger regulations and policy change. Their work set the scene for the National Policy Statement for Freshwater Management which led to the Greater Wellington's whaitua process being based on community and Mana Whenua involvement. Our work is also informed by, and builds on, the work of the Ruamāhanga and Te Awarua-o-Porirua Whaitua Implementation Programmes as well as Ngāti Toa Rangatira's corresponding Statement.

Whaitua Te Whanganui-a-Tara Committee represents a partnership between Mana Whenua, the wider community, our territorial authorities and Greater Wellington. A partnership approach will also be fundamental for implementing this Programme. We especially endorse the opportunity for councils to better partner with Mana Whenua – in particular to support a more holistic approach to improving waterway health and community wellbeing.

This WIP is a call to action. It calls for a paradigm shift in the way we view water (wai), our relationship with water, how we value water and its life maintaining properties.

Our three waters networks are crumbling due to under-investment, population growth is forecast to put more pressure on water use and supply, and climate change will exacerbate the challenges we face, with more extreme weather events predicted to occur much more frequently. Many of our waterways are in poor condition, some hidden, piped underground, out of sight out of mind. A continuing decline in water quality and culture of consumption sets up our children and grandchildren for a bleak and insecure future.

Sites of cultural significance including traditional mahinga kai / food gathering areas have been significantly degraded, having disproportionate impacts on different communities including Mana Whenua and tangata whenua.

Our long-term vision is for all waterways in Wellington, Lower Hutt and Upper Hutt to be restored to a state of Wai Ora (healthy water) within 100 years. We envisage many water bodies will achieve this state much earlier. This Programme sets out the first steps on that journey. There will be some quick wins but there are also some significant challenges to even 'hold the line' of current water quality before improvements can be seen.

Aotearoa is experiencing a shift in how we view water. Government requires councils to stop the decline in water quality and to drive improvements within a generation. Mana Whenua recognise the loss of health and mauri of local waterways that has occurred over generations. New government policy introduced in September 2020 recognises the life maintaining properties of water for all life and ecosystems, including human beings. The principle of Te Mana o te Wai puts the health of a waterbody first, human health needs second, followed by recreational, economic and other needs. Change is now necessary, for the good of our children, grandchildren and following generations.

The WIP is a companion document to Te Mahere Wai – a unique, indigenous body of work that more fully articulates the aspirations of Taranaki Whānui and Ngāti Toa Rangatira. Te Mahere Wai is a landmark document and the two interdependent documents should be considered together.

This Programme sets out recommendations to move us toward our vision of healthy water / Wai Ora. Our recommendations are ambitious and will require changes to current ways of operating and current levels of investment. However, they also seek to balance pace with practicality and equity. We acknowledge the range of barriers that exist to implementation and the lack of information currently available on the health of our waterways. We also acknowledge the power of individuals, whānau, and collaborative community action to help move us toward those outcomes.

We now call on Greater Wellington, Wellington City Council, Hutt City Council, Upper Hutt City Council, and all organisations with a statutory role as kaitiaki of freshwater in our whaitua, to drive action under this Programme.

This document presents a clear voice for water in this whaitua and a unique opportunity to make change. Alongside Te Mahere Wai, it is a founding document for future work and we expect councils to report progress against it over coming years.

We thank and acknowledge those in our communities who had their say in this process – providing feedback online, completing surveys, attending hui (meeting) on this kaupapa (important matter) or sharing your views with a committee member or council officer. Your direction has guided us in the development of our work.

The Whaitua Committee was supported by a project team of dedicated, passionate people from Greater Wellington, Wellington, Hutt and Upper Hutt City Councils, Wellington Water, Mātauranga Māori providers and Mana Whenua. Thank you to each and every one of you, we could not have delivered this taonga (treasure) without your hard work.

It is a privilege and a responsibility to serve on a committee tasked with the opportunity to drive change for our communities, the environment and future generations. Our fellow committee members are a diverse group of community representatives, Mana Whenua representatives, regional and city councillors. This is 'heart' work and you brought your whole selves to the mahi, listening to your communities, leaning in and collaborating for the good of all. Your passion, dedication, tenacity and understanding will be rewarded as the Programme is implemented and the changes start to manifest. We thank you now on behalf of generations to come for the benefits they will derive because of the work we have done up front.

This Programme is just the beginning. It is a first step in charting the course toward healthy waters across Wellington, Lower Hutt and Upper Hutt. We look forward to the journey ahead.

Sam Kahui and Louise Askin, Co-chairs,
Whaitua Te Whanganui-a-Tara Committee

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Executive summary

The Whaitua Te Whanganui-a-Tara Committee is made up of members of the Wellington and Hutt Valley communities, and representatives of Mana Whenua and local councils. It was tasked with advising the Greater Wellington (Greater Wellington) on how to give effect to the National Policy Statement for Freshwater Management 2020 (NPS-FM), which requires actions to be taken to maintain or improve the health of water and give effect to Te Mana o te Wai. The advice of the committee sits alongside (and is informed by) Te Mahere Wai, which has been prepared by and for Mana Whenua to express their aspirations and needs in the context of the NPS-FM.

Te Mana o Te Wai requires the integrated management of freshwater in line with the principle of Ki Uta ki Tai (from the mountains to the sea). This goes beyond the alignment of storm, waste and drinking-water management and must include flood management practices that shape our waterways, commercial allocation, changing land use, water sensitive urban design (WSUD), the active role of Mana Whenua, and many other critical elements.

Eighteen spatial areas have been identified within Whaitua Te Whanganui-a-Tara for integrated management to recognise the specific mana and individual needs of different water bodies. We hope that local communities will develop a sense of ownership and connection for these areas, as well as for each awa within them, as they learn about their names, values, Mana Whenua and community history, and the challenges faced.

All awa in all spatial areas are set a long-term vision of wai ora for all water-quality indicators and have a pathway of short-to-medium term steps towards achieving that vision. Steps beyond that have been left for the next generation to determine, so they can reflect on their own aspirations and contexts and all we learn through the implementation of this WIP.

A paradigm shift is needed to achieve these steps towards wai ora, honour Te Mana o Te Wai and prioritise the health of waterbodies as required by the NPS-FM. Our recommendations are intended to address the past, look to the future, and reset our multi-generational relationship with water to one of care and respect. As part of this, we have deliberately framed our recommendations as 'managing people's impacts on water' instead of the dominant 'freshwater management' approach.

In summary, the committee's recommendations, which sit alongside those in Te Mahere Wai, require a range of actions that will:

- Strengthen community connections with water
- Avoid toxic algal blooms
- Address sources of pollution and reduce future risks
- Balance the needs of nature and people in the places we live
- Ensure we are responsible and respectful in our use of water
- Develop the workforce needed to realise Te Mana o te Wai
- Make clear where we expect central government to act
- Improve information available for better decision making in the future.

These recommendations have been informed by extensive work over the best part of three years. This has included community input (through meetings, public events and online channels), scientific and expert input (though technical reports, presentations and direct advice), Mana Whenua input (through meetings, the direct involvement of Te Kāhui Taiao members, and Te Mahere Wai), and extensive technical support and expertise from officials in all councils in the whaitua.

Upholding Te Mana o te Wai is a responsibility of councils (mana kaunihera), Mana Whenua (mana whakahaere) and all in the community (mana tāngata). All of these have a role to play in the successful implementation of these recommendations. However, the most immediate responsibility sits with Greater Wellington to make the amendments to the Regional Policy Statement and the Proposed Natural Resources Plan that are necessary to give our recommendations regulatory weight. Greater Wellington's investment decisions and operating model are also important to creating the enabling conditions for mana whakahaere and mana tāngata to be effective in their respective roles.

Ongoing transparency and accountability to Mana Whenua and the community on the implementation of recommendations and progress towards wai ora and Te Mana o Te Wai is essential. The catchment journeys for each of the 18 spatial areas provide an incomplete baseline, so Mana Whenua have begun the development of a kaupapa-based measurement framework. In time, this work will inform a holistic Te Oranga Wai framework that is expected to be the primary way communities understand the state of water and progress towards 'wai ora everywhere'.

Committee purpose and decision-making context

The role of our committee is to advise Greater Wellington on how to give effect to the NPS-FM in Whaitua Te Whanganui-a-Tara. This is one of five whaitua in the Wellington Region. Whaitua is a te reo Māori word for 'place', and this whaitua is the geographic area defined by the water catchments across Wellington, Lower Hutt and Upper Hutt. We were charged with developing recommendations that express, and create a pathway towards, Te Mana o te Wai and the aspirations held by the communities and Mana Whenua. The scope of our work includes all freshwater bodies and the impacts of freshwater on the harbour and coast. The process is explained in more detail in Appendix 1.

Our committee of 16 comprises community members and representatives of councils and Mana Whenua. We committed to a bicultural process from the start, establishing co-chairs and sustaining a focus on learning how to bring this commitment to life throughout the process. Together, and through talking with communities, we bring different voices and worldviews into our work. We have also been supported by a team of experts, including scientists, planners, territorial authority advisers, three waters advisers, facilitators, Mana Whenua and te ao Māori advisers. Appendix 1 contains more information about our membership.

The implementation of the NPS-FM was the catalyst for our work and provides important clarity and tools. We agreed early on, however, that it should not overly constrain our approach. We believed we could provide advice that was consistent with the NPS-FM and better reflects the needs and aspirations of Mana Whenua and the communities of Whaitua Te Whanganui-a-Tara. The NPS-FM has been updated during our work, and we anticipate it will be again in the future as learnings from local efforts (such as ours) and from national level work are considered.

While our recommendations have been developed at the request of Greater Wellington, they are also relevant to Taumata Arowai, the Ministry for the Environment and all central agencies that have a role in how society cares for water. In some cases, change at the national level is needed to realise Te Mana o te Wai, and we acknowledge the reforms already underway for resource management, local government and three waters management. As reforms progress, we expect national decision makers and any new agencies to recognise this WIP and Te Mahere Wai as the statements of what needs to be delivered for Whaitua te Whanganui-a-Tara.

The ultimate test is how our recommendations are put into action. We are concerned that progress in implementing the Ruamāhanga and Te Awarua o Porirua WIPs has been slow. There is little public awareness of these documents or transparency about actions or outcomes. Maintaining political commitment requires mechanisms for citizens and Mana Whenua to hold councils to account for implementing the WIPs.

In Te Whanganui-a-Tara, territorial authorities (local councils) fund Wellington Water to manage the three waters network, primarily through the collection of rates and developer contributions. There has been under-investment in three waters infrastructure for decades. While councils are responsible for the failure to properly plan and fund the network, funding constraints have also had an impact. Implementing all our recommendations in the timeframes specified will require new approaches to funding for three waters.

Of course, public costs ultimately fall on ratepayers and taxpayers, and there will also be costs beyond these to some individuals as taking greater care of private impacts on water becomes the new norm.

This will be hard for some people, so support through the transition will be needed. It is particularly important that the approach to implementing our recommendations avoids increasing inequities in people's wellbeing. While some changes will initially feel like extra costs, they really reflect a bill we haven't been paying in the past, but which is necessary now to sustain healthy waterways across generations.

We have tried to set an ambitious, but achievable, pathway based on what we currently know. Our recommendations are part of a 100-year journey and include actions to be implemented in the short term (10 years), in a generation (20-30 years) and in the long term (over 30 years) for more intractable or costly problems. We recommend that Mana Whenua and the community review progress every 10 years and are enabled when necessary to advise councils on adjustments to improve the pace of progress.

Whaitua Te Whanganui-a-Tara Committee Members

Louise Askin (Co-chair, Community member)

Sam Kahui (Co-chair, Taranaki Whānui ki Te Upoko o Te Ika (Port Nicholson Block Settlement Trust))

Kara Puketapu-Dentice (Taranaki Whānui ki Te Upoko o Te Ika (Port Nicholson Block Settlement Trust))

Hikitia Ropata (Ngāti Toa Rangatira)

Naomi Solomon (Ngāti Toa Rangatira)

Anya Pollock (Community member)

Gabriel Tupou (Community member)

Jonny Osborne (Community member)

Pat van Berkel (Community member)

Peter Matcham (Community member)

Zoe Ogilvie (Community member)

Roger Blakeley (Greater Wellington)

Ros Connelly (Greater Wellington)

Tui Lewis (Hutt City Council)

Wayne Guppy (Upper Hutt City Council)

Sean Rush (Wellington City Council)

Previous Committee Members

Morrie Love (Taranaki Whānui ki Te Upoko o Te Ika (Port Nicholson Block Settlement Trust)

Quentin Duthie (Community member)

Paul Swain (Greater Wellington)

Peter Gilberd (Wellington City Council)

Te Mana o te Wai – putting water first

Ka ora te wai – If the water is cared for

Ka ora te whenua – The land will be nourished

Ka ora te whenua – If the land is nourished

Ka ora te tangata – The people will prosper.

Te Mana o te Wai is the fundamental concept underpinning the National Policy Statement for Freshwater Management 2020 (NPS-FM) and is the guiding kaupapa reflected in the kawa-based vision at the start of this document and described by Mana Whenua in Te Mahere Wai.

As part of this, the NPS-FM directs decision making to prioritise:

- **First,** the health and wellbeing of water bodies and freshwater ecosystems.
- **Second,** the health needs of people (such as drinking water).
- **Third,** the ability of people and communities to provide for their social, economic and cultural wellbeing, now and in the future.

Te Mana o te Wai presents us with an opportunity to prioritise the health of freshwater for the first time. It demands different thinking about our relationship with water. We cannot take water for granted and treat it as just another resource to be managed, used and degraded. We cannot consider the health and wellbeing of water bodies and freshwater ecosystems as an afterthought whenever we want to do something. Te Mana o te Wai requires that the importance of water in our lives is asserted and demonstrated through our actions.

Upholding Te Mana o te Wai is the shared responsibility of councils (mana kaunihera), Mana Whenua (mana whakahaere) and all in the community (mana tāngata). Our recommendations expect and support each of us to play our part. In doing so, we enhance our own mana and that of the water.

Council leadership – mana kaunihera

The level of power held by councils within our regulatory systems impacting on water makes their leadership and action critical. Greater Wellington has responsibility for meeting the requirements of the NPS-FM, including setting regulatory limits and targets for water that will drive the action needed to achieve Mana Whenua and community outcomes for water.

All four councils in the whaitua are expected to lead community transformation in the way water is valued and treated, as set out in the recommendations in this document. Some of these recommendations are also relevant in Porirua, which relies on this whaitua for its water supply. Regulatory frameworks need to be implemented and, importantly, enforced to ensure that all activities are managed for their effects on water. Three waters infrastructure must be maintained to a high standard so that Te Mana o Te Wai is not compromised. Councils are expected to show leadership on their own land and in their operations.

Iwi leadership – mana whakahaere

The leadership of Taranaki Whānui and Ngāti Toa Rangatira is critical to achieving the transformative shift required to achieve Te Mana o Te Wai in Whaitua Te Whanganui-a-Tara. Many of the core constructs of Te Mana o Te Wai (ki uta ki tai, mauri, mahinga kai) rely on Mana Whenua interpretation and leadership, and require equitable resources and support that enables their participation to be embedded in whaitua management.

Tangata Tiriti members of this committee acknowledge that current barriers to Mana Whakahaere reflect failures over many generations to bring Te Tiriti o Waitangi to life in our regulatory and governance systems. We have worked to help break down rather than perpetuate these barriers through our work and our recommendations, but more is needed, as expressed in Te Mahere Wai.

Community leadership – mana tāngata

The waters of Whaitua Te Whanganui-a-Tara are a core part of our landscape and identity and we all have a responsibility for their care. Decisions that affect water quality and quantity are made by individuals, families and businesses every day. Many people are already working individually and in groups to do better for water, and every action makes a difference. But we need to bring care for water to the forefront of our daily lives and support more people to live and work in ways that value and restore the environment

Better connecting communities with, and empowering them to care for, water depends on leadership, support and long-term investment in education and action, as set out in our recommendations. The implementation of these recommendations is intended to increase community participation and leadership, grow people's ability to take actions that care for water, and support collaboration across catchments and the whole whaitua so that water, communities and future generations can flourish.

Understanding our relationship with water – freshwater values

Our kawa direct us to the importance of spatial, social and intergenerational equity, which means that all waterbodies (from small streams to larger rivers, aquifers, wetlands, lakes, estuaries and coastal waters) need to be thriving in all awa. Upholding Te Mana o te Wai means striving for wai ora everywhere. We may need to prioritise in the short term to make progress achievable, but it is not possible to trade off the mana of one water body for another in the long term.

What this means for freshwater values is set out in *Appendix 2: Our community's freshwater values in Whaitua Te Whanganui-a-Tara* and in Te Mahere Wai.

Values which apply to some extent to all waterbodies in this whaitua include:

- Ecosystem health
- Mahinga kai
- Threatened species
- Natural form and character
- Māori customary use and wai tapu
- Drinking-water supply
- Human contact (primary)
- Community connection
- Animal drinking water
- Commercial, industrial use and the production of food and beverages
- Transport and Tauranga waka
- Fishing.

In the section we show catchment by catchment how (in many cases) the state of water quality is currently far from our aspirations for supporting our values. There are signs of hope for what can be achieved when we put water first, but water quality is still getting worse in many places, and there are challenges still to come through climate change and urban growth. The scale of the task means we need to start rapidly increasing the pace of action to halt the causes of decline and start noticing improvement.

Within the chapter of each catchment area are a set of tables that set out clear pathways of staged targets for improvement in each catchment's journey from current state to wai ora state for each of the water-quality attributes in the NPS-FM. The timeframes set for each step of the pathway are intended to increase the pace of action across the whaitua, while recognising what can realistically be achieved by when. In some places, achieving wai ora will be a 100-year journey and actions beyond our recommendations will need to be determined by future generations.

The different journeys reflect the reality of different starting points and pressures, natural cycles and the need for prioritisation. All actions can't be implemented everywhere all at the same time, especially when a significant investment of money and the time of skilled people is required. Where we have prioritised spatially, this reflects:

- The trends in water decline
- The risks of inaction to public health, including drinking-water sources
- The significant values for Mana Whenua
- Impact levels
- Inequities in the benefits people receive from their local waterways.

The health of our waterways is far from what we aspire it to be, and it's getting worse in many places. The scale of the task means we need to rapidly increase the pace of action to halt the decline and work toward a goal of wai ora.

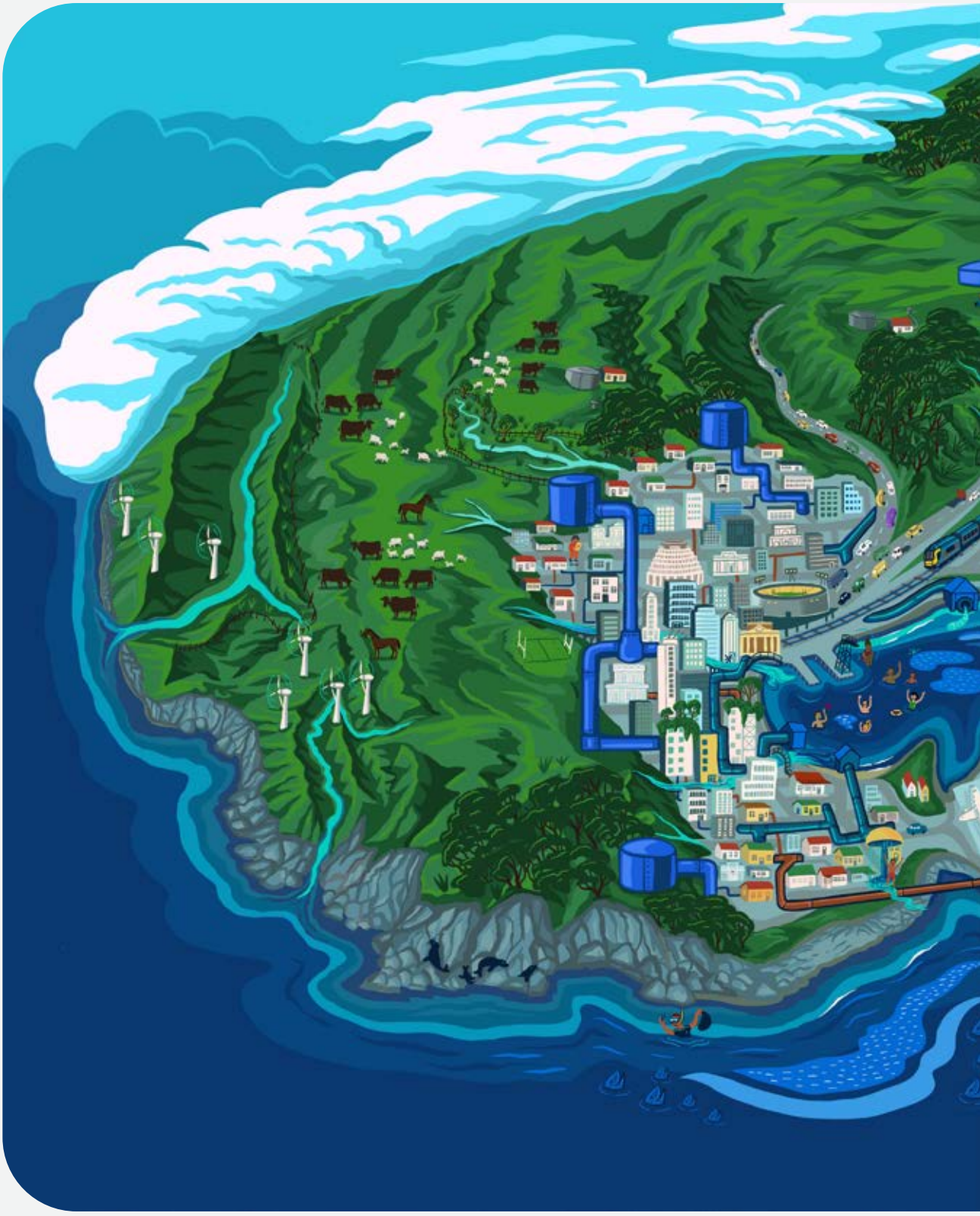
Care for water needs to be at the forefront of our daily lives. We need to support more people to live and work in ways that value and restore the environment.

Strengthen community connections with water

Avoid toxic algal blooms

Address sources of pollution and reduce future risks

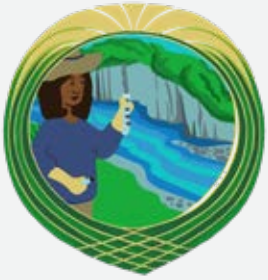
Balance the needs of nature and people in the places we live



Ensure we are responsible and respectful in our use of water

Develop the workforce needed to realise Te Mana o Te Wai

Make clear where we expect central government to act



Improve information for better decision making in the future

Actions to enhance Te Mana o te Wai – our recommendations

The evidence we have received tells us that water will continue to degrade without a step change in action. This does not reflect Mana Whenua and community values or meet NPS-FM requirements, but is a sign that our systems and actions are not yet showing enough care for water. It is a sign that decision making isn't putting the water first as required by Te Mana o te Wai.

The systems and norms that have led to the decline of water are well engrained in society and decision making. We believe that a shift in mindset is key to turning things around – from managing water as a resource, to managing the impacts of people on water. From waiting for proof that something is a problem, to taking care to avoid anything that could become a problem. After all, not having a problem in the first place is always cheaper then fixing something that is broken. It better respects the water as well as future generations to come.

Turning things around is a complex problem to solve because of the wide range of causes and responsibilities. This is an 'everybody problem' and all of us have a role to play in solving it. Our recommendations complement those in Te Mahere Wai and are focused on actions that:

- Strengthen community connections with water
- Avoid toxic algal blooms
- Address sources of pollution and reduce future risks
- Balance the needs of nature and people in the places we live
- Ensure we are responsible and respectful in our use of water
- Develop the workforce needed to realise Te Mana o Te Wai
- Make clear where we expect central government to act
- Improve information available for better decision making in the future.

The impacts and solutions will look different in different places for different people, but each of us has a duty of care to minimise our impacts and this is reflected in our recommendations. By acting together, we'll see improvements in community health, social connections and the health of our streams, harbour and coastline, and secure our water's future for generations to come.

The scale of improvement needed, even just to achieve the minimums set in the NPS-FM, means that there will be significant funding and workforce challenges to implement all recommendations everywhere. This has been recognised in the timeframes we have set for achieving different actions, but it is also why our recommendations cover matters that are about supporting successful implementation, rather than just focusing on direct action to improve water.

As our recommendations are implemented, further decisions will be needed about where planning and investment needs to be directed first.

A vital component of the regulatory response is incorporating the relevant aspects of this document, including the future attribute states, into the Regional Policy Statement and Proposed Natural Resources Plan to support our recommended trajectory.

Transparency about what is happening and ongoing opportunities for involvement by the community are key to successful implementation. To achieve this, the recommendations below sit alongside those in Te Mahere Wai about Mana Whenua participation and giving effect to mana whakahaere responsibilities.

Our first set of four recommendations address the need for both a regulatory response to this WIP and Te Mahere Wai and for ongoing community participation in implementation.

RECOMMENDATIONS

1	Greater Wellington adds all 'first steps' attribute states (short term and generational) identified in the catchment chapters of the WIP into the PRNP as part of the 2022 and 2024 plan changes.
2	Greater Wellington works with Mana Whenua to complete Te Oranga Wai attributes for freshwater and coastal receiving environments for inclusion in the PNRP as part of the 2022 and 2024 plan changes.
3	Greater Wellington proactively communicates the WIP and Te Mahere Wai with stakeholders, community groups and partners through a variety of channels to ensure there is adequate awareness in our whaitua to support ongoing dialogue and accountability for implementation.
4	Greater Wellington establishes a community-led reference group tasked with monitoring progress on the implementation of WIP for Whaitua Te Whanganui-a-Tara and ensures that the council is reporting on progress to the wider community in meaningful ways.

Strengthen community connections with water

Water is a defining feature of our whaitua, encompassing our harbour, coast, rivers and lakes, which are interconnected with aquifers under the ground. Water is part of our everyday life in many ways – from turning on the tap each morning to jumping in a river on a hot day, and everything in-between. However, with the increasing urbanisation of our whaitua in the past decades, we've also reduced water's presence in our landscape (such as piping small streams or covering them with landfills) and made it easy to forget how much we depend and impact on it.

If we're to restore our waterways to good health, we all need to play our part. Each journey begins by acknowledging the problem, which develops to understanding, builds with commitment, and results in communities that are willing and enabled to take action to change our future. At the heart of it all is relationships – with water and with each other. We are all connected, and only when our waterways are clean and healthy will the community be the same. Understanding this is an important part of growing the next generation of children to become kaitiaki and stewards, helping communities act in ways that care for water and develop skills to respond and adapt to change.

Many community groups are already championing and volunteering time on behalf of rivers, streams and environments in our whaitua, but they are often disconnected from each other and what is happening elsewhere. Practical and specialist support is needed to bring people together, increase their knowledge of the state of their water, and help identify the biggest opportunities to make a difference. Community groups are also well placed to lead wider community education as they know what matters locally.

Council monitoring can only go so far. Activating 'citizen science' is therefore key to providing accurate information to councils to target local changes, developing ways to share the story of streams (whether piped or above ground), and leading conversations in local areas on what people want to change and how to do it. It also benefits landowners, who can apply local science and local knowledge in their role as kaitiaki of their land and water.

To strengthen community connections with water our recommended actions focus on:

- **Connecting communities with waterways and piped streams,** so that people get to know their local streams, including those now under the ground.
- **Bringing water into teaching and learning,** so that our tamariki and mokopuna grow their understanding of local waterways and what it means to care for water.
- **Supporting catchment-based planning and local action,** so that community groups have information, support and connections to lead local solutions for local problems and strengthen relationships with water in their community.

RECOMMENDATIONS

CONNECTING COMMUNITIES WITH WATERWAYS AND PIPED STREAMS

5	Greater Wellington, Mana Whenua and territorial authorities work with communities located around piped and above-ground streams to share those streams' stories through visual images, signs, sculptures, temporary artworks or other interactive ways that the communities design.
6	Greater Wellington works with Mana Whenua to name unnamed streams, including those currently piped underground, starting with large streams and then smaller streams within the whaitua (by 2026).
7	Greater Wellington and territorial authorities add information to property Land Information Memorandum (LIM) reports about wetlands and streams that a property drains to and its pathway to the sea; the source of the property's water supply; and the treatment of its wastewater.

BRINGING WATER INTO TEACHING AND LEARNING

8	Mana Whenua, community groups and Greater Wellington take advantage of opportunities to get involved in the refresh of the National Curriculum, which guides teaching and learning in schools, with a focus on how well it identifies and grows capabilities that will help realise aspirations for communities that care for wai and te taiao.
9	Mana Whenua, community groups and Greater Wellington work with early learning centres, schools and kura to develop local resources and supports that help teachers and kaiako to provide teaching and learning that connect tamariki with their local waterways, including piped streams, and grow their understanding of the interconnectedness of the wellbeing of our communities and Whaitua Te Whanganui-a-Tara.

SUPPORTING CATCHMENT-BASED PLANNING AND LOCAL ACTION

10	Greater Wellington, Mana Whenua and territorial authorities establish services to support new and existing catchment or community groups (by 2025), including for: » Providing access to easy-to-use data from all relevant sources, including citizen science, especially data that is relevant to each group's locations and needs » Inspiring and supporting the formation of new groups » Funding ongoing organisational and technical support, including lab analysis » Supporting citizen-led science and monitoring with appropriate training and tools » Mātauranga monitoring » Providing specialist support (such as engineering and legal support, help with navigating local government politics, and communication guidance) » Supporting catchment coordinators for catchment-scale projects and help with project management, people facilitation and fundraising (it includes tapping into the wider volunteer base) » Offering guidance on where to put the best efforts and take actions, consistent with the kawa and Te Mana o te Wai.

RECOMMENDATIONS

SUPPORTING CATCHMENT-BASED PLANNING AND LOCAL ACTION

11	Greater Wellington creates cross-whaitua structures and services that support a coherent and connected approach to local action knowledge-sharing. These should include: » Spatial and catchment-level planning that helps coordinate efforts aimed at meeting Te Mana o te Wai and community goals, and makes roles and responsibilities clear » Community-to-community knowledge exchange and connecting groups » The provision of transparent and clear mechanisms for accessing and allocating funding and services, including expert knowledge » The provision of frameworks and supports that give community groups confidence that they are working in the interests of Mana Whenua » A strategic approach to the use of council support services (such as Mountains to Sea Wellington) » Providing a single contact point for questions and advice for all the agencies involved.
12	Greater Wellington and Mana Whenua develop resources (by 2024) that community groups can use and adapt for their own communication with local communities, to help build understanding, connections and involvement that complement messages and campaigns by councils and water agencies. Specific themes to include are: » Where drinking water comes from, and the relationships between activities in the Hutt Valley and risks to the Waiwhetū aquifer » Awa as tīpuna, living entities of distinctive mana and whakapapa » Our responsibility to respect the awa and their mana, and act on this in our behaviour with water » The state of our waterways, including for different places » Action being taken, including for different places » Actions people can take, including those specific to their local areas.
13	Greater Wellington, Mana Whenua and territorial authorities partner with communities in developing catchment plans, co-designing their journeys and sharing the delivery process and roles required to achieve Te Mana o te Wai and local outcomes. This will help groups to know where to put their best efforts and provide clear resourcing strategies to follow through with their plans.
14	Greater Wellington works with Mana Whenua and catchment groups to make data easily available and accessible in a user-friendly way, including through the use of aggregated data.
15	Greater Wellington provides more specific, local information on water quality to communities – through making existing data more readily available and collecting new data, including via citizen science programmes, Greater Wellington monitoring programmes and the integration of the two (where appropriate).

Avoid toxic algal blooms

The increased size and frequency of toxic algal blooms in Te Awa Kairangi/Hutt River and our other major rivers is a direct risk to dogs and humans. These organisms are a major public concern and make those who visit the rivers wary of going to, using and enjoying them, often at the time of year when they're at their best.

Our vision for Te Awa Kairangi/Hutt River is that toxic algal blooms will be rare and the river will be in balance with the land and its communities, including people. At all points in its journey from the mountains to the sea we'll be comfortable engaging with the river to nourish ourselves physically and spiritually.

The ecological and physical systems that influence the growth of toxic algal blooms are complex. Many of our recommendations in this WIP are expected to help reduce their frequency and size by reducing nutrient availability. But we just don't yet understand enough about how to best avoid creating the conditions in which toxic algal blooms can thrive and more research is needed (see Recommendation 111).

Communities, Mana Whenua and Greater Wellington need to continue working closely together on how best to enable people to continue connecting with the awa they love. This means avoiding interaction with toxic algal blooms when they occur in the short term, while working towards a future where they are no longer a problem.

RECOMMENDATIONS

16 Greater Wellington, with Mana Whenua and communities, develops a toxic algal bloom action plan that includes:

- Management actions
- A monitoring plan specific to toxic algae
- Research priorities
- Climate change adaptation
- A communications approach that supports community and Mana Whenua visions and outcomes.

Address sources of pollution and reduce future risks

Water is life. It nourishes us and all of nature around us. It is essential to our modern way of life, which is why humanity's impacts on water must be looked at closely. Too often our precious water is inadvertently contaminated by human activities, even when we rely on the very same water to sustain us. Living a good life doesn't need to threaten the mauri of water, but it does require a significant step up in how we manage ourselves and our impacts. We need to address current sources of pollution and find ways to minimise the chance of pollution occurring in the future. Our recommendations are focused on the most important issues affecting the health of water in this whaitua:

- Appropriate waste and stormwater management
- Appropriate rural land use practices
- Council leadership to ensure best practices that do right by water
- Avoiding and managing risks from the use of contaminants
- Identifying and addressing risks to water from historic contaminated land
- Paying extra respect to water sources.

Appropriate waste and stormwater management

Water is used to transport our waste away in ways that protect public health. Protecting the mauri of water requires water used for this purpose to re-join the waters of Te Awa Kairangi/Hutt River or Te Whanganui-a-Tara and the coast in the same state that it entered the system. Systems for transporting wastewater should only deposit the wai mate (and the human waste it contains) at its destination – a septic system in rural areas or a sewage treatment plant in urban areas. However, we've found that there are several problems with both urban and rural wastewater systems in our whaitua.

Wellington's water crisis is well known and has attracted considerable media attention. A great deal of work is needed to bring our infrastructure up to scratch, while at the same time the population in our whaitua is only going to grow – adding more stress to an already creaking three waters system and raising the risk of pipes bursting and contaminating the environment.

This situation has arisen because the pipes in the urban wastewater system haven't been maintained properly. They're now failing regularly, allowing wai mate to enter the soil and our natural waterways. A pipeline grading assessment (where grade 1 pipes are in very good condition and grade 5 in very poor condition) shows that 32 per cent of the network of wastewater pipes in our whaitua – around 550km – is in grade 4 or 5 and in urgent need of repair or replacement.

The same thing may be happening to pipes in private ownership, which we understand comprise more than half of the wastewater network. While we have very little information on the condition of those pipes, many are likely to be in their original condition and (based on our knowledge of the public network) leaking wastewater into the environment.

There are situations where new public pipelines are being installed and connected to existing private pipelines, of which some are more than 60 years old. This highlights the importance of ensuring that the three waters infrastructure on private land is up to standard, otherwise we'll only solve half the problem. The entire network, both public and private, needs to be improved.

Stormwater has also been allowed to enter the wastewater system, to such an extent that the wastewater pipes can't cope when it rains. To prevent this from causing wastewater to flood back into houses, engineers have built overflows that deposit the excess water (including human waste) into our streams and rivers. We consider this unacceptable.

In areas that do not have access to municipal wastewater systems, landowners often use septic systems to treat waste from their property. Many of these systems are old (some date from the 1940s or even earlier) and have not been adequately maintained. As a result, these septic systems often leach untreated waste into the soil, from which the contaminants can enter water bodies. This situation is not acceptable and should not continue. We believe that landowners with septic systems need to have access to information about the proper maintenance of these systems, and that Greater Wellington should investigate just how big the impacts of leaching systems are.

Because overflows or leaching of untreated wastewater is a major environmental and cultural issue, our recommendations set a tight timeframe for repairing and replacing leaky wastewater pipes in both public and private ownership.

Our recommendations include:

- **Preparing plans within stormwater and wastewater resource consents,** so that there is a clear investment pathway for addressing issues in the municipal network.
- **Repair and renewal of the public wastewater pipe network,** so that people can be confident that pipes are fit for purpose and will keep wastewater out of local waterways.
- **Stopping wastewater overflows,** so that our systems reflect the complete unacceptability of sewerage polluting our waterways.
- **Identifying and fixing degraded pipes and cross-connections in private parts of the network,** so that urban property owners are supported to take responsibility for problems associated with their own pipes.
- **Creating safety nets to avoid new problems arising in the future,** so that we can be confident that private pipes are being maintained as well as the public ones.
- **Reducing sludge to landfill,** so that dealing with solids left over from wastewater treatment doesn't come at the expense of the natural environment.
- **Ensuring rural wastewater systems are well maintained,** so that rural property owners are supported to take responsibility for problems associated with their septic systems.

RECOMMENDATIONS

PREPARING PLANS WITHIN STORMWATER AND WASTEWATER RESOURCE CONSENTS

17	Greater Wellington amends regulatory documents to require the relevant three waters agency to develop a stormwater strategy (by 2023), within the global stormwater network resource consent, to contribute to achieving the relevant first steps in each of the catchment tables under the heading 'Journey from current state to wai ora'.
18	Greater Wellington amends regulatory documents to require the relevant three waters agency to develop a strategy/plan (by 2023), within the wastewater network resource consents, to contribute to achieving the relevant first steps in each of the catchment tables under the heading 'Journey from current state to wai ora'.

REPAIR AND RENEWAL OF THE PUBLIC WASTEWATER PIPE NETWORK

19	The relevant three waters agency increases the number of repairs and renewals in the public wastewater infrastructure (aligning with the strategy in Recommendation 18) to ensure that: » By 2033, no more than approximately 22 per cent of the wastewater pipe network will be worse than grade 3 (average condition) » By 2040, no more than ~12 per cent of the wastewater pipe network will be worse than grade 3 (average condition) » By 2050, no wastewater pipe assets will be below grade 3, and asset management plans will be actively identifying and replacing ageing pipes or pipes in poor condition.

STOPPING WASTEWATER OVERFLOWS

20	Territorial authorities and the relevant three waters agency prioritise the repair and replacement of public wastewater assets that lead to overflows on private or public land.
21	A target of zero wastewater overflows (by 2060) is achieved, except in infrequent situations (such as pump failures or rainfall events) with a >25-year average return period (ARI). [1-2] To meet this goal, we recommend implementing six-yearly targets for reducing wastewater overflows set out in the relevant three waters agency's 2024 wastewater strategy and resource consent. These overflow reductions must align with our obligation to achieve the relevant first steps in each of the catchment tables under the heading 'Journey from current state to wai ora' and the primary contact recreation national bottom lines set by central government by 2040.
22	The relevant three waters agency investigates, and reports to, Greater Wellington and Mana Whenua (by 2022) on the feasibility of pre-treating wastewater overflows and any locations where this could be prioritised for upcoming Long Term Plan reviews.

[1] *While we appreciate flooding events can result in wastewater contamination in the environment, we should not accept this as 'normal practice' for the wastewater network.*
By 2060, we expect the wastewater network to be of such a standard that it does not leak wastewater and that overflows only happen under unplanned or extreme events.

[2] *A 25-year average return period (ARI) is a storm of a certain size and duration that could be expected to occur once in a generation, which has a four per cent probability of occurring every year. While historical records indicate this storm should occur every ~25 years, it could occur more than once over this period, but the probability would be low. Similarly, a 100-year ARI storm could occur twice in one year, but the probability would be very low.*

RECOMMENDATIONS

STOPPING WASTEWATER OVERFLOWS

23	The relevant three waters agency increases its monitoring of wastewater overflows across the network, with the aim of identifying faults through increased data collection (by 2025). The identified faults are to be repaired in line with the timelines specified in Recommendations 19, 27 and 28.

IDENTIFYING AND FIXING DEGRADED PIPES AND CROSS-CONNECTIONS IN PRIVATE PARTS OF THE NETWORK

24	Greater Wellington amends the relevant regulatory documents, and the relevant three waters agency increases its investigations of, the public/private water networks (by 2030) to identify all cross-connections (wastewater connected to stormwater) and inflow faults (stormwater connected to wastewater). The assessed pipe conditions and any faults are to be recorded on the relevant properties' LIMs and updated as repairs are made.
25	Greater Wellington amends the relevant regulatory documents on, and the relevant three waters agency increases its investigations of, the public/private water networks (by 2040) to identify all groundwater infiltration (to the wastewater network) and wastewater leakage (exfiltration). The assessed pipe conditions and any faults are to be recorded on the relevant properties' LIMs and updated as repairs are made.
26	All territorial authorities provide financing mechanisms (subject to appropriate terms and conditions) no later than 2024 to assist landowners to fix faults in private laterals. These mechanisms could be deferred payments collected through rates, or territorial authorities could recover the costs when the properties are sold. Territorial authorities and the relevant three waters agency also provide supporting advice to private landowners on their rights and responsibilities regarding private laterals.
27	Territorial authorities apply their existing powers under the Local Government Act 1974 and Health Act 1956 to ensure landowners repair all faults related to cross-connections (wastewater to stormwater) and inflows (stormwater to wastewater) within two years of their identification. Cross-connection and inflow fault repairs on private land may be undertaken by the relevant three waters agency. However, the costs are to be covered by the landowners either directly or through other funding mechanisms (see Recommendation 26).

RECOMMENDATIONS

IDENTIFYING AND FIXING DEGRADED PIPES AND CROSS-CONNECTIONS IN PRIVATE PARTS OF THE NETWORK

28

Territorial authorities, through the relevant three waters agency, apply their existing powers under the Local Government Act 1974 and Health Act 1956 to ensure that:

- All identified leaky private wastewater laterals, including infiltration and/or exfiltration leaks, are fixed within five years of identification. Enforcement action is to be taken if the fixes are not made in this timeframe
- By 2045, all identified leaky private wastewater laterals have been fixed and an ongoing cycle of maintenance is in place

A database is developed and maintained of the conditions and ages of all private and public assets in the three waters network.

CREATING SAFETY NETS TO AVOID NEW PROBLEMS ARISING IN THE FUTURE

29

By 2025, territorial authorities and the relevant three waters entity develop a process (such as a 'warrant of fitness'), through which the condition of private laterals is assessed at the point of a property's sale or when a building consent application is lodged. The costs are to be covered by the property owners.

The condition of these laterals, and any faults revealed through the process, are to be recorded on the properties' LIMs with the information updated as repairs are made (aligning with the timelines in Recommendations 27 and 28). Once the repairs are complete, an ongoing cycle of inspection and maintenance should be established.

30

By 2024, territorial authorities establish a complete set of regulatory and policy measures that:

- Require landowners to repair all failed private laterals and record these failures on their LIMs until the repairs are complete

Provide a funding mechanism to support landowners in making these repairs (such as instalments on their rates bills or councils recovering the costs when properties are sold).[3]

REDUCING SLUDGE TO LANDFILL

31

Relevant three waters agency investigates methods (by 2025) to significantly reduce sludge going to landfills from wastewater treatment plants.

[3] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 23.*

RECOMMENDATIONS

ENSURING RURAL WASTEWATER SYSTEMS ARE WELL MAINTAINED

32

Greater Wellington and territorial authorities provide good-practice information and advice to septic tank owners.

They also develop a programme for regular septic tank investigations undertaken in rural/lifestyle areas in the whaitua, with the aim of improving their understanding of the impact of septic tanks on water quality, ecology and public health.

Where septic tanks are identified as affecting water quality, ecology or public health, territorial authorities or Greater Wellington are to work with the relevant landowners to reduce these effects by repairing, replacing or enhancing their septic systems and having an ongoing cycle of maintenance.

Appropriate rural land use practices

Rural areas should be thriving, productive places where freshwater is valued and water quality is the best it can be. Many rural landowners are already working hard to achieve this, but the challenge involves many properties across a complex terrain, and it is often hard to gauge the wider impact of improvements made at the property/farm level.

The biggest impacts from activities on rural land are high levels of sediment and Escherichia coli (*E. coli*). Clearances of vulnerable land in the past have increased the amount of sediment entering waterways from hillsides and stream-bank erosion, and *E. coli* is entering streams via a range of human, livestock and avian sources. As in our urban environment, an integrated catchment management approach, which is informed by local monitoring information and involves the whole community, will be most effective for identifying contaminant hotspots and targeting the effort involved.

There are a number of national rules already being rolled out around farm planning and stock exclusion, so we have focused our attention on local needs. Landowners affected by national rules will need support to target implementation well in the context of their land and the wider catchment. But an approach of only applying the national rules in our rural catchments is not enough to uphold Te Mana o te Wai. Just as we expect of landowners and businesses in our urban environment, all rural landowners need to be taking action to reduce impacts on water and enhance the environment.

Plantation forestry can have benefits for water quality, but it also brings a high risk of sediment loss in the years after harvesting, particularly in the headwaters of Te Awa Kairangi/Hutt River. Unfortunately, the evidence we have heard suggests that good-practice sediment management in line with national rules is not yet being consistently used. This suggests a need to ramp up investigations of, and prosecutions for, poor management with greater accountability to communities affected by the consequences of poor practice.

Our recommendations include:

- **Supporting implementation of national regulations and beyond, to better protect waterways,** small streams and manage contaminant hotspots through a local community catchment approach.
- **Developing local monitoring information,** to better inform Freshwater Farm Plan development.
- **Supporting best practice and monitoring compliance of forestry operations,** so the amount of sediment entering our waterways is reduced.

RECOMMENDATIONS

SUPPORTING IMPLEMENTATION OF NATIONAL REGULATIONS AND BEYOND

33	Greater Wellington provides sufficient Land Management advisory resources and funding to: » Support the implementation of actions at property and catchment levels to achieve catchment plan objectives » Support landowners' implementation of national stock exclusion rules » Help link farmers' action (including through their Freshwater Farm Plans) to catchment plans, and help small block owners to link their actions to catchment plans » Support the implementation of Freshwater Farm Plans to ensure quality delivery of farm planning services and effective connections to catchment plans » Promote the uptake of best management practice, and ensure open communication between landowners and Greater Wellington to keep best practices up to date » Integrate advice to landowners with other relevant objectives to achieve co-benefits (e.g., carbon sequestration, biodiversity)
34	Greater Wellington supports landowners to exclude livestock from waterways by: » Helping them to develop and implement practices that minimise stock access to streams not covered by regulations » Investigating the specific impacts of horses on water quality and considering further stock exclusion regulations if they are identified as a significant source of contaminants.

RECOMMENDATIONS

INCENTIVISING REVEGETATION OF VULNERABLE LAND

35 Greater Wellington investigates alternative incentives (e.g., rates rebates) to increase landowners' uptake of revegetation projects, including projects using native plant species.

This applies particularly to landowners with marginal and erosion-prone land (to reduce erosion and sediment loss), wetlands (for nutrient stripping, etc), and rural catchments generally (to slow flood flows further down the catchment).

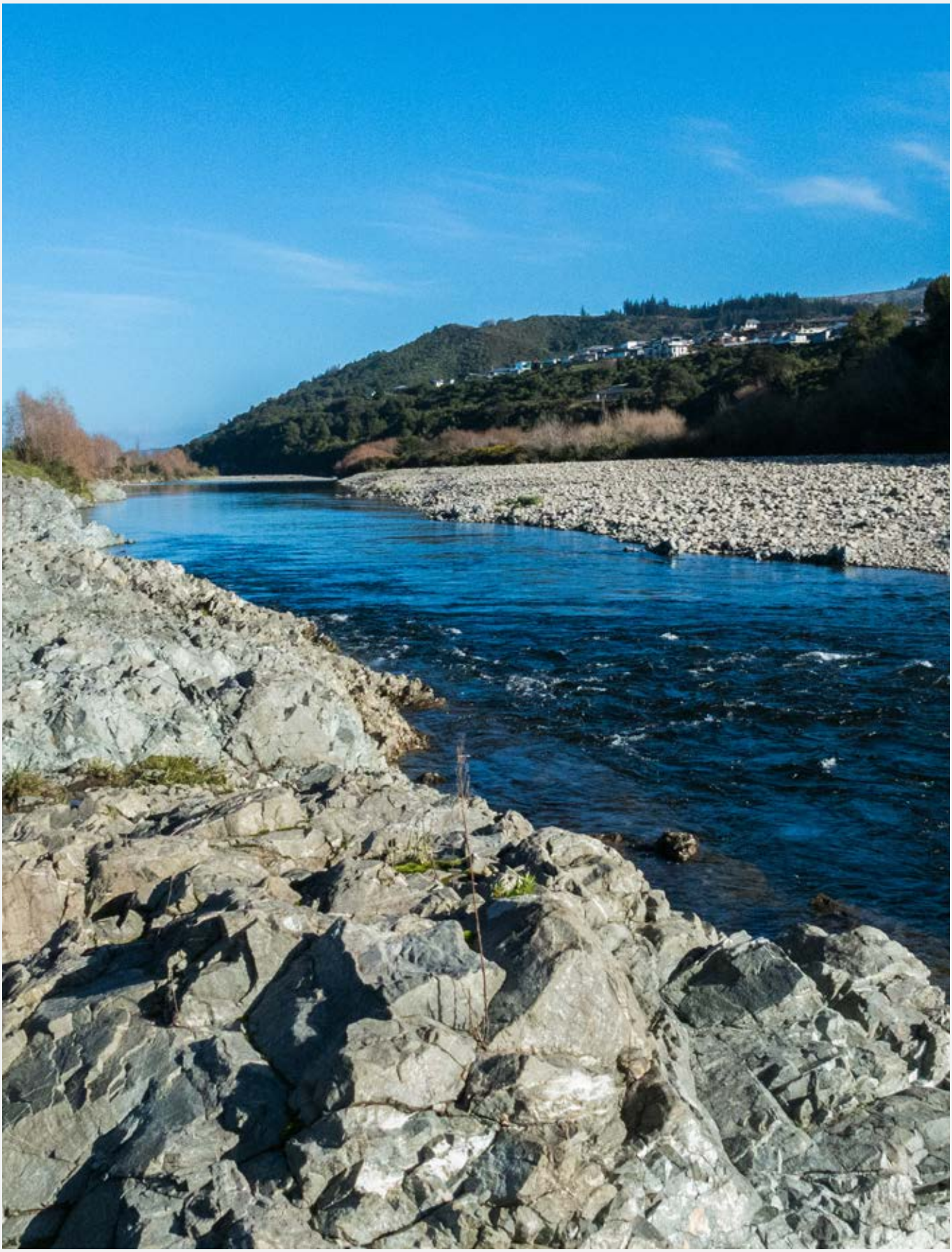
SUPPORTING THE DEVELOPMENT OF PROPERTY LEVEL INFORMATION

36 Greater Wellington supports the development of property-specific information to inform Freshwater Farm Plan development, particularly for managing diffuse discharges, CSA (Critical Source Area, i.e., hotspot) management, riparian planting (to complement stream fencing regs), and management methods for those streams where stock exclusion rules do not apply.

SUPPORTING BEST PRACTICE AND COMPLIANCE OF FORESTRY OPERATIONS

37 Greater Wellington provides enough staff and resources to:

- Work with forestry groups (New Zealand Farm Forestry Association, New Zealand Forest Owners Association) and contractors to provide proactive advisory support that includes ensuring all forestry operators are aware (by 2023) of relevant regulatory requirements and good practice
- Ensure all forestry operators in the whaitua are monitored for compliance with the National Environmental Standard for Plantation Forestry (NES-PF) and other relevant requirements from 2023 onwards, and share this monitoring information with the community
- Take enforcement action on non-compliance.



Council leadership to ensure best practices that do right by water

People and organisations throughout New Zealand have key roles in improving the quality of our freshwater and its environment, from those who work with water or have responsibility to protect freshwater, to the plumbers, developers and industries that rely on it to run their businesses.

Greater Wellington has an important role in leading the way in best-practice environmental management for green spaces, farms and forests, public transport systems and its own vehicle fleet. Other countries are phasing out copper brake pads with the aim of improving their water environments and preventing poisoning in rivers and streams – councils need to lead by example in using copper-free alternatives in their car fleets.

Councils also need to consistently expect all land use and activities to put water first. We know there are many examples of excellent professional practice, but there are still areas for improvement. Te Mana o te Wai is the responsibility of us all, so all urban development needs to use water sensitive urban design (WSUD). Land use and activity rules designed to protect water need to be enforced, with consequences based on the principles of restorative justice for water and local communities. Te Mahere Wai also includes a proposed restorative justice approach.

To increase council leadership to ensure best practices that do right by water, our recommended actions focus on:

- **Councils leading by example,** so that they are not asking others to do what they are not doing themselves, and to support an ongoing focus on evolving to better practices.
- **Consistent enforcement of rules that protect water,** so that there is transparency and growing trust that people will be held to account if they're not playing their part.

RECOMMENDATIONS

COUNCILS LEADING BY EXAMPLE

38	Greater Wellington and territorial authorities: » Are exemplars of good practice on all council-owned land and infrastructure, including contaminated land, farms, forestry land, wetlands and golf courses. » Provide information on how good-practice decisions have been made. » Report publicly on their year-on-year improvements.
39	Greater Wellington, territorial authorities and the relevant three waters agency set an example by ensuring that (from 2022), their fleet vehicles are renewed with copper-free brake pads or replaced by vehicles with these pads.

CONSISTENT ENFORCEMENT OF RULES THAT PROTECT WATER

40	Territorial authorities review and strengthen their plumbing consent and code compliance processes (by 2024), to ensure there are clear accountabilities and consequences for compliance transgressions and ultimately a low risk of future illegal cross-connections. [4]
41	Greater Wellington and the relevant three waters agency engage with and express the importance of environmental consequences to the Plumbers, Gasfitters and Drainlayers Board, relevant professional regulatory bodies and industry organisations. These organisations shall: » Together improve their systems of communication and reporting for disciplinary complaints » Become active and consistent in reporting discovered evidence of sub-standard tradesperson work, especially for instances of illegal wastewater to stormwater connections » Apply disciplinary action as set out under the defined offences in section 89 of the Plumbers, Gasfitters, and Drainlayers Act 2006.
42	The relevant three waters agency works with industry organisations to reinforce or improve standards, communication and training for best industry practice. Priority should be given to industries where there is high interaction with the stormwater and wastewater network (e.g., painters and cleaners).
43	Greater Wellington investigates and considers adopting new mechanisms to improve compliance (such as restorative processes and requiring bonds for earthworks and forest harvesting).

[4] *Adapted from WCC Mayoral Task Force Review on three waters, Recommendation 22.*

Avoiding and managing risks from the use of contaminants

Some contaminants can have toxic and visual effects on freshwater and coastal environments. While we have many recommendations that look at changing our practices and increasing levels of treatment (such as implementing WSUD under the 'Making water sensitive urban design the norm' section), these recommendations do not specifically target the sources of all contaminants.

The recommendations below recognise that some practices (such as washing cars or cleaning paint brushes) can have detrimental impacts on environmental quality when not performed correctly and they still occur on a regular basis. Also, many old materials (such as roofs) can have an ongoing effect on water quality until they are replaced or treated.

RECOMMENDATIONS

44	Greater Wellington and Mana Whenua work with territorial authorities to ensure that all large green spaces (e.g., parks, school grounds, golf courses) are managed to reduce the infiltration of fertiliser into groundwater and waterways, with plans in place (by 2023) that include public reporting.
45	With input from the relevant three waters agency (by 2026), Greater Wellington and territorial authorities develop or amend regulatory instruments to help reduce the risk of contaminants entering the stormwater system.[5] These could include: » Painting and/or replacing old roofs to reduce the prevalence of heavy metals » Washing paint brushes or cars » Treating runoff from carparks and roads.
46	Greater Wellington and territorial authorities develop a scheme to support the painting or replacing of large-scale high zinc-yielding roofs, which could include education, advice and incentives.
47	Greater Wellington and territorial authorities develop a scheme to reduce the impacts on waterways from the washing of cars.
48	Greater Wellington and territorial authorities investigate options to minimise the impacts of agrichemical sprays on waterways and report on options (by 2025).
49	Greater Wellington, territorial authorities, the relevant three waters agency and relevant industry groups develop and implement a pollution prevention programme. This will be outlined, delivered and monitored through various mechanisms. The programme must: » Raise the awareness of the public about what they can do to reduce their impacts on harbour and stream health » Promote and incentivise industry good management practice, targeting high-risk land-use activities that contribute relatively high levels of contamination » Identify and target priority areas for contaminant reduction based on the identification of catchments that contribute to localised hotspot areas » Investigate opportunities to enable change by streamlining regulatory processes and removing barriers to businesses and industries initiating change » Work with specific industries/suppliers to increase understanding around risks from exterior chemical cleaning products, with an aim to reduce usage through point-of-sale warnings and changes in product care advice.
50	Territorial authorities and the relevant three waters agency work together in high-risk areas to increase and prioritise regular street sweeping and sump clearance. They also need to investigate other opportunities to capture and clear contaminants from stormwater drains, including those to increase awareness and education with residents and businesses about how they can reduce contaminants (e.g., litter ending up in waterways).

[5] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 12.*

Identifying and addressing risks to water from historic contaminated land

Our whaitua has dozens of closed sites (such as factories, quarries, landfills and cemeteries) that have been contaminated by chemicals. Even though these facilities are not operating any more, some may still pose a risk to water quality due to leaching of contaminants which can harm our streams, rivers, aquifers and harbour. Current activities can also be contaminating land (e.g., landfills), but the risk of these activities to water quality and aquatic ecosystems is closely managed through resource consents.

There are likely to be many contaminated sites in our rohe that we don't know about. We need to understand the size of the challenge ahead, so councils must prioritise working with landowners to find these sites, identify their effects on water quality, and try to stop any contaminants affecting the environment. This is important for private land, because landowners might not have caused the contamination, may not be aware of it, or may not have the funds to remediate the land. Local knowledge and vision will be vital to this process. Councils should also lead by example on publicly owned land by taking steps to manage the risks to water quality, particularly from closed landfills.

RECOMMENDATIONS

51	Greater Wellington works with territorial authorities, Mana Whenua and landowners to identify and document (by 2026) the locations of potentially contaminated land, including landfills, and the risks to water quality and aquatic ecosystems.
52	Greater Wellington, territorial authorities and Mana Whenua work with owners of land with contaminated sites to further investigate, monitor, develop and implement remediation plans for those that pose medium-to-high risks to water quality and aquatic ecosystems. These plans are to be developed within five years of the identification of these sites, and those posing high risks to water quality are to be prioritised for remediation.
53	Agencies involved in the remediation of contaminated land affecting water quality and aquatic ecosystems include Mana Whenua in decision making and involve, consider and contain the visions and ideas of community groups in the planning and implementation, including as part of developing catchment plans (see Recommendation 13).

Paying extra respect to water sources

The hierarchy of obligations under Te Mana o te Wai provides for the health needs of people, as a second priority behind the health and wellbeing of waterbodies. But by protecting water sources, such as te mātapuna (headwaters) and aquifers, we also protect communities' health and wellbeing by providing for safe drinking water.

Keeping nitrates out of our drinking-water sources, for example, will protect the health and wellbeing of waterbodies and people. We are fortunate in our whaitua to have low levels of nitrates in our water supply sources and our recommendations intend to keep it that way. Recent studies suggest the maximum allowable level for nitrate-nitrogen in drinking water (11.3mg/L) may be too high when accounting for the risk of colorectal cancer. Our recommendation to maintain nitrate-nitrogen in our water supply sources in the 'A' band (< 1mg/L) will future-proof against this potential risk.

Drinking water sourced from rivers in the Hutt Valley, Wainuiomata and Ōrongorongo catchments is well protected through the designation of 'water collection areas' (land above the water takes that is owned and managed by Greater Wellington and Wellington Water to provide safe drinking water).

The quality of drinking water at greatest risk is that in the aquifers in the Hutt Valley, where a city sits above them. The Waiwhetū aquifer is an essential source of drinking water, sometimes providing up to 70 per cent of our supply in summer. Investigations after a bacterial contamination event in 2016-17 found that the aquifer was more vulnerable to contamination than previously thought. Further investigations are needed to better understand our aquifers to better manage risks to water quality and ecological health (see Recommendation 110).

Those living above aquifers have a role in managing the risks to them from their activities. Implementation of many of our recommendations will help better protect the aquifers, but councils, Mana Whenua and communities need to work together to investigate risks, prioritise actions and closely manage activities that create risks. Any work will need to align with regulation changes about drinking-water sources, signalled as part of the Three Waters Reform Programme.

RECOMMENDATIONS

54	Greater Wellington, Mana Whenua, Hutt City Council, Upper Hutt City Council, the relevant three waters agency and the community actively work together to better protect the current and future sources (surface water and groundwater) of human drinking-water from emerging threats. They do this by investigating the risks associated with water quality and quantity and managing activities that may adversely affect this (such as land use and contaminant discharges). This may include developing district and regional plan provisions and other methods.

Balance the needs of water and people in the places we live

Te Mana o te Wai requires us to prioritise the health and wellbeing of water bodies and freshwater ecosystems first. While there are notable examples of past decisions that have done this (such as the areas which protect our drinking-water sources and our 'green belt'), for the most part the current design of the places we live in reflects decisions that have prioritised economic wellbeing at too great a cost to our relationship with water and its health.

Re-balancing things will not be easy, but there are ways we can start doing things differently so that our tamariki and mokopuna inherit an environment working more in harmony with water than what we have today. By putting water at the centre of our thinking we can re-imagine possible futures, identify the opportunities and work out how to overcome perceived constraints. To make a start our recommendations are focused on:

- Making water sensitive urban design the norm
- Approaching flooding risks in ways that better respect natural processes
- Protecting and restoring wetlands
- Letting the fish move freely throughout the whaitua.

Making water sensitive urban design the norm

Urban development disrupts natural cycles. Urban growth has cleared and contoured land to establish built environments with largely impermeable surfaces, introducing new (emerging) contaminants and increasing existing contaminants into the environment, with little treatment along the way. This results in reduced water storage and natural treatment, and a reduction in stream flows to maintain the remnant ecosystems.

We need to reconsider the way our urban spaces grow and develop. This isn't a new idea, as many cities in New Zealand are years ahead of us. What's missing, in our view, are strong requirements and an easy-to-follow regulatory and design pathways to incorporating WSUD into any new developments. In our cities we must also install in new developments (and the existing built environment) more natural stormwater systems ('green infrastructure') to treat contaminated water at its source. We must also drive a community-wide and industry-wide shift that considers environmental impacts at the household level.

Councils are responsible for controlling urban developments and should ensure their rules require the widespread use of WSUD. This is because WSUD uses interventions (such as rainwater/stormwater harvesting, rain gardens, constructed wetlands, swales, green roofs and permeable pavements) to reduce water-quality impacts and reduce peak wet weather flows through naturalised treatment processes.

This would be a game-changer and help to rekindle our connections to water and the environment, especially for our children.

To realise our vision of WSUD being the norm for our urban environments, our recommendations focus on:

- **Creating a consistent approach to WSUD across the whaitua,** so that it is easier for people to understand expectations and to ensure equal care for water no matter where in the whaitua development is happening.
- **Supporting people to make the most of Water Sensitive Urban Design (WSUD),** so good decisions are made that maximise the benefits for water and people and take account of the wider catchment context.
- **Being smarter about approaches to stormwater management,** so that we achieve a more natural water cycle and make good use of water where it falls.
- **Ensuring green infrastructure is maintained,** so that it remains fit for purpose throughout its life.

RECOMMENDATIONS

CREATING A CONSISTENT APPROACH TO WSUD ACROSS THE WHAITUA

55	The relevant three waters agency's (currently Wellington Water) Regional Standard for Water Services should incorporate WSUD stormwater and water conservation interventions.[6] Also, territorial authorities' codes of practice and district plans should be amended to refer to the Regional Standard for Water Services (where applicable) by 2025, and should be mandatory for all developments (greenfield, infill/brownfield and re-development, including infrastructure). It should be supported through education programmes for contractors, community groups, and the design and engineering community.
56	By 2022, Greater Wellington convenes a WSUD working group with Mana Whenua, territorial authorities, the relevant three waters agency and Waka Kotahi. The group will need to be funded to cover its wide-ranging work, which will aim to: » Resolve barriers to WSUD in the Wellington Region » Identify opportunities to retrofit WSUD and green infrastructure into the existing urban environments, incorporating communities and catchment-level planning » Identify opportunities to 'daylight' piped streams and restore existing streams to promote community connection, habitat restoration and flood mitigation » Lead by example in promoting new WSUD initiatives. The working group should be part of Greater Wellington's newly established regional stormwater forum. It should also collaborate with key stakeholders (such as developers and commercial, industrial and residential community groups), and help provide education and training material/ programmes for contractors.
57	By 2025, Greater Wellington, Mana Whenua and territorial authorities amend the relevant planning documents to retain, restore and enhance the natural drainage system – so that they require hydraulic neutrality and water-quality treatment in urban catchments through WSUD.

[6] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 7.*

RECOMMENDATIONS

SUPPORTING PEOPLE TO MAKE THE MOST OF WSUD

58 Greater Wellington and Mana Whenua, together with territorial authorities and the relevant three waters agency, develop (by 2025) a comprehensive suite of regulatory and non-regulatory interventions for new property developments and infrastructure, to be implemented through WSUD via a catchment-management approach.

These interventions would include water impact assessments, rainwater/stormwater harvesting, rain gardens, constructed wetlands, green roofs, improved sump maintenance, strategic street sweeping and permeable pavements to reduce water-quality impacts and reduce peak wet weather flows.[7] Existing properties and infrastructure should be retrofitted using this WSUD approach whenever opportunities arise (e.g., at the end of an asset's life).

59 The relevant three waters agency:

- Develops a standardised tool (by 2025) that can be used to assess a development's potential contributions of contaminants and hydrological impacts
- Recommends potential options to mitigate these effects using site-appropriate WSUD green infrastructure.

This supports the global stormwater strategy (Recommendation 56) and Recommendation 58.

BEING SMARTER ABOUT APPROACHES TO STORMWATER MANAGEMENT

60 By 2025, Greater Wellington and territorial authorities amend the relevant planning documents so that all resource consents for property developments and infrastructure upgrades/repairs require the minimisation of stormwater effects and achieve hydraulic neutrality on-site. Where this is not possible or practical on development sites, a formal stormwater offsetting programme could be adopted to fund more efficient centralised systems in the public realm.[8]

61 Territorial authorities amend regulatory documents, while working with the relevant three waters agency, to (by 2035) reduce the effects of stormwater flooding on public health, safety and property by further integrating the use of roads and open spaces (such as parks and sports grounds) to act as overland flow paths and flood storage.[9]

ENSURING GREEN INFRASTRUCTURE IS MAINTAINED

62 By 2024, territorial authorities work with the relevant three waters agency to develop an approach to the ownership and management of green infrastructure for property developments, and ensure this infrastructure meets appropriate standards when being vested to council ownership.[10]

63 Territorial authorities ensure that (by 2024) all green infrastructure is adequately capitalised and depreciated to provide funding for ongoing maintenance and renewals.[11]

[7] *Modified from WCC Mayoral Task Force Review on the three waters, Recommendation 6.*
[8] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 8.*
[9] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 14.*
[10] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 10.*
[11] *Modified from WCC Mayoral Task Force Review on three waters, Recommendation 11.*

Approaching flooding risks in ways that better respect natural processes

Flooding can affect many parts of the whaitua, in both rural and urban settings. This can occur from small streams overtopping their banks, surface ponding due to insufficient stormwater system capacity, or even large-scale and extensive flooding when a river burst its banks. Much of the urban environment has developed on floodplains, with the largest supporting over 70,000 people around Te Awa Kairangi/Hutt River.

To keep these communities safe, we rely on stop-banks to constrain the river's flow and keep it away from people and houses. However, while this keeps us safe, the process can damage habitats, remove swimming holes and mahinga kai, and prevent the river flowing in its natural path. Allowing rivers to self-adjust aligns with te Mana o te Wai and can work out cheaper than ongoing hard engineering interventions.

Te Mana o te Wai requires us to change the way we manage rivers, including through flood protection. We can't compromise the safety of our communities, but we must honour the mana and the mauri of the wai (both Te Awa Kairangi/Hutt River and the smaller streams that flow into it). This means flood protection works must balance the safety of communities and the ability of the river to flow naturally, while enhancing swimming holes and habitats, and empowering Mana Whenua to act as kaitiaki and undertake mahinga kai. We must also not allow new development in areas that we know are at high risk of flooding. Keeping people out of harm's way in the first place is the best way to keep our communities safe.

We're calling on councils to change the ways they manage flooding and the dangers it creates, aligning with Te Mana o te Wai. This change should happen as soon as possible, because it will take a long time for the benefits to appear of giving streams and rivers room to move. We may not reap those benefits ourselves, but our children and grandchildren will enjoy rivers and streams flanked by native trees and surrounded by native birds.

RECOMMENDATIONS

64	Greater Wellington works with Mana Whenua, community groups and territorial authorities to amend (by 2024) all relevant regulatory documents to ensure: » That river management enhances habitat restoration and stormwater treatment along the full length of developed rivers » The protection of swimming holes. Specifically, for Te Awa Kairangi/Hutt River, these objectives should be accounted for when undertaking flood protection works.
65	Territorial authorities update the relevant regulatory documents (by 2025) to ensure they incorporate up-to-date flood hazard mapping and are supported by rules that prevent property development in high-risk areas.
66	By 2024, Greater Wellington amends the relevant regulatory documents to include policies that aim to avoid unsuitable property development, with reference to setbacks from stream/river margins and hydraulic neutrality. By 2025, territorial authorities incorporate rules in their district plans that: » Require WSUD, including hydraulic neutrality in any developments » Provide for buildings to be set back from river and stream margins (these setbacks are to provide for āhua and natural character) » Restrict development in known overland flow paths (in line with Recommendation 61).
67	Greater Wellington amends the relevant regulatory documents by 2023, while working with Mana Whenua and territorial authorities to co-design operational guidelines for undertaking flood works on small urban streams, including those on private property. These guidelines would: » Leave room for the river, floodwater and natural processes » Establish native riparian vegetation, which also gives effect to the values in the NPS-FM 2020.
68	Greater Wellington, territorial authorities, Mana Whenua and the relevant three waters agency develop plans (by 2030) for the managed retreat and adaptation of three waters infrastructure due to rising sea level.

Protecting and restoring wetlands

Natural wetlands are rich in biodiversity and have a unique role in filtering contaminants from water. They are a natural and essential part of water's journey from the mountains to the sea and are important for slowing the impacts of flooding, cleansing water and as carbon sinks. From micro wetlands that are the source of our streams, to large areas such as the Mangaroa peatland and those wetlands around the Parangārehu Lakes (Lakes Kōhangapiripiri and Kōhangaterā), they are a highly valued environment that must be protected.

The retention and restoration of our remaining repo (wetlands) is of great importance to Mana Whenua who recognise repo for their role as habitat for rongoā (plants able to be used as remedies), mahi raranga (plants and soils used for weaving and construction) and supporting mahinga kai values (places, taonga species and activities relating to cultural harvest).

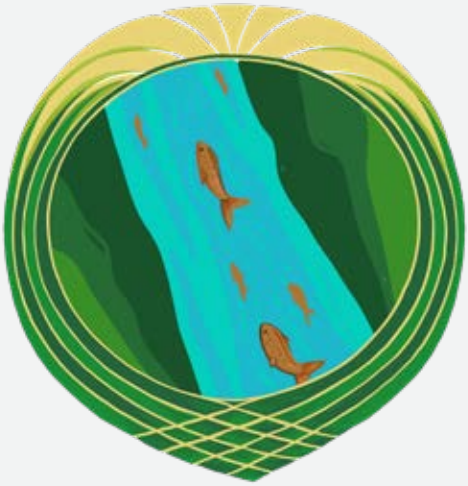
Unfortunately, most of the wetlands in our whaitua have been lost, and what's left are our most critically endangered habitat. Only three per cent of the original wetland extent remain in Whaitua Te Whanganui-a-Tara. Most of these wetlands are on private land and depend on landowners' efforts for their protection and to avoid further fragmentation and degradation. The Mangaroa peatland is the only deep peat land in the Wellington Region, and while originally 420ha in area it has been affected by draining for more than a century. Draining wetlands has changed them from carbon sinks to sources of carbon dioxide.

Our goal is to see the remaining wetlands protected and enable degraded wetlands to be restored by communities in a way that does not affect people's housing. Many landowners are already investing in protecting wetlands on their properties, but there is still work to be done. Barriers to taking action need to be overcome, so that landowners have the information, support and community aspirations to act as kaitiaki for these precious areas. To this end, the committee also supports Mana Whenua aspirations for the Parangārehu Lakes area.

The further loss or degradation of wetlands is incompatible with our role as kaitiaki, because without wetlands and the species they support the mauri of our waters is diminished. Our recommendations give protection to these rare habitats and acknowledge our debt to them for the physical and spiritual sustenance they provide. Restoration benefits the journey of water from mountains to sea and enhances Te Mana o te Wai.

RECOMMENDATIONS

69	Greater Wellington supports and incentivises landowners wanting to restore wetlands and removes barriers for best-practice restoration of the mauri of degraded wetlands.
70	Greater Wellington increases the resourcing available to implement and enforce the NPS-FM 2020, National Environment Standards and PNRP provisions about wetland identification, protection and restoration.
71	Greater Wellington supports positive relationships with wetland owners, including those with wetlands above the Parangārehu Lakes and at Mangaroa. It also provides assistance to protect and restore those wetlands.
72	Greater Wellington and Mana Whenua seek opportunities to develop and restore wetland habitat when managing and designing flood protection works and developing green spaces.
73	Greater Wellington maps all natural wetlands in the whaitua, as required by the NPS-FM 2020. This is to be completed by 2024, rather than the NPS-FM deadline of 2030.
74	Greater Wellington addresses the issues raised in Te Mahere Wai on the recommendations about the Parangārehu Lakes area.



Letting the fish move freely throughout the whaitua

Our streams, rivers, wetlands and lakes are home to a large variety of native and introduced fish. Many people are not aware that within our dense urban footprints some native species may still be present, despite the highly modified environment.

However, life for the fish is not without its problems. As our cities have grown, we've piped the streams that used to flow to the sea and those pipes have made it difficult – even impossible – for fish to migrate between the sea and freshwater. Added to this are other potential barriers (such as poorly installed and maintained culverts, flood gates, ford, weirs and dams, e.g., the Silverstream Weir across Te Awa Kairangi/Hutt River).

The situation is especially grave for mahinga kai – the native fish species, the fish-gathering process and the passing on of knowledge from generation to generation. Blocking the fish passages threatens not only their survival, but also the kaitiaki role and cultural practices of Mana Whenua. With so many native fish species under threat of extinction, change is urgently needed.

To start with, we need to understand the scale of the problem by identifying all the barriers in our whaitua, then find ways to remove them. Greater Wellington can start this process, but we know that Mana Whenua will be the key to the programme's successful implementation. While councils can help Mana Whenua in setting up the programme, they simply don't have the mandate, the capacity or the expertise to manage freshwater for mahinga kai.

We understand that restoring fish passages will be a long process, and for that reason our recommendations include priorities (such as the spawning places of mahinga kai species). Also, we believe it will be easier to find and remove barriers to fish passage on public land, so we've scheduled this work ahead of that on private land. Together, we'll enable our native fish to live the way they did before we modified their habitat, restoring mahinga kai and the mauri of our precious water.

RECOMMENDATIONS	
75	Greater Wellington identifies all fish passage barriers on public land by 2025 and private land by 2030.
76	Greater Wellington, together with Mana Whenua, community groups and territorial authorities, works with owners of fish passage barriers to remediate the highest-risk sites by 2040 and all other sites as soon as practical, but no later than 2045. Catchments highly valued for their indigenous fish and mahinga kai species are prioritised and Greater Wellington reports publicly on the identification and remediation progress.
77	Greater Wellington and Mana Whenua work with territorial authorities to identify (by 2025) and restore (by 2035) the spawning habitats of indigenous fish and mahinga kai species (e.g., inanga) in their rohe.

Be responsible and respectful in our use of freshwater

Our awa need abundant water to be their true selves and support vibrant freshwater ecosystems. All water we take for our own use is precious – given to us by water as the source of all life. But our way of life uses water in a way that affects water health more than it should. This isn't consistent with Te Mana o te Wai as the health and wellbeing of water bodies and freshwater ecosystems should come first.

The population dependent on the waters of Whaitua Te Whanganui-a-Tara is expected to rise significantly in the coming years, with a corresponding rise in the need for water. However, climate change means rainfall will be more erratic, with occasional longer droughts and bigger storms. Sea-level rise will increase the risk of salt water getting into the Waiwhetū aquifer. Together, these factors mean that unless we change our ways, the health of water will decline.

If we want to realise Te Mana o te Wai and have enough water to thrive in the future, we need to respect water by being more careful with what we take and use. Our recommendations for being more responsible about how we meet the needs of people are focused on:

- Redesigning our water allocation system
- Moving towards more natural flows in our rivers and streams
- Only using the amount of water we need
- Future planning for our public water supply

Councils, individuals and commercial water users in the Porirua community have the same responsibilities to Whaitua Te Whanganui-a-Tara as those who live here, as their water is supplied from the same sources within this whaitua. Engagement between the relevant councils and three waters agency will be needed to support the Porirua community with the implementation of our recommendations.

Redesigning our water allocation system

Many of our problems can be traced back, in part, to our water allocation systems. We need to transform and redesign these systems if we're to achieve Te Mana o te Wai and give effect to iwi rights and interests. We also need to develop measures to understand what success in giving effect to Te Mana o te Wai looks like for water quantity.

Tweaks within the current water allocation regulatory framework will not be enough to achieve outcomes.

Fundamental system change is needed for Mana Whenua and communities to be able to realise their aspirations for water use. For instance:

- We need to rethink the way we source water and supply it to our cities.
- There must be changes in the way people and businesses use and value water.
- There needs to be a better way to decide who can access water, because the 'first come, first served' approach is inequitable and hasn't worked well for Mana Whenua or the community.
- We need to consider how we dispose of our sewage, because using large amounts of high-quality drinking water to dispose of it is wasteful of the water.

As we restore the mauri of our awa we can build a better system – one in which we look after the water first, in partnership with Mana Whenua. The transformation of our water allocation system will take time, but changes can be made now to begin that journey and better protect our rivers and streams as set out in other parts of our recommendations.

RECOMMENDATIONS

78	Mana Whenua and Greater Wellington work together and with input from relevant interested parties, including the three waters agency, to design a new water allocation regulatory regime that: » Gives effect to our understanding of Te Mana o te Wai » Provides for Mana Whenua rights and interests, which may include a specific allocation for iwi » Includes mātauranga Māori in its development and monitoring.
79	Greater Wellington investigates options for iwi allocation in the current regulatory regime.
80	Mana Whenua and Greater Wellington work together to develop a framework of how Te Mana o te Wai (for water quantity) can be achieved and demonstrated. This includes agreeing on the process, measures and indicators of success. *Note: This links to wider attribute work, as the measures can't sit with water quantity alone.*
81	Greater Wellington supports Mana Whenua to develop mahinga kai measures related to water quantity.
82	Greater Wellington, Mana Whenua and territorial authorities (including Porirua City Council) recognise, promote and provide for the mana of the Te Awa Kairangi/Hutt, Wainuiomata and Ōrongorongo Rivers as awa tupuna for Taranaki Whānui and Ngāti Toa Rangatira. They are treasured taonga and providers of wai ora and hauora (health and wellbeing) for the whole Whaitua Te Whanganui-a-Tara community and Te Awarua-o-Porirua community.

Moving towards more natural flows in our rivers and streams

While it will take time to re-design our water allocation system, we can make changes to our regulations now that will enable us to reduce the amount of water taken at times of low flows and better protecting our rivers and streams. To move towards more natural flows in our rivers and streams, our recommended actions focus on:

- Changes to minimum flows and allocation amounts, to better protect the health of water and ecosystems through natural cycles of change in water abundance.
- Removing permitted water takes, so that the only takes not consented are for the provision of drinking water for people and livestock.
- Supporting the implementation of new regulations around water takes, so that people know the rules and the impact of changes is well understood.

The current minimum flow at Kaitoke on Te Awa Kairangi/ Hutt River, where the main water supply intake is located, is 600L a second. As a percentage of the mean annual low flow (MALF) ,approximately 35 per cent, and considering the high volume of abstraction, this is well below what is deemed to be precautionary in Aotearoa for providing for ecosystem health. It is also likely to be impacting on other values.

We don't yet have measures or understanding about what minimum flows give effect to Te Mana o te Wai, but the hierarchy of obligations in the NPS-FM requires the health and wellbeing of the river to be prioritised over other uses.

Our recommendations take a precautionary approach by endorsing significant increases to minimum flows over time to reduce risks to ecosystem health from abstraction at low flows. At the same time investigations will be undertaken to improve our understanding (see Recommendation 107).

Raising the minimum flows will help achieve a more natural flow that is less affected by water takes, but it will impact on our community water supply. People still need water, which is why we have recommended that the transition happen over a significant length of time. This allows for engagement with councils and community (including Porirua), the community water supply to diversify its sources and create more storage, and for tools to reduce water demand and wastage to be implemented (see recommendations in the 'Only using the amount of water we need' and 'Future planning for our public water supply' sections).

There is a very small amount of groundwater available to be allocated, but we are recommending that the allocation be capped at the existing consented use. This is because aquifers and surface water are highly connected, so taking more groundwater will result in a greater impact on the surface water that is already fully allocated.

In addition to the consented water takes, people can take up to 20,000L of water a day from any stream under the 'permitted activity water take' rule in the PNRP. While evidence suggests people don't often take the full amount, if they did, the flow and overall health of our streams would be at serious risk. These smaller streams and the water they carry are vital to the whole whaitua, as they provide important environments for our urban and rural residents and precious habitats for native fish species and mahinga kai.

For this reason, we recommend that the current permitted allowance be replaced with a requirement that people taking water from a stream or aquifer gain a resource consent first. This wouldn't apply to takes that provide drinking water for people and livestock, as these takes are protected under the Resource Management Act.

RECOMMENDATIONS

CHANGES TO MINIMUM FLOWS AND ALLOCATION AMOUNTS

83 Greater Wellington includes in the PNRP the following water allocation limits for the Te Awa Kairangi/Hutt, Wainuiomata and Ōrongorongo Rivers:

- Increase the minimum flows over time to 80 per cent of MALF in 50 years' time:
  - The first minimum flow increase must be included in the upcoming plan changes to be notified by 2024 and will apply from the mid-2030s, or whatever date is most appropriate, to ensure that the new minimum flow applies when the bulk water consents to take surface water in the major water supply catchments are renewed
  - Future increases in minimum flow must be stepped out in line with the bulk water consent renewals
  - We expect this pathway for increases in minimum flows to be revised as a result of further investigative work to understand the limits that would achieve Te Mana o te Wai, outlined in Recommendation 107.
- Cap the amount of water available to be allocated through consents at the existing consented use.

84 Greater Wellington includes in the PNRP the following water allocation limits for all streams (outside the three major water supply catchments):

- 100 per cent of MALF for the minimum flow
- 30 per cent of MALF for the allocation limit.

85 Greater Wellington retains the current policy settings that allow the reallocation of any water that becomes available within the allocation limit to be reallocated.

REMOVING PERMITTED WATER TAKES

86 Greater Wellington amends the PNRP policy and rule framework in Whaitua Te Whanganui-a-Tara so the region-wide permitted activity rule (R136) no longer applies to this whaitua.

Note: Water takes for reasonable domestic use and animal drinking water are still authorised under section 14(3)(b) of the Resource Management Act. All other takes will require a resource consent.

SUPPORTING THE IMPLEMENTATION OF NEW REGULATIONS AROUND WATER TAKES

87 Greater Wellington amends the PNRP through a plan change (by 2022) to ensure that all water takes requiring resource consent within Te Whanganui-a-Tara require metering. Electronic metering is required by 2027.

88 Greater Wellington reviews all existing consents in catchments outside the major water supply catchments that haven't expired within five years of the whaitua plan change, to ensure that any updated allocation limits are applied to consents.

89 In collaboration with catchment communities, Greater Wellington develops a work programme designed for and with landowners (particularly for lifestyle block owners), to ensure they are aware of regulations on the use of water.

RECOMMENDATIONS

SUPPORTING THE IMPLEMENTATION OF NEW REGULATIONS AROUND WATER TAKES

90	Greater Wellington undertakes assessments (e.g., through rural engagement surveys and targeted catchment investigations) to understand any potential changes in the way people are taking unconsented water (section 14(3)(b) of the Resource Management Act about takes).
91	Greater Wellington increases its flow monitoring in small streams in catchments where land use is changing significantly, or there is thought to be a relatively high potential for change (e.g., rural intensification). This is to establish whether any increase in water use is affecting flows and therefore values.

Only using the amount of water we need

The large population base in Wellington and the Hutt Valley relies on Te Awa Kairangi/Hutt River and its aquifers for most of its community water supply, and Porirua does as well. In total, about 95 per cent of all water taken in this whaitua is for community water supply. Of that, around 60 per cent is used for residential purposes, 20 per cent for commercial/industrial purposes and 20 per cent is lost to leaks.

Our whaitua has one of New Zealand's highest rates of water use per person – and that's not a statistic to be proud of. Practically speaking, and at the current rate of use, we can expect more restrictions on water use in the future due to the pressures of population growth and climate change. We must reduce demand and improve water efficiency to both solve our future water crises and have more respect for the mauri of our awa.

Individuals and commercial water users have a vital role in making this happen and need to be supported with information and tools that enable them to make more informed decisions about their water use. Reducing individual use will help overall demand, which is essential to achieving a more resilient water system in the future.

Water tanks are a useful tool for reducing the pressure on the public water supply. We recommend they be installed in residential and commercial properties for purposes that don't require treated water (such as watering gardens). Water tanks also improve people's connection to their water, slow runoff from impervious surfaces, and act as emergency water sources in events like earthquakes.

RECOMMENDATIONS

92

Territorial authorities and the relevant three waters agency implement universal residential metering to identify water wastage, reduce demand and enable more effective network management. To enable metering:

- Territorial authorities will consult on how to fund water meters by 2025
- The relevant three waters agency will install water meters.

The whaitua committee recognises that water metering enables a range of mechanisms for reducing demand. These include, for example: leak detection; information provision; the identification of potential excessive users for advice, support and/or fines; and volumetric charging.

Agreement could not be reached on whether volumetric charging should be introduced as a lever for reducing demand. However, if it is, it will be important to ensure that:

- Water assets remain in public ownership
- People can access enough water to flourish
- Vulnerable communities are not disadvantaged
- Water is respected as the giver of life and doesn't become a commodity
- It prevents exploitation and excessive use by people who can afford it.

93

The relevant three waters agency provides the community (by 2022) with information on and practical support for being more efficient with water. The information might cover:

- Technological solutions (such as the different uses of rainwater tanks)
- Water-saving tips
- The natural water cycle and where our water comes from.

The support could be provided through partnerships with catchment groups, through the Mangai Wai Ora (kaitiaki) programme (see Recommendation 101), professional associations and enterprises (e.g., a Sustainability Trust model).

RECOMMENDATIONS

94	The relevant three waters agency develops a programme by 2023 that engages with commercial water users (and starts with identifying the top 100). » The programme: Identifies how water is used » Helps users to understand how their use compares to that of similar industries nationally and globally » Supports businesses to improve water efficiency and/or lower their demand.
95	Greater Wellington and the relevant three waters agency investigate the current pricing for commercial water users (by 2023), to determine if changes in pricing mechanisms could help improve their water-use efficiency and identify the possible economic implications.
96	Territorial authorities promote the use of rainwater tanks or alternative water-storage solutions for non-potable uses in new commercial and residential developments. *Note: The majority of the committee strongly supported rainwater tanks being mandatory for new developments, but there was not consensus agreement. The committee did agree that more rainwater tanks in new developments would be beneficial and their use should be promoted.*
97	Greater Wellington, territorial authorities and the relevant three waters agency incentivise (and support with educational material) the retrofitting of rainwater tanks to reduce demand and/or attenuate stormwater, prioritising suburbs that are prone to flooding due to capacity issues in the stormwater network. Territorial authorities provide a funding mechanism for willing property owners.

Future planning for our public water supply

We want to have enough water available to provide for Wellington's future population growth, while putting the rivers and aquifer first as part of Te Mana o te Wai and accounting for the impacts of climate change on future rainfall. We also want to ensure our rivers have enough water to support their ecosystems, provide us with recreation opportunities, and protect our aquifers from salt water intrusion. Although we use more water in the summer than in the winter, the total amount doesn't vary much, so we need a steady supply.

Work needs to start straightaway on assessing and fixing leaks in the public drinking-water network, to reduce leaks and water wastage over time. If investigations reveal that the network is in a worse state than expected, and therefore that short-term leak reduction targets can't be met, it's still important to ensure that individuals, communities and businesses have accessible and fit-for-purpose information on the situation.

We also need to find ways to ensure water is supplied from more diverse sources in the future, with water supply less reliant on the three major water supply catchments at times of low flows. This includes investigating options to: harvest more water when the rivers are more resilient e.g., in higher flows); investigate options for additional large-scale storage; use rainwater tanks for storage of non-potable water; and recycle urban water on a community scale.

RECOMMENDATIONS

98	The relevant three waters agency ensures that 100 per cent of the public drinking-water network is assessed for leakage (by 2030) and a plan (publicly available with progress reporting) is developed to repair and replace assets in the Wellington drinking-water network so that: » By 2030, the network will have an Infrastructure Leakage Index (ILI) of 4.5 or lower » By 2040, the network will have an ILI of 3.5 or lower » By 2050, an ILI target of 2 or less will have been achieved and an ongoing cycle of maintenance will be in place to ensure this continues.
99	The relevant three waters agency investigates additional water storage and harvesting water at high flows as soon as possible to ensure continued security of supply for municipal use.
100	The relevant three waters agency engages with the community and Mana Whenua (by 2023) on implementing community-scale, urban-water recycling for uses such as firefighting, the irrigation of parks and industrial/commercial applications. Initiatives to be considered should include: » Collecting and storing community stormwater in public spaces for non-potable purposes » Using the continuous supply of treated wastewater for non-potable purposes. Continued public education and long-term three waters strategies should also encourage a greater use of recycled urban water, and evaluate where existing networks can be optimised, replaced or retrofitted to make greater use of recycled water.

Develop the workforce needed to realise Te Mana o Te Wai

People in industries that use or affect water need to have a 'care for water' mindset, along with the knowledge and skills to integrate that philosophy with their everyday work. As more information is gained about the state of public and private three waters networks instances of cross-connected pipes and other sub-standard work continue to come to light. This is just one example of the importance of thinking about water within vocational training and professional standards.

Implementation of our recommendations relies on the availability of skilled Mana Whenua to advise at the governance level, partake in cultural monitoring and act as kaitiaki. There are already significant pressures and constraints on their capacity, and the value of their time is not always recognised.

Implementation (at the desired pace) also depends on the availability of workforces in a range of sectors with the right skills and capabilities to do the work, now and in the future. These workforces are already in high demand and the skills required are not always available locally. We need to be deliberate about finding and creating the workforce we need, in the context of the nationwide focus on improving the health of waterways and unprecedented infrastructure investment internationally.

RECOMMENDATIONS

101

Greater Wellington provide resourcing for a Mangai Wai Ora (kaitiaki) programme (as outlined in Te Mahere Wai), to be developed and led by Taranaki Whānui and Ngāti Toa, alongside relevant industry bodies to train a workforce of kaitiaki to support the ongoing delivery of work on freshwater projects in the whaitua.

The scope of the role could include:

- Freshwater and coastal monitoring using a range of scientific information, including mātauranga Māori, citizen science and community knowledge to inform the current state of water and the environment
- Leadership in freshwater policy and plan development
- Providing for cultural relationships with freshwater and coastal environments
- Monitoring of mahinga kai and Māori customary use
- Checking wastewater and stormwater infrastructure on private and public land, in support of three waters agency roving crews
- Providing advice and support for industries on their potential impacts on water quality and mitigations
- Supporting education on local streams, water quality and water usage in schools and the community
- Clearing waterways of rubbish, riparian planting and reporting pollution.

102

Mana Whenua, Greater Wellington and territorial authorities engage with relevant Workforce Development Councils (WDCs) to identify how the WDCs can best contribute, through their leadership roles in vocational education and training, to growing the workforce needed to take care of water.

Make clear where we expect central government to act

Central government has a role to play alongside councils, Mana Whenua and the community in achieving water-quality aspirations for fresh and coastal waterbodies. Several areas have been identified in our recommendations where central government need to play their part by changing national regulations.

The need for national-level reform doesn't stop individuals from doing their bit to protect water in the meantime (such as replacing the copper brake pads in their own cars).

RECOMMENDATIONS	
103	Greater Wellington and territorial authorities continue to advocate and petition central government for new regulations to restrict the supply of water for water-bottling activities.
104	Greater Wellington advocates to central government in 2022 for the Emissions Trading Scheme to include the protection and restoration of natural wetlands, whether or not they are currently functioning wetlands.
105	By 2022, Greater Wellington, Mana Whenua and territorial authorities (through the regional stormwater forum – see Recommendation 56) will advocate to central government to introduce with urgency rules that will phase out copper brake pads in vehicles by 2030 or earlier.

Improve information available for better decision making in the future

The recommendations in this WIP have been informed by the best available knowledge and information. However, gaps have been identified in several areas and we are still growing our understanding of how science (through research) can draw on the knowledge of mātauranga Māori (as kaitiaki). Understanding their complementary relationships and the benefits for both will help us take a holistic view in seeking solutions to our problems.

Investing in research and learning now will lay the foundation for innovation and more targeted decision making around these complex issues in the future. We expect to be continually adjusting how we care for water as knowledge and information evolves over time. We recommend focusing further investigations on:

- **Strengthening the use and influence of mātauranga Māori,** so that progress on Mana Whenua values is better understood and used to inform kaitiakitanga.
- **Developing measures for community participation and connection,** so that we better understand people's relationships with water.
- **Informing future minimum water flow and allocation decision making,** so that we can be confident we are making the best decisions for the awa.
- **Better understanding the health and connections of aquifers,** so that we can understand whether further actions are needed to restore their mauri and uphold their mana.
- **Improving our understanding of nutrient sources to inform toxic algal management,** so that we can target and build on recommended actions to further lower the risk of regular blooms.

RECOMMENDATIONS

STRENGTHENING THE USE AND influence OF MĀTAURANGA MĀORI

106	Greater Wellington partners with Mana Whenua to use mātauranga Māori in developing an understanding of water quality and quantity within the whaitua (e.g., our understanding of springs, aquifers and wetlands, and stream water-quality monitoring).
107	Greater Wellington partners with Mana Whenua to develop a comprehensive approach to understanding, managing and allowing for mahinga kai values throughout the whaitua. This should build on existing work by Mana Whenua and include: » Developing attributes for understanding whether the values are being provided for with Mana Whenua » Designing and implementing a comprehensive monitoring programme to provide information on current state and trends » Developing targets for mahinga kai throughout the whaitua » Determining any management methods beyond those already recommended in this WIP that are required to achieve the targets.

RECOMMENDATIONS

DEVELOPING MEASURES FOR COMMUNITY PARTICIPATION AND CONNECTION

108

Greater Wellington works with Mana Whenua and communities to develop measures for community participation in and connection to their water bodies – and in doing so build on the kaupapa framework, Te Oranga Wai, being developed by Mana Whenua (as outlined in Te Mahere Wai).

'Community connection' is important beyond narrow in-stream measures of environmental outcomes. It spans participation, mental health, spiritual connection, identity, sense of place, story and culture, and physical health needs.

Note: This recommendation should only be undertaken once the kaupapa framework, Te Oranga Wai, being developed by Mana Whenua is complete and only if there are identified gaps in meeting wider community needs.

INFORMING FUTURE MINIMUM WATER FLOW AND ALLOCATION DECISION MAKING

109

Greater Wellington, Mana Whenua and the relevant three waters agency undertake, or continue to undertake, investigations to determine the changes in minimum water flows and allocation required to meet the long-term whaitua vision and Te Mana o te Wai. Investigations are to begin by 2022 and to be completed by 2027.

These investigations should lead to a package of actions and a timetable for implementation. Their scope should be defined in detail and include, but not be limited to:

- Prioritising catchments based on information requirements, values and pressures, which includes any catchment focal points for small stream investigations beyond the main water supply catchments
- Mātauranga Māori and quantifying water flows to support Mana Whenua values and outcomes for catchments of interest
- Testing alternative minimum water flow and allocation regimes alongside a range of municipal water supply infrastructure options
- Facilitating the implementation of any new allocation regime and detailed assessments of its implications for municipal water supply infrastructure
- Assessments of the implications of climate change on stream flows
- Ecosystem function modelling
- A review and revision of the Waiwhetū aquifer's management.

RECOMMENDATIONS

BETTER UNDERSTANDING THE HEALTH AND CONNECTIONS OF AQUIFERS

110 Greater Wellington supports and invests in research (to begin by 2023) to better understand our aquifers.

This includes investigations of the:

- The hydrogeology of aquifers (such as groundwater sources and flow paths, and water availability)
- Indicators of aquifer ecosystem health, such as stygofauna
- Stressors on aquifer ecosystem health, such as contamination from *E. coli* and land uses
- Risks to the sources of human drinking water, including from emerging contaminants.

Note: Ecosystem health encompasses the five elements of the NPS-FM 2020 – water quality, water quantity, habitat, aquatic life and ecological processes.

To support this research, Greater Wellington develops a monitoring network for aquifer ecosystem health by 2023.

IMPROVING OUR UNDERSTANDING OF NUTRIENT SOURCES TO INFORM TOXIC ALGAL MANAGEMENT

111 Greater Wellington initiates (by 2025) and carries out more investigations into the nutrient sources of Te Awa Kairangi/Hutt River, to help in developing the actions needed in future to manage toxic algae.

These investigations may include:

- Nitrogen coming from tributaries and groundwater in the Pakuratahi and Mangaroa River catchments
- Nitrogen entering the shallow, unconfined Upper Hutt aquifer
- The contribution of sediment-bound phosphorus
- Identifying the sources of fine sediment and its role in toxic algal bloom formation.

The pathway to healthy water

Our ultimate destination is for all waterbodies, from small streams to larger rivers, aquifers, wetlands, lakes, estuaries and coastal waters, to be returned to a state of wai ora (water of life-giving quality) over time. We can't know exactly what the journey there will look like, particularly as some parts are for future generations to lead. But we must keep this destination in our collective sight and chart a pathway of clear steps (or 'waypoints'), which can guide more immediate decisions and tell us whether we are on course for wai ora in each catchment area.

Describing the destination and steps towards healthy waters

The NPS-FM contains a set of nationally consistent measures for water quality that are called 'attributes' (such as *E. coli*), as a measure for health risk from pathogens. In turn, the attributes have states ('attribute states') ranging from A (excellent) to E (poor). In most cases the C attribute state represents an environmental bottom line. Greater Wellington must use these attribute states to set the water-quality target states which lay out the pathway, require action and mark progress.

We believe, however, that these measures are only part of the picture and do not fully express a holistic understanding of 'healthy waterbodies' for kaitiaki and communities. Mana whenua mātauranga considers a wider set of measures which means that, for example, an area measured against the NPS-FM attributes (as in a good or excellent state) may still be considered degraded by Mana Whenua for mahinga kai and mauri outcomes.

We expect that new measures of holistic health are used to broaden the description and waypoints of our journey towards healthy water once they are developed. Te Mahere Wai has more on this, including Te Oranga Wai, an assessment framework approach (currently in development) based in mātauranga Māori. This framework offers wider tools for assessing the NPS-FM's first priority of Te Mana o te Wai.

As these holistic frameworks begin to be used by kaitiaki and communities, the information in the catchment chapters will be able to be enriched. This will improve our understanding of progress towards Te Mana o te Wai and the impact of our recommendations. We also expect it to reveal opportunities to improve outcomes that are not immediately apparent in the information currently available, improving future decision making. Our hope is that each catchment chapter will become a living document used by catchment communities to capture the journey for each awa and plan local actions that complement the recommendations in this WIP.

Whaitua catchment areas

We have identified six broad 'catchment areas' in the whaitua, with sub-catchments within some of these. The six areas follow from the mountains to the sea – ki uta ki tai – and the sub-catchments within reflect where we know there are broad changes in the character and conditions of the stream and our activities in the catchment. These are spatial areas where the opportunities and challenges faced by the individual awa within them are similar, and there is value in people coming together to work out how best to care for those awa.

In reality, people in community and kaitiaki groups work in a much more locally focused way at smaller scales than these. This reflects the personal connections that people feel with particular places. Water is all-connected, so integrated management of our impacts is important – without it, groups can be frustrated by activities upstream or downstream undermining their efforts. We hope that the frameworks we provide for these larger areas will help local groups understand the wider catchment context for their place and how their contributions can best sit alongside the efforts of others. Information and insights at a local scale will also help fill the gaps in our knowledge, and support better planning across each catchment.

The six areas are:

- Te Awa Kairangi/Hutt Valley and Waiwhetū
- Ōrongorongo and Wainuiomata
- South-West Coast, Mākara and Ohariu
- Korokoro
- Wellington Urban, Southern Coast and Te Whanganui-a-Tara
- Parangārehu Lakes.

Each area is described in detail in its own chapter, with a map showing the major sub-catchments, a description of each catchment, the opportunities and challenges we see in implementing our recommendations, and tables showing:

- The expected stream conditions now, and what is forecast if there is no further intervention beyond current rules and practices
- The stream conditions we expect will be achieved once our recommendations are implemented
- Steps that signal where more improvement will still be needed, providing waypoints to guide future decisions on actions towards wai ora.

Achieving wai ora is a long-term journey

Within the chapter of each catchment area are a set of attribute tables that illustrate the planned pathway from current state to wai ora state for each awa, using the water-quality attributes from the NPS-FM.

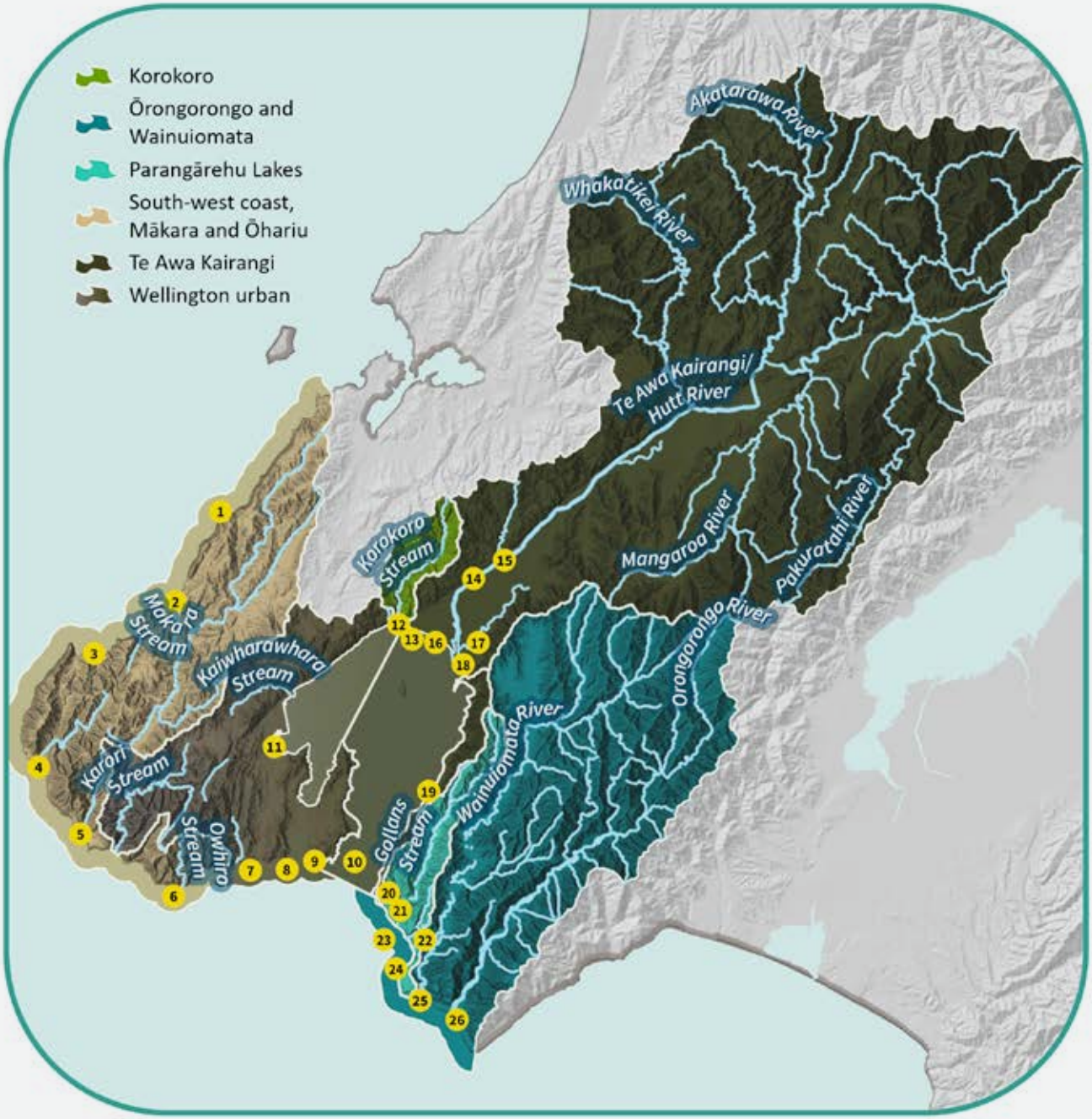
Current and forecast attribute states

The first set of columns in each attribute table shows the current attribute state of streams in each catchment area now, and the forecast state if no further intervention beyond current rules and practices has taken place. It is based on the science advice from our expert panel scenarios, and information provided by other expert advisers, and considers projected climate change impacts and population growth.

While this gives a single current state and forecast trend assessment for a whole area, we know water-quality states vary widely in every sub-catchment and along each reach of stream. Even an urban stream can have excellent mauri, habitat and water quality in its headwaters. It is vital that we access local knowledge to understand all the places where mauri and water quality are good or excellent and ensure they are protected, maintained and improved.

The forecast illustrates that climate change is expected to increase many pressures in the coming decades, with decreases in summer low flows and increases in temperatures, periphyton, sediment and flood disturbance of freshwater habitat in many parts of the whaitua. Without better practices and infrastructure, urban development will exacerbate flood disturbance, habitat modification and contamination in streams and downstream waterbodies. If we continue to manage the environment as we do, we will see ecosystem health and other values continue to deteriorate in many parts of the whaitua. This is not good enough, and does not provide for Te Mana o Te Wai or align with our kawa.

Whaitua te Whanganui-a-Tara



Sites with significant Mana Whenua values

1. Kie Kie/Kia Kia (Ngutu Kākā pā) (Pipinui Point)
2. Ōhariu - Wharehou Bay
3. Te Ika a Maru - Ohau Bay
4. Ōterongo Bay
5. Waiariki Stream mouth and coast
6. Te Rimurapa - Pariwhero (Sinclair Head - Red Rocks)
7. Tapu te Ranga - Owhiro - Haewai
8. Te Raekaihau Point reef
9. Hue te Taka (Wellington south coast)
10. Te Tangihanga-a-Kupe (Barrett Reef)
11. Te Aro pā
12. Te Korokoro o Te Mana (Korokoro Stream mouth)
13. Pito-one pā (Petone foreshore)
14. Te Awa Kairangi/Hutt River - Maraenuku pā
15. Te Awa Kairangi/Hutt River - Motutawa pā
16. Hīkoikoi pā, Pitoone (Petone) foreshore
17. Te Awa Kairangi (Hutt River mouth)
18. Waiwhetū Stream – Ōwhiti pā
19. Korohiwa (East Harbour coast)
20. Parangārehu Lakes, Kohangapiripiri
21. Parangārehu Lakes, Kohangatera
22. Ōkākaho Stream
23. Parangārehu (Fitzroy Bay)
24. Baring Head/Ōruapouanui
25. Wainuiomata River mouth and foreshore
26. Ōrongorongo River mouth

As the current and forecast attribute states highlight, many rivers, streams and fresh and coastal waterbodies are degraded in places and exposed to current pressures and future risks. In places, the national bottom lines for water-quality measures have been exceeded. We must start changing our practices in development, land and water use and realise the committee's vision for all waterbodies.

First steps

The 'first steps' columns show the changes in stream conditions that we expect to see from implementing our recommendations for all the issues we have addressed. The short-term (S) states indicate an intention to hold the line in the face of expected declines, and in doing so sets in motion a need to implement our recommendations immediately. Generational (G) states describe the environmental conditions that are expected to result from the full implementation of our recommendations. They are based on science advice given through our expert panel scenarios and other expert advisors. A generational timeframe is 20-30 years, and achieving the attribute improvement depends on the speed of implementation.

Our recommendations represent a significant shift in practice and commitment. We expect our recommendations to lead to improvements for all catchments, but unfortunately some places may not meet a national bottom line or show an improving state within a generation because of the scale of some of the issues we face. This does not mean reducing our efforts or lowering our ambitions for these places, but we want to see all places reach wai ora, including the most degraded waterways. It is just that they will need the most effort to overcome the effects on their wellbeing of catchment modification and legacy contaminants.

Longer term

While improvements are expected to take a long time to achieve in some places, the scale of the task to repair the damage means we need to start now and continue working towards our destination of wai ora everywhere. The restoration of our estuarine environments is expected to take multiple generations and may require significant improvements in water quality in the upstream catchments. While changes in these environments may be incremental and small, they are highly valued and ecologically significant.

Some of the improvements illustrated in our first steps appear underwhelming because they reflect just how degraded many streams are and how much effort it will take to improve them. We know that these improvements do not reflect what the committee, Mana Whenua and the communities we have engaged with seek to reach. The longer-term column helps illustrate our aspirations and our intention of continuous improvements towards wai ora throughout the whaitua in subsequent generations. We do not know yet what this might take or how long it will take, but we are committed to reviewing and adjusting next steps as we learn more. We must hold to our aspirations and re-express them so that each generation knows we have been guided by high aspirations, and that our legacy to them reflects our best efforts, not a trade-off of their wellbeing for short-term gain.

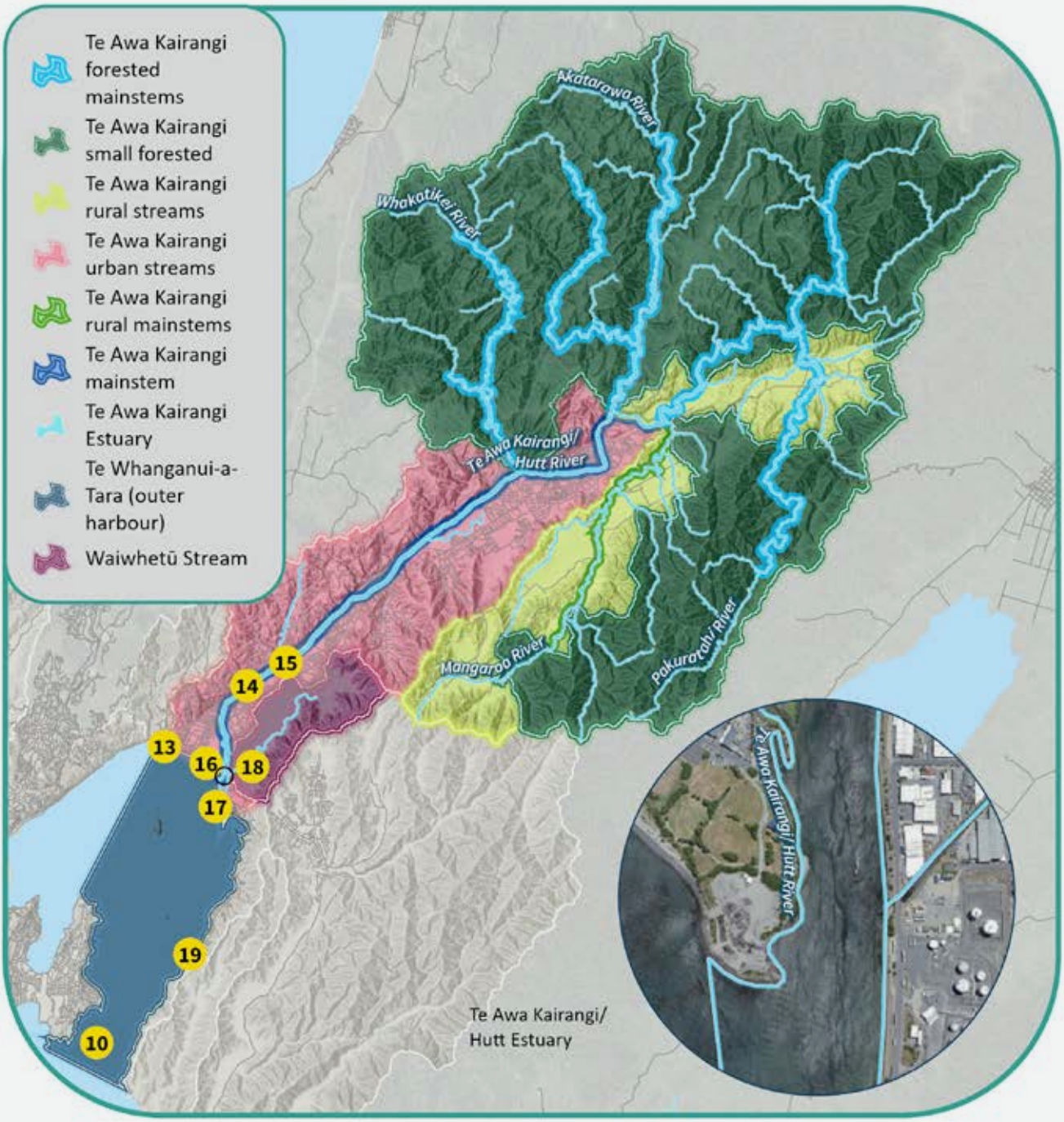
The challenge of meeting human health standards for primary contact

The suitability of water for primary contact (such as swimming), in terms of risks to human health is measured in the NPS-FM using the *E. coli* attribute. The standard set for primary contact sites is very stringent and reflects a very low estimated risk of pathogenic infection. This standard is not currently met in non-forested catchments and some forested catchments across the whaitua.

If we are to improve primary contact safety across the whaitua, we need to have improvements in the state of the overall *E. coli* attribute, which we expect to see as a result of our recommendations. The high standard for primary contact sites is equivalent to the A state for the *E. coli* attribute. *E. coli* itself is not a problem, but it is a strong indicator for the presence of a range of pathogens that are less easy to monitor.

E. coli is entering water via a range of human, livestock and avian sources. Human and livestock sources pose the highest risk to human health, and human faecal contamination in particular must be eliminated because it disrespects Te Mana o te Wai and damages the mauri of water. These priorities are reflected in our recommendations. Our expectation is that the monitoring framework will enable us to track progress in the reduction of human and livestock sources, so that we can be confident that we are making a difference to risks to human health, even if *E. coli* levels from all sources do not yet meet the primary contact standard in the NPS-FM.

Areas in Te Awa Kairangi catchment



Sites of significance for Mana Whenua

- 10. Te Tangihanga-a-Kupe (Barrett Reef)
- 13. Pito-one pā (Petone foreshore)
- 14. Te Awa Kairangi/Hutt River - Maraenuku pā
- 15. Te Awa Kairangi/Hutt River - Motutawa pā
- 16. Hīkoikoi pā, Pitoone (Petone foreshore)
- 17. Te Awa Kairangi (Hutt River mouth)
- 18. Waiwhetū Stream – Ōwhiti pā
- 19. Korohiwa (East Harbour coast)

Catchment context and description

Te Awa Kairangi/Hutt River is the major river system in Te Whanganui-a-Tara and is made up of many unique parts. From the headwaters in the Tararua Ranges, water flows through small, forested streams, before travelling through a number of main stem rivers into the urban environment, and its smaller streams, and then out into Te Whanganui-a-Tara/Wellington Harbour.

The catchment is full of contrasts. The water supply areas and regional parks feature huge areas of native vegetation, while grassland and peatland dominate the Mangaroa Valley on the river's eastern side. The Western Hills are a mix of grassland, exotic forest, native vegetation and urban areas, while the entire length of the valley floor is heavily urbanised. State Highway 2 and the railway shadow the river from Lower Hutt to the base of the Remutaka Range. Te Awa Kairangi/Hutt River enters Te Whanganui-a-Tara/Wellington Harbour via the Hutt Estuary, which is surrounded by a heavily industrialised area at Seaview. The river also aligns with the main Wellington earthquake fault line. Over the centuries, successive earthquakes have raised the Hutt Valley and harbour and the beach has moved southwards.

Early European arrivals identified the Hutt valley as a good site for settlement, and in the 1840s to 1880s the entire floodplain was deforested to make way for development. However, as the population grew and the valley's forest cover reduced, flooding became a major issue. Stop banks and a narrowing of the river channel began to modify Te Awa Kairangi/Hutt River, and that process continues today. These works continue to have significant impacts on mahinga kai species, Mana Whenua sites of significance, and the mauri of the rivers and their tributaries. The Hutt Valley is now the most densely populated floodplain in New Zealand.

Residents in the Hutt Valley love their waterways, as they provide a sense of place and purpose and provide opportunities for recreation and revitalisation.

Te Awa Kairangi is a taonga and awa tupua (treasured ancestral waterbody) for Ngāti Toa Rangatira and Taranaki Whānui. Like all awa (rivers) in the Te Whanganui-a-Tara Whaitua, Te Awa Kairangi is a place for wānanga (traditional learning). Of note are the pā sites, the repō/wetlands and their uses for weaving dyes and building materials. Te Awa Kairangi traditionally sustained a large population and provided access to fish, rich gardening soils, forest birds and numerous wild plant foods.

As the largest river in Te Whanganui-a-Tara Whaitua, Te Awa Kairangi/Hutt River once sustained a large variety of fish species. Upstream of Kaitoke Weir the river is recognised for its outstanding indigenous ecosystem values and continues to support a variety of endemic wildlife, including endangered species (such as banded kōkopu, bluegill bully, giant bully, giant kōkopu, koaro, piharau, longfin tuna, redfin bully and shortfin tuna).

The river is of great importance as it is the largest source of freshwater in the region. Te Awa Kairangi/Hutt River provides most of the drinking water in the metropolitan Wellington area via water abstracted from the river at Kaitoke, groundwater in the Waiwhetū aquifer and artesian water at Petone.

Water takes, discharges and modifications to natural flow have had a significant effect on this awa, and while there is excellent water quality in the headwaters, it is vulnerable throughout its journey mai uta ki tai (from the inland to the sea).

Waiwhetū

Waiwhetū Awa is located at the lower end of the Te Awa Kairangi valley and river mouth. While the lower reach of the Waiwhetū Stream is heavily channelised and polluted, the mid-range of the awa still retains āhua (natural character), and considerable investment in its restoration has brought the community together.

The stream is Ngā Taonga Nui a Kiwa for Ngāti Toa Rangatira and Taranaki Whānui. It traditionally held great significance as it sustained iwi over many centuries, with pā built on the banks (such as the Waiwhetū Pā, and Owhiti Pā). Te Awa Kairangi ngā ngutu awa (the river mouth), the Waiwhetū Stream and the Waiwhetū Estuary are important sources of mahinga kai, and places for te mahi mātaitai for kaimoana.

Te Whanganui-a-Tara (Wellington Harbour)

Te Whanganui-a-Tara (Wellington Harbour) is a Taonga Nui a Kiwa (place of outstanding importance) to Ngāti Toa Rangatira and Taranaki Whānui. The relationship of both iwi with the harbour is synonymous with their mana and identity.

Te Tangihanga-a-Kupe (Barrett's Reef) is but one example of the many places of significance to both Ngāti Toa Rangatira and Taranaki Whānui within Te Whanganui-a Tara. These places are valued for many reasons, including enabling whānau (family group) to carry out rituals and ceremonies, and also as places where mahinga kai (customary harvest) occurs.

Wellington Harbour is highly valued for its recreational activities, boating, fishing, diving and walking alongside it. Wellington Harbour is home to one of the busiest ports in the country, with thousands of commercial shipping movements in and out of the harbour each year. The Hutt Estuary and Wellington Harbour are impacted by discharges from Te Awa Kairangi (such as stormwater and wastewater discharges).

Main issues in this catchment

Te Awa Kairangi/Hutt River and Waiwhetū are typical of heavily urbanised catchments, with **urban development and encroachment, channelisation, pathogens and stormwater contaminants** degrading their water quality. The need to manage flood risk and the demands of providing sufficient potable water to meet the needs of the growing Wellington Region place pressure on waterways. The aquifer, which is an essential source of the current water supply system, is also at risk of being contaminated by the city built above it.

Wastewater overflows from a storage tank in Silverstream on average six times a year. In 2018 and 2019, this accounted for more than 60 per cent (~195,000m^3) of the total recorded wastewater overflows in the whaitua. The contaminants in these overflows present a significant challenge to improving the catchment's water quality. Our recommendations for preventing wastewater overflows and **network leaks,** and eliminating **stormwater contaminants,** are vital to achieving water-quality improvements in the Te Awa Kairangi catchment area.

Low-to-moderate intensity commercial farming and lifestyle properties are valued by our community, but can release **pathogens, nutrients and sediment** into local waterways if not managed well. We need better septic tank monitoring and performance, riparian protection and livestock exclusion from waterways, improvements in hill country management and better localised and catchment group planning, as this will go a long way towards addressing these risks. Improved sediment management during forestry harvesting in the four main tributary catchments will also reduce risks to the health of the river and downstream environments.

The urban environment releases contaminants (such as metals, nutrients, pathogens and hydrocarbons) into Te Awa Kairangi/Hutt River and its tributary streams via the stormwater system. This has many effects on the quality of the water, the health of the aquatic life in the rivers, estuaries and Te Whanganui-a-Tara, and the people who live in the catchment. Shifting the health of Hutt Valley's urban streams will require a fundamental change in the hydrological effects of stormwater and the restoration of stream-bed forms and functions.

Given the **effects of the urban environment on water flows and stormwater,** the adoption of best-practice WSUD for urban redevelopments now and into the future will contribute to improvements in most water-quality attributes.

Urban development and encroachment in the valley has led to the need for flood control works (such as stopbank development and maintenance, river straightening, channel stabilisation and willow planting), to ensure the safety of people, property and infrastructure. It has also changed the form, function and habitat of the riverbed. We need fundamental changes in the hydrological effects of urban stormwater, enhancements in the form and function of stream-beds, and significant habitat restoration.

Many urban streams in Te Awa Kairangi have been modified in ways that stop native fish moving through catchments as they need to at different phases of their life. The advice we have received on **fish passage** remediation is that once all barriers have been identified, remediation should be feasible within 25 to 30 years. Remediation does not equate to removal – passage barriers can often be modified to meet the needs of specific species. When this is achieved, we expect to see the attribute state for fish in rivers to shift to an A state.

A wide range of unpredictable factors affect **toxic algal growth** (including water temperature, flow rates, nutrients and sediment), so addressing the problem is difficult and complex. Although there is no attribute for toxic algae they are a major concern, so we need a bespoke toxic algal bloom action plan that targets all of these factors.

The health of Te Awa Kairangi/Hutt River is affected by water use right across the whaitua, and also in Porirua. Current levels of **water abstraction** to meet drinking-water supply needs are creating issues for ecosystem health and recreation during low-flow periods, primarily in summer. The committee does not believe the current minimum flows provide for the health needs of the awa and Te Mana o te Wai. More responsible and respectful use of water, which enables minimum flows to be raised while also protecting the security of drinking-water supply, is necessary to restore the mauri of the water and will contribute to improvements in ecosystem health attributes.

The **Hutt Estuary and Te Whanganui-a-Tara are affected by discharges** from Te Awa Kairangi/Hutt River, so our recommendations for improvements will also benefit these places.

Pathway from current state to wai ora to guide our journey

Sub- catchment areas	Ecological health															Human health				
	Macroinvertebrates					Periphyton					Fish					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Te Awa Kairangi small forested	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Te Awa Kairangi Forested mainstems	A	–	A	A		A	–	A	A		A	–	A	A		C	–	C	A	
Te Awa Kairangi Lower mainstem	B	↓	B	B		C	↓	C	B		A		A	A		D		D	C	
Te Awa Kairangi Rural mainstems	C		C	B		C	↓	C	B		B		B	A		D	↑	D	B	
Te Awa Kairangi rural streams	C		C	B		C	↓	C	B		B		B	A		D	↑	D	B	
Te Awa Kairangi urban streams	C	↓	C	C		C	↓	C	C		B		B	A		E		E	C	
Waiwhetū Stream	D		D	C		C	↓	C	C		A		A	A		E		E	C	
Te Awa Kairangi/Hutt Estuary •	C	↓↓	C	C		C	↓	C	C		Not applicable					C		C	B	
Te Whanganui-a-Tara (outer harbour)•	B	↓	B	B		A		A	A		Not applicable					C		C	B	

Sub- catchment areas	Ecological toxicity																			
	Copper					Zinc					Nitrate					Ammonia				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Te Awa Kairangi small forested	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Te Awa Kairangi Forested mainstems	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Te Awa Kairangi Lower mainstem	A	↓	A	A		A	↓	A	A		A		A	A		A		A	A	
Te Awa Kairangi Rural mainstems	A		A	A		A		A	A		A		A	A		A		A	A	
Te Awa Kairangi rural streams	A		A	A		A		A	A		A		A	A		A		A	A	
Te Awa Kairangi urban streams	B	↓	B	A		B	↓	B	A		A		A	A		A		A	A	
Waiwhetū Stream	C	↓	C	A		D	↓	D	B		A		A	A		B		B	A	
Te Awa Kairangi/Hutt Estuary •	A	↓	A	A		A	↓	A	A		Not applicable					Not applicable				
Te Whanganui-a-Tara (outer harbour)•	A	↓	A	A		A	↓	A	A		Not applicable					Not applicable				

Sub- catchment areas	Sediment										Phosphorus					Dissolved oxygen				
	Clarity					Deposited														
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Te Awa Kairangi small forested	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Te Awa Kairangi Forested mainstems	A	–	A	A		A	–	A	A		B	–	B	A		A	–	A	A	
Te Awa Kairangi Lower mainstem	B		B	A		A	–	A	A		A		A	A		A	–	A	A	
Te Awa Kairangi Rural mainstems	D	↑	D	C		A	–	A	A		B	↑	B	A		A	–	A	A	
Te Awa Kairangi rural streams	B	↑	B	A		A	–	A	A		B	↑	B	A		A	–	A	A	
Te Awa Kairangi urban streams	D	↓	D	D		No data					C		C	C		A	–	A	A	
Waiwhetū Stream	A	↓	A	A		Not applicable					D		D	C		B	–	B	A	
Te Awa Kairangi/Hutt Estuary •	Not applicable					B	↓	B	B		Not applicable					Not applicable				
Te Whanganui-a-Tara (outer harbour)•	Not applicable					D	↓	D	D		Not applicable					Not applicable				

Table footnote

Current illustrates the current state assessment (C) and forecast change (F) if we did not change our current management of stressors upon that attribute. A single arrow (↓) indicates that deterioration within an attribute state is expected and a double arrow (↓↓) that an attribute state deterioration is expected.

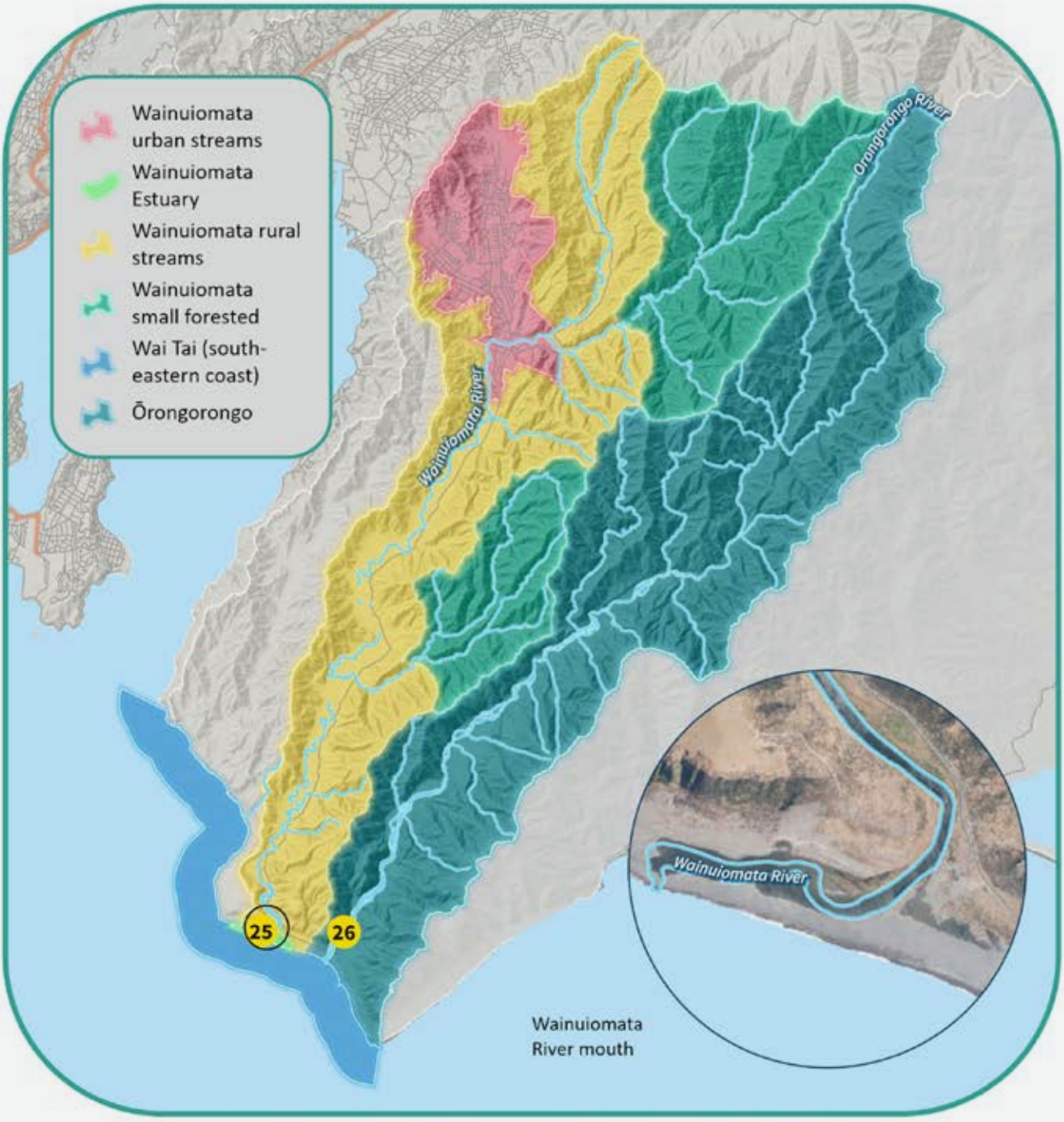
Forecasts have not been made in predominantly forested catchments, or for the deposited sediment and dissolved oxygen attributes, and these are shown as a white box with a dash in the table.

The first steps describe the predicted states that are expected from implementing management solutions to at least maintain the current state in the short term (S) and full implementation of our recommendations in a generation (G). Those that have the same short-term and generation state are expected to have improvement within that attribute state within the generation.

'Longer-term' expresses our direction and intention for continuous improvements desired towards wai ora throughout the whaitua. However, based on current information and approaches we don't currently know what this might require or how long this might take.

**Coastal environments use attributes specific to those environments. However, they are shown under similar river attribute headers: Benthic Macroinvertebrates are presented under MCI, Macroalgae under Periphyton, Enterococci under E. coli, and Muddiness under Deposited Sediment.*

Areas in the Ōrongorongo and Wainuiomata catchment



Sites of significance for Mana Whenua

- 25. Wainuiomata River mouth and foreshore
- 26. Orongorongo River mouth

Catchment context and description

Ōrongorongo

The Ōrongorongo Awa is located to the east of the Wellington Harbour and runs almost parallel to the Wainuiomata River before entering takutai moana (the sea) on Wellington's south coast. While most of the catchment is covered in native bush (approximately 95 per cent), near the coast there is some low-intensity agriculture (sheep and beef). The catchment also provides important recreational opportunities for the wider Wellington population and is a popular area for tramping.

The awa (river) and surrounding taiao (environment) is valued for its āhua (natural character). The mātāpuna (headwaters) of Te Awa o Ōrongorongo is found in the Pākuratahi Forest and has pristine water quality. The upper reaches of the river contain an abundance of native vegetation, and rongoā (such as tītoki, makomako, manamana, kawakawa and rangiora) can be found.

The Ōrongorongo catchment has steep topography, highly erodible soils that are prone to slips, and is affected by large flood events. There are low numbers of wild animals like goats, pigs and deer.

The Ōrongorongo River and Big Huia Creek are both places in which surface water is abstracted for the community drinking water supply. The awa is also highly valued for its Māori customary and recreational uses.

The Ōrongorongo Swamp is the only montane-alluvial wetland in the region and is considered one of the most pristine wetlands, with exceptional native ecosystem value. The Ōrongorongo awa is braided and the river mouth is wāhi tapu (restricted use) and a site of significance to Taranaki Whānui.

Wainuiomata – Te Wai Nui ō Mata

The Wainuiomata catchment is made up of many unique parts. Te kuinga o te awa (the source of the river) is the Remutaka Ranges. The water flows through a number of small, forested streams before it passes through the suburb of Wainuiomata. In developed parts of the catchment, the river has been heavily modified and engineered to reduce flooding. The mainstem, and a number of smaller rural streams, then flow through primarily pastoral land before entering the ocean at Wellington's south coast, east of the harbour entrance. The awa (river) and its surrounding taiao (environment) is valued for its āhua (natural character).

The small, forested streams of the Wainuiomata and its tributaries (such as Catchpool Stream) are wai tapu, which are sacred places where rituals and ceremonies were practised by Mana Whenua. The water is Wai Mātua o Tūāpapa (virgin water) and tohi (baptism) and cultural immersion take place here. There are numerous Āku Waiheke (small streams) in the upper reaches of the whaitua with unique values and mana that should be recognised and protected.

The Wainuiomata River and George Creek are Wai Māori (fresh drinking-water sources), both being places in which surface water is abstracted for community drinking-water supply.

Many taonga species precious to Mana Whenua have been found in the mātāpuna (headwaters) of the awa, and in the mainstem, above Black Creek. The Wainuiomata River is also valued for its Māori customary and recreational uses. It supports a variety of activities, such as te hī ika (line fishing), te hao ika (netting) te hopu tuna (taking eels) and kaukau (swimming).

The river finishes its journey in the East Harbour Regional Park where it discharges into the Cook Strait via the Wainuiomata Estuary. The Wainuiomata River mouth and foreshore are sites of significance to Taranaki Whānui, as well as key mahinga kai sites. The Wainuiomata Estuary contains habitat for, and is home to, many native fish migratory species and native birds that are taonga to Mana Whenua. The estuary is one of less than half a dozen sites along the South Wellington coastline that supports a breeding population of Tuturuwhatu (banded dotterels). Inanga spawning habitats are found in vegetation near river mouth.

Main issues in this catchment

Because the Ōrongorongo catchment is dominated by native forest from the headwaters nearly all the way to the sea, it is in excellent state with few pressures affecting its health. However, pastoral farming in the lower catchment may be having some effects, and the impacts of the current water abstraction levels require further investigation.

The Wainuiomata catchment, on the other hand, has a diverse range of land uses resulting in a range of water-quality issues and challenges. In urban areas, water is degraded due to **encroachment, channelisation, habitat removal, pathogens and stormwater contaminants.** Ongoing management of flood risks while restoring the mana to waterbodies (such as Black Creek) is going to be a major challenge. In rural areas, macroinvertebrate and fish habitats need to be improved through riparian vegetation planting and stock exclusion. Also, the demand for potable water needs to be met without diminishing Te Mana o Te Wai.

Over 40 per cent of the **wastewater** network in urban Wainuiomata is in a poor state and on average more than 20 **wastewater overflow** events occur every year. **Faecal contamination from rural and urban sources** has resulted in swimming holes (such as at Richard Prouse Park) no longer being safe for human contact, even in dry weather. This is a major concern, as people still visit and swim in these areas.

Our recommendations to address pathogens, particularly human sources from our wastewater network and septic tanks, are expected to improve the attribute state for *E. coli* in streams within a generation.

The low-to-moderate intensity commercial farming and lifestyle properties are valued by our community, but can release **pathogens, nutrients and sediment** into local waterways if not managed well. Our recommendations for improved septic tank monitoring and performance, riparian protection and livestock exclusion from waterways, improvements in hill country management, and better localised and catchment group planning will go a long way towards addressing these risks.

Urbanisation of Wainuiomata has seen contaminants (such as metals, nutrients, pathogens and hydrocarbons) appear in the small streams that feed into the Wainuiomata River via the stormwater and wastewater networks. Repairing the wastewater network and adopting best-practice WSUD for urban redevelopments now and into the future will reduce the sources of **stormwater contaminants** and go a long way to improving the catchment's overall water quality. Implementation of our recommendations will ensure that future urban intensification does not cause further degradation.

Urban development and encroachment in Wainuiomata has seen the need for flood control works to ensure the safety of people, property and infrastructure. While necessary, these works have **altered the mauri of waterbodies by changing their form, functions and habitat.**

Black Creek runs through a heavily populated area of Wainuiomata and has the potential to provide for a range of community values. However, it acts more like a stormwater drain than a functioning stream and will require significant effort to restore its mana and mauri. A key first step is to give it back its name and to seek opportunities for habitat restoration.

The Wainuiomata and Ōrongorongo catchments are major sources of potable water. The priority for these catchments is to better understand the potential **effects of water abstraction on water quality** and Te Mana o Te Wai, especially during periods of low flow. It has been reported that sections of the Ōrongorongo River run dry during summer, and it is unclear whether water abstraction in the upper section is a contributor.

Journey from current state to wai ora

Sub- catchment areas	Ecological health															Human health				
	Macroinvertebrates					Periphyton					Fish					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Ōrongorongo	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Wainuiomata small forested	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Wainuiomata urban steams	D	↓	D	D		C	↓	C	C		A		A	A		E		E	C	
Wainuiomata rural steams	C	↓	C	B		C	↓	C	C		A		A	A		D		D	C	
Wainuiomata Estuary*	B		B	B		A	↓	A	A		Not applicable					B		B	B	
Wai Tai (south-eastern coast)*	A		A	A		A		A	A		Not applicable					A		A	A	

Sub- catchment areas	Ecological toxicity																			
	Copper					Zinc					Nitrate					Ammonia				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Ōrongorongo	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Wainuiomata small forested	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Wainuiomata urban steams	B	↓↓	B	B		B	↓↓	B	A		A		A	A		B		B	A	
Wainuiomata rural steams	A	↓	A	A		A	↓	A	A		A		A	A		A		A	A	
Wainuiomata Estuary*	A	↓	A	A		A	↓	A	A		Not applicable					Not applicable				
Wai Tai (south-eastern coast)*	A		A	A		A		A	A		Not applicable					Not applicable				

Sub- catchment areas	Sediment										Phosphorus					Dissolved oxygen				
	Clarity					Deposited														
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Ōrongorongo	A	–	A	A		A	–	A	A		A	–	A	A		A	–	A	A	
Wainuiomata small forested	A	–	A	A		A	–	A	A		C	–	C	C		A	–	A	A	
Wainuiomata urban steams	D	↓	D	C		A	–	A	A		C		C	B		A	–	A	A	
Wainuiomata rural steams	D	↓	D	C		A	–	A	A		C		C	B		A	–	A	A	
Wainuiomata Estuary*	Not applicable					A	↓	A	A		Not applicable					Not applicable				
Wai Tai (south-eastern coast)*	Not applicable					A		A	A		Not applicable					Not applicable				

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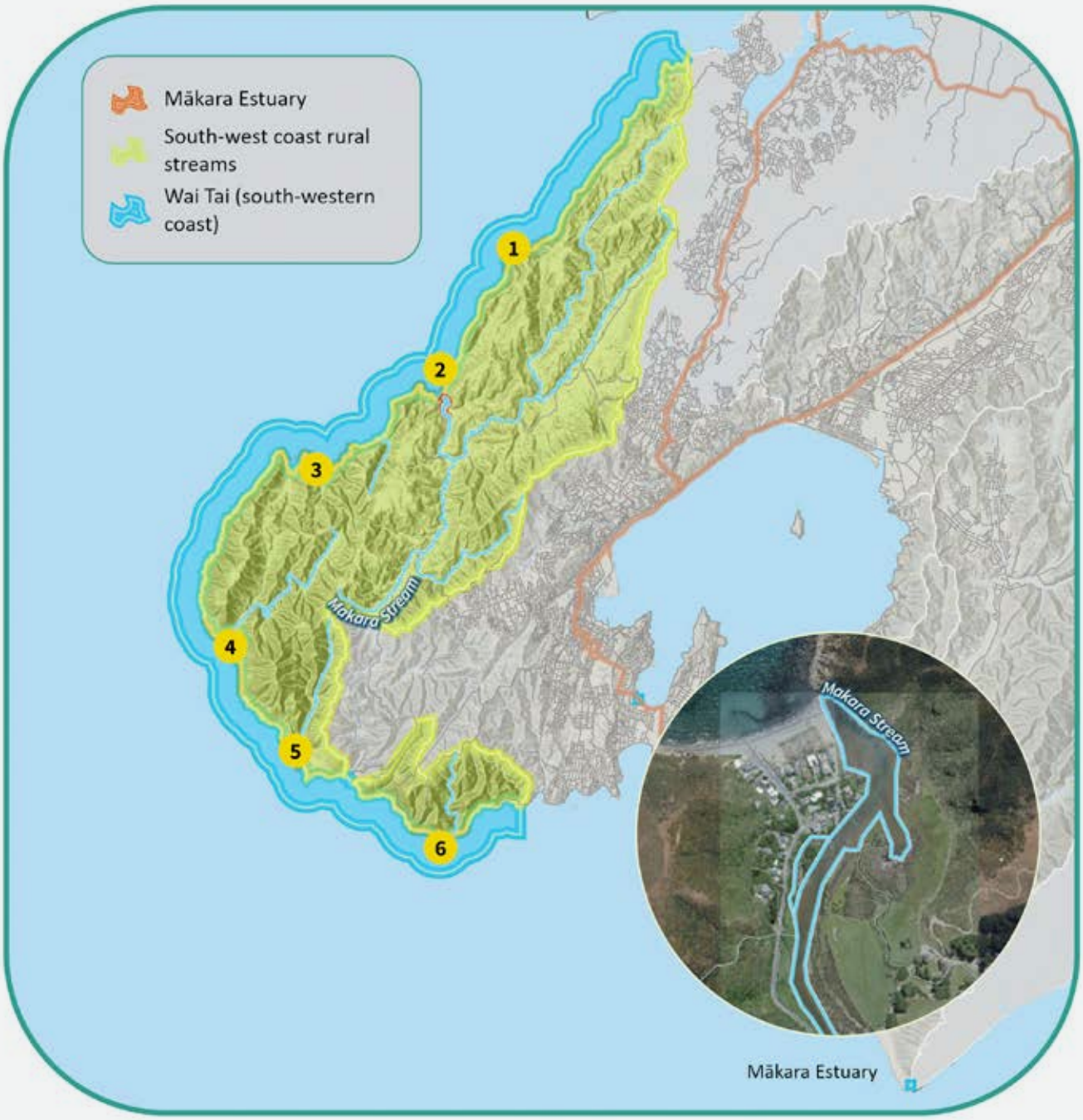
Areas in the South-west coast, Mākara and Ōhariu catchment



Sites of significance for Mana Whenua

1. Kie Kie/Kia Kia (Ngutu Kākā pā) (Pipinui Point)
2. Ōhariu - Wharehou Bay
3. Te Ika a Maru - Ohau Bay
4. Ōterongo Bay
5. Waiariki Stream mouth and coast
6. Te Rimurapa - Pariwhero (Sinclair Head - Red Rocks)

Catchment context and description

The south-west coastal catchments are characterised by steep, scrub and pasture-covered hills above valleys that are generally aligned with fault lines. The streams in these valleys run to the Cook Strait in the south and toward the Tasman Sea in the west. Much of the land was covered in dense podocarp forest until clearance for farming in the late 1800s. Gold prospecting in the mid-to-late 1800s led to a boom in population growth in the western area. Mākara Beach was home to a small fishing community in the early 1900s and is now a popular spot for launching small fishing boats and diving. Its coastal dunes were removed during World War II, modifying the stream mouth.

In more recent years, many small 'lifestyle blocks' have been established in Ōhariu and Mākara, generally along the waterways and each with its own septic system. Two windfarms built in the late 2000s cover a significant area, with sediment management being a focus at the time of construction. Small tributaries provide drinking water for a number of households.

Much of the eastern and coastal areas have reverted to scrub or native bush, and the north-west area has been largely maintained in pasture. The modified environment means that storm runoff moves more quickly down the catchment, which in turn has increased downstream flood risk and streambank erosion.

There are many āku waiheke (small streams) and head water mātāpuna (springs) in the whaitua that flow into the Mākara Stream. These have unique values that must be recognised and protected. The stream and its corridor support many mahinga kai plants like harakeke, raupō, watercress, puha and fernroot, and plants for weaving and rongoā (healing).

The Mākara Estuary and river mouth is recognised as a significant natural wetland and is the only remaining salt marsh estuary on the Wellington Peninsula. It is an important refuge for feeding and nesting birds (such as pied shag, red-billed gull, white-fronted tern, black shag, pied stilt, and variable oystercatcher). The salt marsh also provides seasonal or core habitat to threatened indigenous fish species (such as longfin eel, giant kōkopu, kōaro, inanga, redfin bully, bluegill bully and piharau). The Mākara Estuary has silted up due to high sediment loads coming from further up the catchment.

While the most noteworthy Mana Whenua values in this area are mahinga kai and kaimoana, the estuary is also recognised for other special values (such as waka, healing from the ocean, and the cleansing qualities of the wind). Ngāti Toa Rangatira identify the southwest coast as a very important mahinga mataitai (customary seafood gathering area) and wāhi kōrero I tuku iho (intergenerational knowledge transfer area). Ohariu Pā is found on Mākara Beach, and is of significance to Ngāti Tama. Similarly, the wider Wellington community highly values the kai moana provided by the surrounding South Coast area.

The local communities include many small properties and a handful of large sheep/beef farms (some residents having multigenerational connections to the area), most with additional sources of income alongside farming. Farming is valued by the community and is very low intensity, largely due to the catchment's topography and climate (with most land classed as LUC 6+). There are only small pockets of production forestry. Several landowners and local community groups are working to improve water quality in the area.

The area also supports recreational opportunities for the wider Wellington community, with mountain biking, walking and four-wheel drive tracks and venues for functions. Intensive pest control is currently underway, in order to release kiwi in the area within the next couple of years.

Aside from the Mākara Estuary, all streams in the area discharge straight to a very dynamic coastal environment that is thought to quickly dissipate most contaminants, particularly on the South Coast.

Main issues in this catchment

The south-west coastal catchments and streams are subject to several environmental pressures and are in a deteriorated or fair state. **Sediment loss** is a significant issue in several streams in this area. The historical clearance of steep land for farming has left the more vulnerable land unstable and prone to erosion. Alongside this, a **lack of stream-bank vegetation and livestock exclusion** from waterways means stream margins are more prone to erosion during periods of high rainfall and **habitat for aquatic life and ecosystem health is reduced.**

Faecal contamination and high pathogen concentrations are issues in both dry and wet weather for the catchments, and monitoring shows the Mākara Stream has levels considered unsuitable for human contact. The main sources of faecal contamination are likely to be ruminants and wildfowl, with septic tanks and horses also potential sources. Reducing *E. coli* in this mostly rural catchment will require additional, locally specific diagnostic assessments to identify the sources of dry and wet weather exceedances, particularly dry weather contamination.

Because of the steep terrain, for the most part the 2020 stock exclusion regulations do not apply, meaning that achieving improvements for *E. coli* will require additional actions. The vulnerability of small streams to discharges and damage from stock and septic tanks is an ongoing risk. Their relatively small size makes them disproportionately vulnerable to *E. coli* and sedimentation caused by cattle grazing, plantation forestry and water takes.

These catchments are priority areas for dedicated land management support and coordinated catchment planning. The focus needs to be on identifying critical source areas for contaminants, reducing stock access to waterways, establishing riparian vegetation, the retirement or reforestation of some areas, and good maintenance of household septic systems.

We have heard from Mana Whenua that whānau (family group) could traditionally swim, and harvest and consume kaimoana like tuna, mullet, and pipis, without becoming māuiui (unwell). Areas where paua once lived have now completely disappeared, except in Ohau North where there are lots of small, undersized paua. There is also immense pressure on coastal resourcing from poaching.

Mākara Estuary and the coastal waters are highly valued areas and the local community has already made substantial efforts to restore them. Because of the slow response rate to stressors, improvement will take time, but can be achieved through mitigations further up the catchment. Although naturally low in diversity, Mākara Estuary supports an even sparser benthic macroinvertebrate community than expected because of the impact of **muds and sediment** in particular. Reducing sediment inputs through improved practices up the catchment, and better flushing over generations, will lead to small improvements.

Journey from current state to wai ora

Sub- catchment areas	Ecological health													Human health				
	Macroinvertebrates					Periphyton					Fish					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
South-west coast rural steams	C	↓	C	C		C		C	C		A		A	A		E		E	D	
Mākara Estuary*	D		D	D		C		C	C		Not applicable					C		C	C	
Wai Tai (south-western coast)*	A		A	A		A		A	A		Not applicable					A		A	A	

Sub- catchment areas	Ecological toxicity																	
	Copper					Zinc					Nitrate					Ammonia				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
South-west coast rural steams	A		A	A		A		A	A		A		A	A		A		A	A	
Mākara Estuary*	A	↓	A	A		A	↓	A	A		Not applicable					Not applicable				
Wai Tai (south-western coast)*	A		A	A		A		A	A		Not applicable					Not applicable				

Sub- catchment areas	Sediment										Phosphorous					Dissolved oxygen				
	Clarity					Deposited														
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
South-west coast rural steams	D	↓	D	C		D	–	D	C		D	↓	D	C		A	–	A	A	
Mākara Estuary*	Not applicable					C	↓↓	C	B		Not applicable					Not applicable				
Wai Tai (south-western coast)*	Not applicable					A	↓	A	A		Not applicable					Not applicable				

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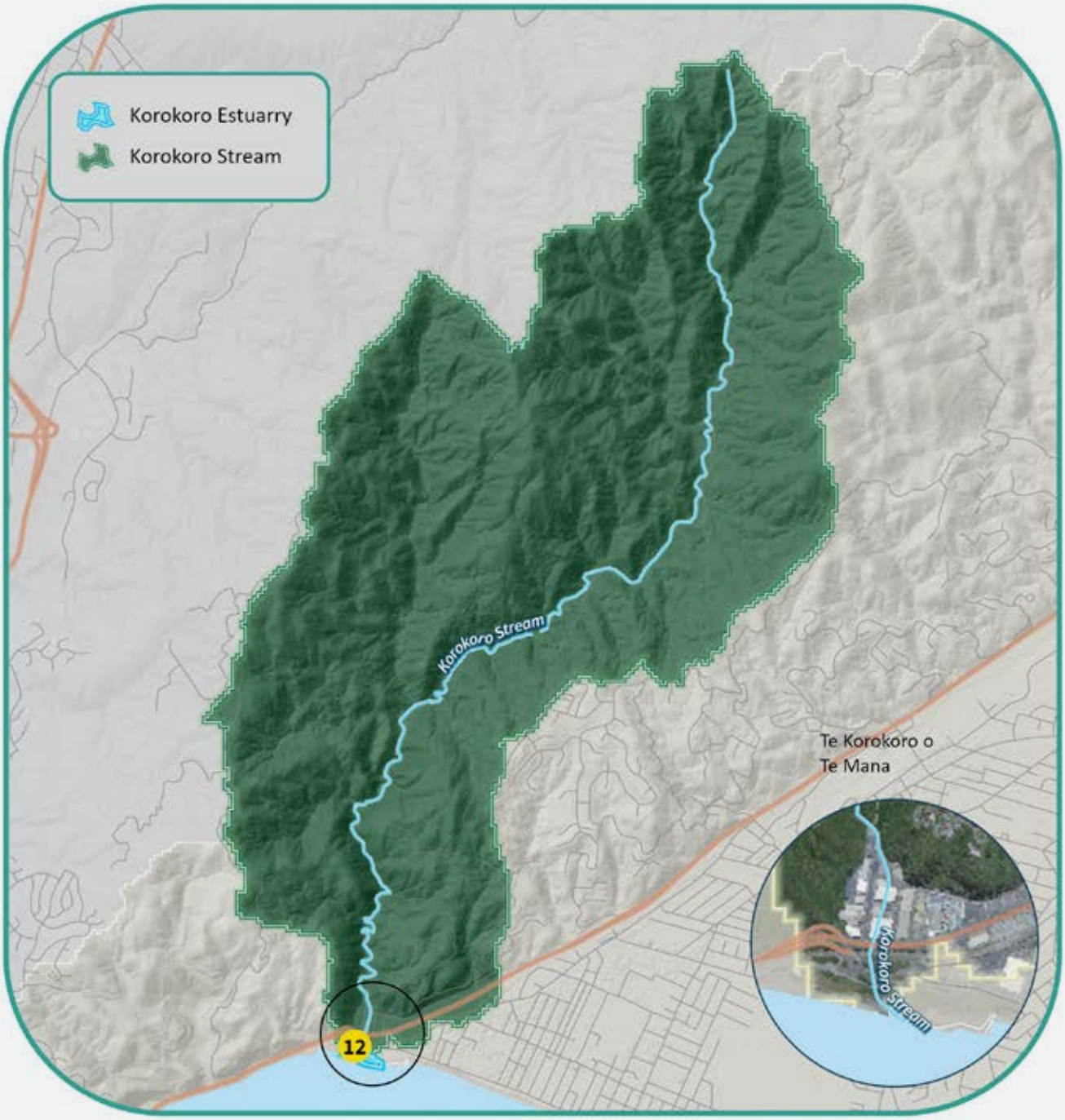
**Coastal environments use attributes specific to those environments. However, they are shown under similar river attribute headers: Benthic Macroinvertebrates are presented under MCI, Macroalgae under Periphyton, Enterococci under E. coli, and Muddiness under Deposited Sediment.*

Areas in the Korokoro catchment



Sites of significance for Mana Whenua

- 12. Te Korokoro o Te Mana (Korokoro Stream mouth)

Catchment context and description

The Korokoro Stream originates in Belmont Park and drains approximately 8km to the Wellington Harbour, under State Highway 2 and through a small estuary. The headwaters are primarily forested scrublands and indigenous forest with some rural land use activities and urban development along the foothills in the suburb of Korokoro.

Retaining much of its original āhua (natural character), Te Korokoro o Te Mana is a Taonga for Taranaki Whānui, and it is also protected as a site of significance in the PNRP.

Korokoro Stream is recognised as an exemplar catchment in line with its cultural status as Te Korokoro o Te Ika a Maui (the throat of the fish of Maui). This is reflected in the gurgling sounds made by the stream.

The catchment has a long history of industrial and municipal use. There are two old dams along the Korokoro Stream that are more than 100 years old. One was used for the local community's municipal supply, the other by a wool mill. These original municipal and industrial uses are now gone. The catchment is mainly used for recreation by locals. It is mostly contained within Belmont Regional Park, which contains popular and accessible walking tracks, and is also known for its trout fishery.

Te Mātāpuna of the Korokoro Stream are still pristine and have provided Taranaki Whānui with a vital supply of high-quality drinking water for the Pito-one Pā for many generations. The stream is of exceptional value to iwi due to the abundant spiritual sustenance it provides. Whānau (family group), hapū and iwi carry out rituals, collect rongoā, and continue to share stories of its healing practices and teachings. It is also mahinga kai (food gathering area) for the hapū of Taranaki Whānui and Te Ātiawa, particularly renowned for whitebait, longfin tuna and shortfin tuna.

The Pito-one Pā / Te Tatau o te Po on the Petone foreshore is a significant wāhi ahurea (historical site) positioned near the mouth of Te Korokoro o Te Mana.

Mana Whenua expect that the unique and special values associated with Te Korokoro o Te Mana will be enhanced through the recognition of the persona of the awa and restored through active management.

Main issues in this catchment

Much of the upper Korokoro catchment has regenerating forest cover, resulting in a good current state for most of the freshwater ecological attributes. However, where pastoral grazing and urban development is occurring, water quality has degraded and will continue to do so without interventions.

Low-to-moderate intensity pastoral land use occurs in the upper Korokoro catchment and is a source of **sediment and nutrients** to streams and headwater gullies. This pressure will reduce over time as Belmont Regional Park transitions out of pastoral land use and farm and catchment planning becomes common practice. Sedimentation from plantation forestry harvest needs to be managed well to reduce this pressure.

Urban development is the biggest risk to Korokoro water quality. If not managed appropriately to our recommendations, the Korokoro catchment could quickly be affected by **stormwater contamination, hydrological changes and channel modifications** associated with urbanisation. We recommend the adoption of best-practice WSUD for urban redevelopments now and into the future.

Modification, channelisation and de-vegetation of the Korokoro Estuary and lower stream reaches has reduced overall stream health in this area, including the total removal of inanga spawning habitat. Locally specific assessments and catchment planning with Mana Whenua and communities will identify the best places for habitat restoration in some urban and rural sub-catchments.

Journey from current state to wai ora

Sub- catchment areas	Ecological health															Human health				
	Macroinvertebrates					Periphyton					Fish					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Korokoro Steam	B	↓	B	A		B		B	B		A		A	A		C		C	B	
Korokoro Estuary•	C	↓↓	C	C		B		B	B		Not applicable					C		C	B	

Sub- catchment areas	Ecological toxicity																			
	Copper					Zinc					Nitrate					Ammonia				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Korokoro Steam	A		A	A		A		A	A		A		A	A		A		A	A	
Korokoro Estuary•	A	↓	A	A		A	↓	A	A		Not applicable					Not applicable				

Sub- catchment areas	Sediment										Phosphorus					Dissolved oxygen				
	Clarity					Deposited														
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Korokoro Steam	A	↓	A	A		A	–	A	A		B		B	A		A	–	A	A	
Korokoro Estuary•	Not applicable					A	↓	A	A		Not applicable					Not applicable				

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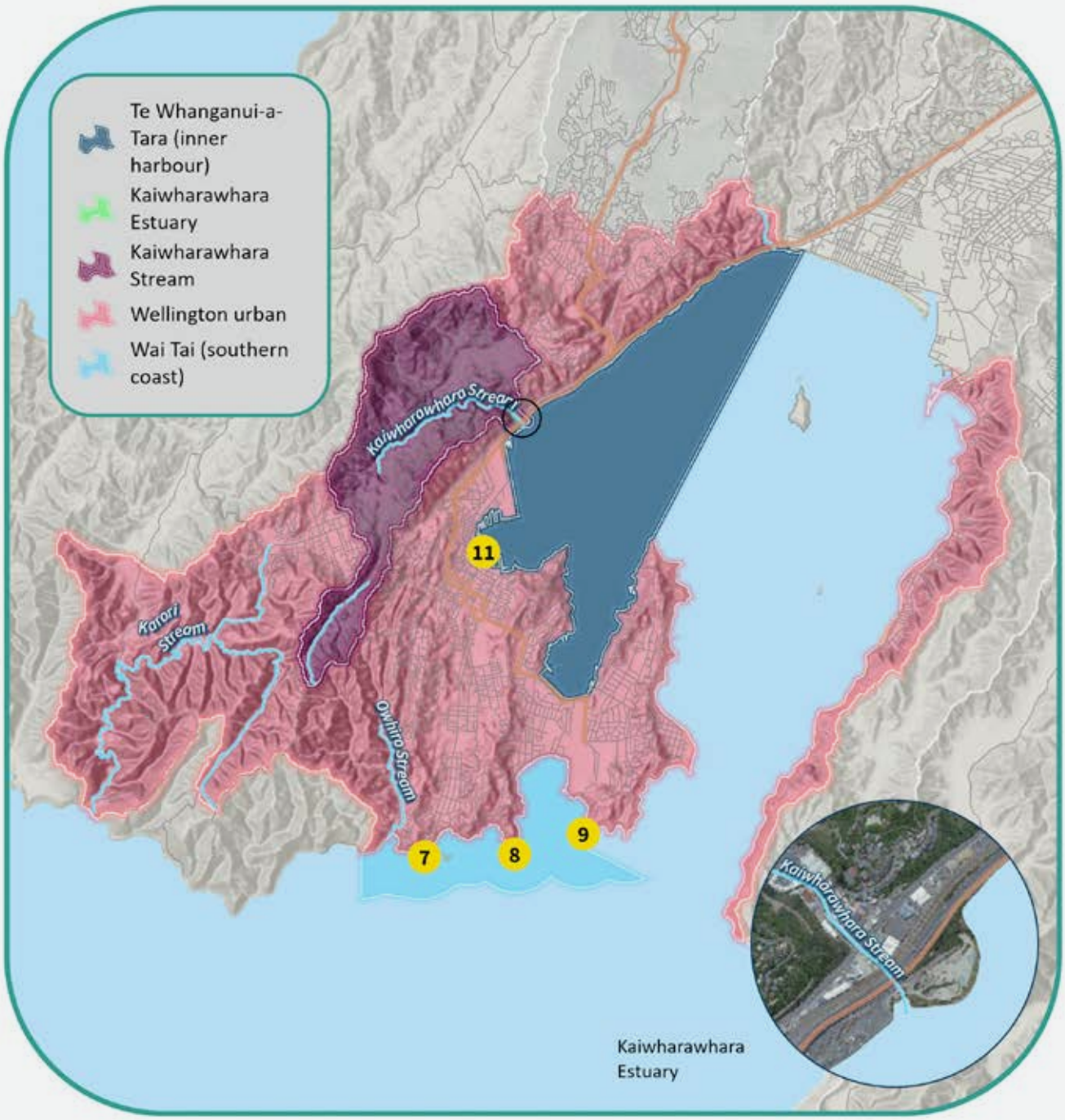
Areas in the Wellington urban catchment



Sites of significance for Mana Whenua

- 7. Tapu te Ranga - Owhiro - Haewai
- 8. Te Raekaihau Point reef
- 9. Hue te Taka (Wellington south coast)
- 11. Te Aro pā

Catchment context and description

The main streams in the Wellington urban area are the Kaiwharawhara, Karori and Ōwhiro Streams, which flow to the Whanganui-a-Tara inner harbour or out to the South Coast and the Cook Strait. Wellington City and its surrounds are mainly urban areas with some indigenous vegetation on the city fringes, town belt and in the headwaters of streams. Some rural land use activities are undertaken in tributaries of the Karori Stream.

Kaiwharawhara is the largest stream system in Wellington City and one of the few remaining streams that has a relatively natural estuary mouth into the harbour. The stream runs around the west of Te Ahumairangi (Tinakori Hill), the maunga (mountain) that surrounds and sustains the city of Wellington.

Te Manga o Kaiwharawhara and its environs are considered significant to both the history and continued wellbeing of the Te Ātiawa and Taranaki Whānui people. The stream is also a site of wāhi whakarite (preparing for an important activity/event) and was used for rituals (such as planting at Puanga/Matariki).

As the population of Wellington has grown over time, the urban footprint has expanded and densified. The proximity and accessibility to our homes means these urban streams are highly valued, and have great potential for people to reconnect to their local waterways and get involved in their improvement.

The Kaiwharawhara catchment is the gateway for people entering and exiting the city with the major transport corridors of State Highway 1 and the North Island main railway running through it. The approach to urban development and transportation has seen many streams piped, or in concrete channels and parts of the inner harbour reclaimed, for the central business district and Port.

Despite the surrounding environment being heavily urbanised and the stream experiencing pressures from urban land uses (such as from stormwater), the Kaiwharawhara Stream has high ecological and cultural values. Kia Mauri/mouriora te Kaiwharawhara (Sanctuary to Sea) is a project funded to continue the creation and restoration of indigenous fish habitat, which includes spawning sites. Monitoring is also carried out at Zealandia where te mātāpuna are found.

Āku Waiheke (the many small streams) of Wellington have been largely lost through piping, contamination and infill. This is a significant issue for Mana Whenua who retain aspirations that their streams are wherever possible day-lighted and their mana and mauri (wellbeing) restored.

The Kaiwharawhara Pā was located near the stream mouth and remains a significant site for Taranaki Whānui forming the original gateway into Wellington.

The Cook Strait also faces considerable pressure from stormwater and wastewater discharges from these areas. This is a critical issue for Mana Whenua due to the impacts these discharges are having on mahinga kai, cultural and recreational use, and there is currently very little data or understanding of their effects.

Main issues in this catchment

Wellington City streams suffer from a wide range of stressors and are generally in a poor state. Most **streams in the city have been heavily modified or piped,** with only small (mainly headwater) reaches still open to daylight. We risk losing connection with our urban streams and the values they provide if the current trend of reclamation and encroachment continues, while the streams themselves lose their mauri and life-supporting capacity.

Around one-third of Wellington City's **wastewater network is in a poor state** (i.e., broken and leaking) and in need of repair, and **wastewater overflows** are a common occurrence. Faecal contamination of the accessible streams (such as Kaiwharawhara, Ōwhiro and Karori) means they are not safe for human contact, even in dry weather. More recently, small 'lifestyle blocks' have appeared in some of the main valleys (such as South Karori, Long Gully and towards Mākara), generally along the waterways and each with its own septic system.

Our recommendations target the improvement in *E. coli* to achieve the C state in a generation and we believe the journey of further improvement must continue from there. This involves institutions and residents taking responsibility, fixing all **cross-connected storm and wastewater networks** and eliminating overflows to a rare occurrence, as well as the picking up of dog faeces and septic tank management.

Landfills (historic and current), as well as other **contaminated sites,** are also leaching toxicants into streams and this needs to be addressed.

Reducing sediment and improving the state of ecosystem health in Wellington's urban streams will require fundamental changes in the **hydrological effects of urban stormwater,** enhancements in the form and function of stream-beds, and significant habitat restoration. Projects of this scale go beyond our general recommendations and require locally specific diagnostic assessments and integrated catchment planning. It would also have implications for current land use, as the restoration of streams would involve rebuilding their habitats and meandering forms.

The Wellington City catchments that have been identified for **intensification and infill housing** will need careful management not to further exacerbate the pressure on our already **stressed urban streams.** We recommend the adoption of best-practice WSUD for urban redevelopments now and into the future.

Urban development, encroachment and catchment imperviousness (these increase peak flow rates during rainfall) have resulted in the need for flood control works, including river straightening, channel stabilisation and vegetation removal to ensure the safety of people, property and infrastructure. But this has also **changed the form, function and habitat of streams** in these urban catchments. Many streams are affected by **lack of space, no vegetation for shading, abnormal flows from stormwater, contaminants and straightening.** Some streams do have shading and space, but are still affected by abnormal flows, contaminants and flooding defences.

Many urban streams have been modified in ways that provide **barriers to fish** from moving through catchments as they need to at different phases of their life. The advice we have received on fish passage remediation is that once all barriers have been identified, remediation should be feasible within 25 to 30 years. Remediation does not equate to removal – passage barriers can often be modified to meet the needs of specific species. When this is achieved, we expect to see this attribute state shift to an A state.

The **channelisation of the Kaiwharawhara Estuary** means its natural processes no longer operate as they should. Contaminants are flushed through the concrete channel and it has an 'artificial' A state for most 'water-quality' parameters. An unusual challenge associated with restoring the habitat and natural processes in Kaiwharawhara Estuary is that while ecosystem health and cultural values may increase, other parameters may reduce as flows slow down through the estuary and contaminants can accumulate. Catchment actions to reduce the inputs may help, but it's uncertain if this would be sufficient to maintain an A state for these parameters.

In **Te Whanganui-a-Tara harbour,** although current state assessments reflect the whole inner harbour, there are **hotspot sites for metals contamination** in benthic sediment, particularly around the Queens Wharf and Port areas and stormwater outfalls. Our recommendations will help prevent further degradation.

Depositional basins will always have naturally high muddiness and it is difficult to improve significantly, although improvements within the D state (A state for Evan's Bay) may occur over time.

Benthic macroinvertebrates will likely improve within the existing state as these are associated with legacy effects to sediment and metals. This gradual shift will take multiple generations for the worst sites and potentially shorter timeframes at more resilient sites.

Enterococci in the inner harbour sites should improve to a B state with improvements to infrastructure.

The open coastal waters are in a good state, although sediment inputs and faecal contamination after rainfall may continue to impact recreation at Karori Stream and Ōwhiro Bay, and the collection of mahinga kai at these sites is likely to continue to be affected.

This stretch of coastline which contains the Taputeranga Marine Reserve may also be affected by poorly understood freshwater impacts, including emerging contaminants.

Journey from current state to wai ora

Sub- catchment areas	Ecological health															Human health				
	Macroinvertebrates					Periphyton					Fish					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Kaiwharawhara Stream	C	↓	C	C		C		C	C		A		A	A		E		E	C	
Kaiwharawhara Estuary*	C		C	C		A		A	A		Not applicable					C		C	B	
Wellington urban	C	↓	C	C		C		C	C		A		A	A		E		E	C	
Wai Tai (southern coast)*	B		B	B		A		A	A		Not applicable					B		B	B	
Te Whanganui-a-Tara (inner harbour)*	B	↓↓	B	B		A		A	A		Not applicable					C		C	B	

Sub- catchment areas	Ecological toxicity																			
	Copper					Zinc					Nitrate					Ammonia				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Kaiwharawhara Stream	C	↓↓	C	B		B	↓↓	B	A		B		B	B		B		B	B	
Kaiwharawhara Estuary*	A		A	A		A		A	A		Not applicable					Not applicable				
Wellington urban	D	↓	D	C		B	↓↓	B	A		B		B	B		B		B	B	
Wai Tai (southern coast)*	A	↓↓	A	A		A		A	A		Not applicable					Not applicable				
Te Whanganui-a-Tara (inner harbour)*	A	↓↓	A	A		B	↓↓	B	B		Not applicable					Not applicable				

Sub- catchment areas	Sediment										Phosphorus					Dissolved oxygen				
	Clarity					Deposited														
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Kaiwharawhara Stream	B	↓	B	A		A	–	A	A		D		D	C		A	–	A	A	
Kaiwharawhara Estuary*	Not applicable					A		A	A		Not applicable					Not applicable				
Wellington urban	D	↓	D	C		B	–	B	B		D		D	D		A	–	A	A	
Wai Tai (southern coast)*	Not applicable					A	↓	A	A		Not applicable					Not applicable				
Te Whanganui-a-Tara (inner harbour)*	Not applicable					D	↓	D	D		Not applicable					Not applicable				

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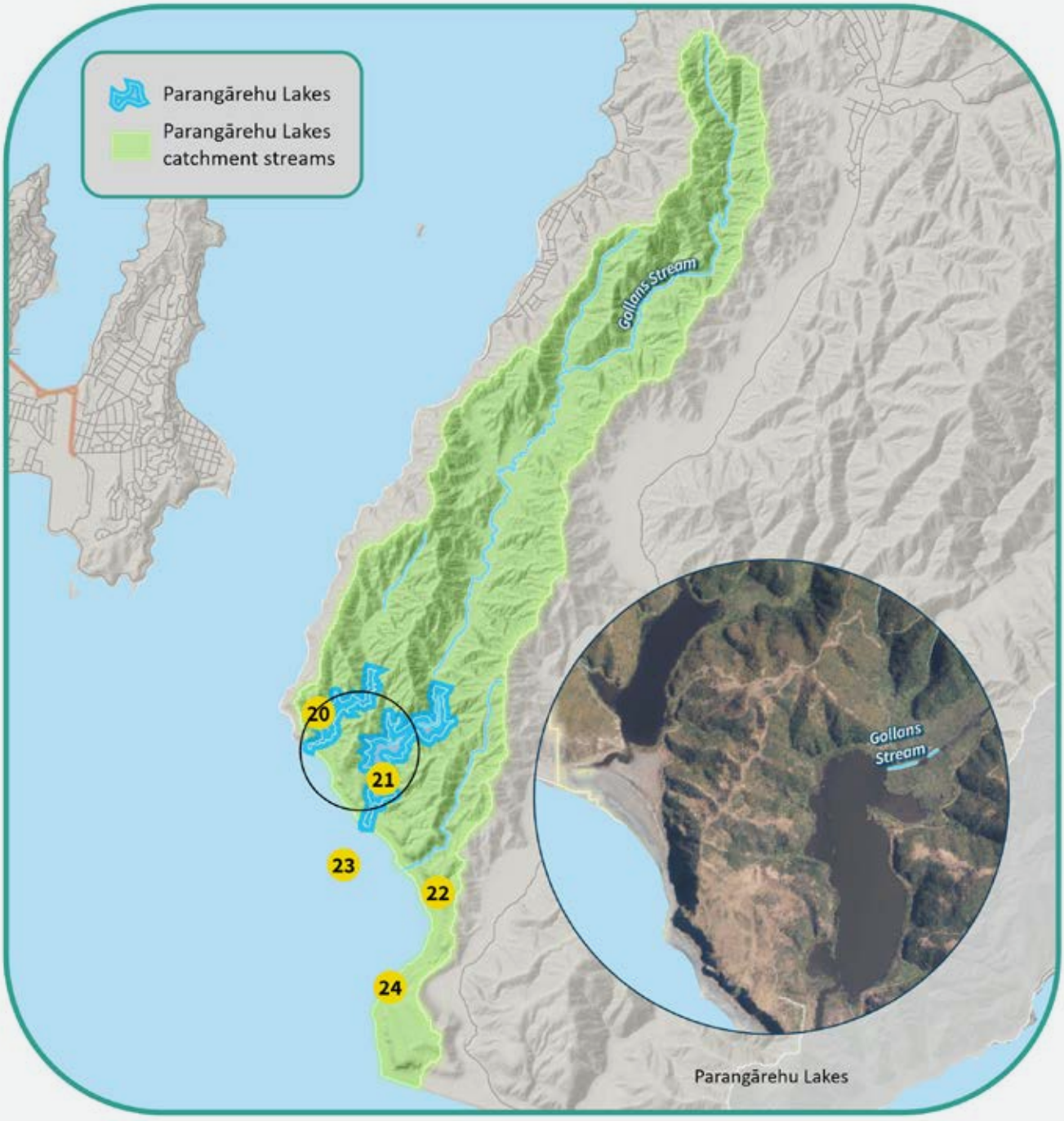
Areas in the Parangārehu Lakes catchment



Sites of significance for Mana Whenua

- 20 Parangārehu Lakes, Kohangapiripiri
- 21 Parangārehu Lakes, Kohangatera
- 22. Ōkākaho Stream
- 23 Parangārehu (Fitzroy Bay)
- 24. Baring Head/Ōruapouanui

Catchment context and description

The Parangārehu Lakes (Parangārahu is also an appropriate usage) are two small, shallow, coastal lakes situated on the southern coastline within the East Harbour Regional Park. This catchment area includes these lakes and the upstream and surrounding short coastal-facing land of Baring Head. The headwaters of Lake Kōhangaterā includes Gollan's Stream with wetland, pastoral and native forest areas, as well as the popular Butterfly Creek recreational area. The Lake Kōhangapiripiri catchment, the smaller of the two, is mainly indigenous forest and regenerating scrublands, with significant wetlands to the north of the lake.

These lakes are highly valued by the wider community for recreational activity and their impressiveness. The Kōhangaterā and Kōhangapiripiri Lakes have many important values, including as outstanding wetlands and water bodies for indigenous biodiversity values, Ngā Taonga nui a kiwa and sites of significance to Taranaki Whānui, and are regarded as nationally significant lakes of their type. The presence of these lakes is a 'jewel in the crown' in this whaitua and they are outstanding.

Gollan's Stream is the primary kuinga (source) of wai entering Lake Kōhangatera and is a place of great beauty and pristine waters. Te mātāpuna o te manga (the headwaters of the stream) are found in the undisturbed beech forest of the Eastbourne hills. This forest also forms part of the East Harbour Regional Park and it is managed by Greater Wellington.

Historically, Lake Kōhangaterā was a superior fishery for Taranaki Whānui. Karaka groves were planted alongside the lakes as a food source and the tributaries contain raupō beds. The area was a summer camp for whānau (family group) as they fished not only the lakes but the sea. Important mahinga kai sites in the area include Ōkākaho Stream, Parangārehu (Fitzroy Bay), Ōruapouanui/Baring Head and Kōhangaterā Lake, where species (such as longfin and shortfin tuna, mullet, kahawai and whitebait) were found. These sites are also puna rongoā and puna raranga (a source of medicinal and weaving material).

The Port Nicholson Block (Taranaki Whanui ki Te Upoko o Te Ika) Claims Settlement Act 2009 came into force on 5 August 2009, which transferred ownership of the lakebeds of Lake Kōhangapiripiri and Lake Kōhangaterā, the esplanade land surrounding both lakes and the dendroglyph site to the Port Nicholson Block Settlement Trust (PNBST). Greater Wellington and the PNBST jointly manage the Parangārehu Lakes Area through a 'Rōpū Tiaki' or guardianship group. The iwi and co-management partner Greater Wellington have drafted a management plan jointly to support the ecology of the area. All future planning and management actions for these lakes must recognise the co-management agreements and tino rangatiratanga of Taranaki Whānui over these lakes.

Our committee recognises the Vision and Outcomes of the Parangārahu Lakes Area Co-Management Plan that includes:

Moemoeā – vision

Kōhangapiripiri – Kōhangaterā – Kohanga ora: Nests nurturing life and wellbeing.

The outcomes – which are the Indicators of life, health and wellbeing are:

- *Tuna Heke* – restoration of the eel and native fishery of the lakes as a self-replenishing mahinga kai for Taranaki Whānui
- *Manu Korihi* – flourishing forested landscape and healthy wetland-lake ecosystem sustains multitudes of birds and indigenous species and a revitalisation of Taranaki Whānui cultural practice
- *Tangata Kaitiaki* – managers, visitors and Taranaki Whānui are active kaitiaki protecting the catchments as taonga, which contributes to personal, community and tribal wellbeing.

Main issues in this catchment

The Parangārehu Lakes are generally considered to be in good, if not excellent, condition but there are emerging pressures causing concern. Te Māhere Wai raises a number of issues about the Parangārehu Lakes catchments that Greater Wellington must also consider and address.

The relatively recent detection of **invasive exotic plants in both lakes** threatens to upset the current macrophyte (aquatic plant) assemblage, which includes a range of unique and rare species. Recent incursions of the aquatic weed egeria (Egeria densa) in the upper Lake Kōhangaterā catchment is of particular concern. If not managed, there is a very real risk that egeria could out-compete and smother native macrophytes.

Both lakes have relatively **high nutrient levels,** which if not controlled could result in the lake experiencing an increase in phytoplankton blooms, or in a shift from a macrophyte to a phytoplankton-dominated system.

Excess **sediment** directly affects the health of the streams and is a potential source of nutrients. Suspended sediment can also reduce lake clarity, favouring some aquatic plants over others, potentially upsetting the current balance. Clearance of steep land for agricultural use in the lakes' catchments has resulted in increasing sedimentation in the lakes. Direct **livestock access to streams** hampers the growth of riparian vegetation and further weakens the stability of stream-banks. A lack of livestock exclusion and stream-bank vegetation in these catchments has left **stream bank margins prone to erosion** during periods of high rainfall.

Concern has been raised about the current level of **public access.** The Parangārehu Lakes need to be protected from development, pollution and should be accessed in a biosecurity and environmentally conscious manner by the public.

Actions likely to achieve shifts towards wai ora in a generation include good environmental practices addressing:

- Stock exclusion for wetlands (required in national regulation).
- Stock exclusion for Gollan's Stream and 1m wide tributaries (required in national regulation on low-slope land), which will also address stock exclusion for low-lying wetlands adjacent to streams.
- Any seepage wetlands in catchment assessed through catchment and farm environment planning.
- Any erosion
- risks with a focus on stream-bank sources assessed through catchment and farm environment planning, which will also reduce phosphorous sources.

Also of concern is that the coastal road may be acting as a barrier to fish passage to the Lakes.

Journey from current state to wai ora

Sub- catchment areas	Ecological health															Human health				
	Macroinvertebrates					Periphyton					Fish					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Parangārehu catchment streams	C	↓	C	B		C	↓	C	B		A		A	A		E		E	C	

Sub- catchment areas	Ecological toxicity																			
	Copper					Zinc					Nitrate					Ammonia				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Parangārehu catchment streams	A		A	A		A		A	A		A		A	A		A		A	A	

Sub- catchment areas	Sediment								Phosphorus					Dissolved oxygen				
	Clarity					Deposited												
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Parangārehu catchment streams	D	↓	D	C		D	–	D	C		D		D	C		A	–	A	A	

Sub- catchment areas	Ecological health															Human health				
	Submerged plants (natives)					Submerged plants (invasive)					Phytoplankton					*E. coli*				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Lake Kōhangatera	B	–	B	A		B	–	B	B		A	–	A	A		No data		B	A	
Lake Kōhangapiripiri	B	–	B	A		C	–	C	B		A	–	A	A		No data		B	A	

Sub- catchment areas	Human health					Ecological toxicity					Nutrients									
	Cyanobacteria					Ammonia					Phytoplankton					Phosphorous				
	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term	Current		First steps		Longer term
	C	F	S	G		C	F	S	G		C	F	S	G		C	F	S	G	
Lake Kōhangatera	A	–	A	A		A	–	A	A		B	–	B	B		C	–	C	B	
Lake Kōhangapiripiri	A	–	A	A		A	–	A	A		C	–	C	B		C	–	C	B	

Sub- catchment areas	Dissolved oxygen				
	Lake bottom				
	Current		First steps		Longer term
	C	F	S	G	
Lake Kōhangatera	No data			A	
Lake Kōhangapiripiri	No data			A	

Table footnote

Current illustrates the current state assessment (C) and forecast change (F) if we did not change our current management of stressors upon that attribute. A single arrow (↓) indicates that deterioration within an attribute state is expected and a double arrow (↓↓) indicates that an attribute state deterioration is expected.

Forecasts have not been made for the lakes or the deposited sediment and dissolved oxygen attributes, and these are shown as a white box with a dash in the table.

The first steps describe the predicted states that are expected from implementing management solutions to at least maintain the current state in the short term (S) and full implementation of our recommendations in a generation (G). Those that have the same short-term and generation state are expected to have improvement within that attribute state within the generation.

'Longer-term' expresses our direction and intention for continuous improvements desired towards wai ora throughout the whaitua. However, based on current information and approaches we don't currently know what this might require or how long this might take.

Appendices

Appendix 1: Committee establishment and membership

Whaitua Te Whanganui-a-Tara is the third of five whaitua processes Greater Wellington is undertaking as part of its requirement to give effect to the National Policy Statement for Freshwater Management 2020.

Greater Wellington saw the establishment of whaitua committees as an opportunity to do things differently through a devolved, community-led planning process. Greater Wellington aims to ensure that improvements in water quality are driven by local leadership, knowledge and priorities.

Whaitua Te Whanganui-a-Tara decision making is informed by many voices: national legislation that directs regional and district plans; the voices of the many and diverse local communities, whānau, hapū and individuals who provided their views; scientists from all disciplines; and those with cultural or local knowledge. It also considers those who do not have a voice or struggle to be heard, including younger and future generations. We have sought to represent all these voices.

The founding members of the Whaitua Committee were Roger Blakeley and Paul Swain (Greater Wellington), Morrie Love and Kara Puketapu-Dentice (Port Nicholson Block Settlement Trust/Taranaki Whānui ki Te Upoko o Te Ika), Hikitia Ropata and Naomi Solomon (Ngāti Toa Rangatira), Tui Lewis (Hutt City Council), Wayne Guppy (Upper Hutt City Council), Peter Gilberd (Wellington City Council), and Anya Pollock, Gabriel Tupou, Jonny Osborne, Louise Askin, Pat van Berkel, Peter Matcham, Quentin Duthie and Zoe Ogilvie (community representatives).

The first meeting was held on Matiu/Somes Island in February 2019 and was hosted by Taranaki Whānui. A key outcome of the day was a commitment to a bicultural approach to the way we would operate and make decisions. We were all encouraged to not just follow a 'bicultural process', but to think from the start that the outcome would be different from any previous similar processes.

In early meetings we decided we would benefit from a joint chairing arrangement, with one of the chairs being Mana Whenua and the other a member of the community who was not Mana Whenua. Kara Puketapu-Dentice and Louise Askin were confirmed as co-chairs at our third meeting.

The committee's make-up changed during its tenure:

- Morrie Love left and was replaced by Sam Kahui; Paul Swain left and was replaced by Councillor Ros Connelly; and Peter Gilberd left and was replaced by Councillor Sean Rush.
- Quentin Duthie resigned in February 2021 after making an outstanding contribution to the committee during its first two years.
- Kara Puketapu-Dentice stepped down as co-chair in December 2020 and continued as a committee member. Sam Kahui was appointed as his replacement.

Appendix 2: Our community's freshwater values in Whaitua Te Whanganui-a-Tara

This Appendix takes a close look at the things we value in the waterbodies of our whaitua (our 'freshwater values'). These values all apply to some extent to all the waterbodies:

- Freshwater ecosystem health
- Mahinga kai
- Threatened species
- Natural form and character
- Māori customary use and wai tapu
- Drinking-water supply
- Human contact (primary)
- Community connection
- Animal drinking water
- Commercial, industrial use and the production of food and beverages
- Transport and Tauranga waka
- Fishing.

For a detailed description of specific Mana Whenua values in this whaitua, see Te Mahere Wai, the companion document produced by Te Kāhui Taiao (the Mana Whenua membership of the Whaitua Committee).

Freshwater ecosystem health.
This refers to the extent to which a catchment supports an ecosystem appropriate to the type of water body (e.g., river, lake, wetland or aquifer). There are five biophysical components that contribute to freshwater ecosystem health and all of them need to be managed. They are:

- Water quality – the physical and chemical measures of the water (such as temperature, dissolved oxygen, pH, suspended sediment, nutrients and toxicants)
- Water quantity – the extent and variability in the level or flow of water
- Habitat – the physical form, structure and extent of the water body, its bed, banks and margins; its riparian vegetation; and its connections to the floodplain and to groundwater
- Aquatic life – the abundance and diversity of biota, including microbes, invertebrates, plants, fish and birds
- Ecological processes – the interactions among biota and their physical and chemical environment (such as primary production, decomposition, nutrient cycling and trophic connectivity).

We must also consider ways to fulfil the mauri or āhua of our waterbodies. Te Mahere Wai has more on this, including information on a Te Oranga Wai assessment framework (currently in development) for determining kei te ora te mauri (the mauri of the place is intact). The framework offers wider tools for assessing the NPS-FM's first priority of Te Mana o te Wai, and the provision of other Mana Whenua values. The western science measures of the national objectives frameworks are a part of (but insufficient on their own) for fully understanding the mauri, mana and āhua of waterbodies.

Ecosystem health as key indicator of the health of the waterbody – to be prioritised under Te Mana o te Wai applies to all freshwater bodies and coastal receiving environments of all sizes and types. Where a waterbody is significantly degraded or modified the journey of improvement may be long, but we must work to achieve the first priority (providing for ecosystem health) with kei te ora te mauri as the destination. Providing for the health of the awa will provide for the health needs of people and other human uses and values.

Mahinga kai.
Mahinga kai generally refers to freshwater species that have traditionally been used as food, tools or other resources. It also refers to the places those species are found and to the act of catching or harvesting them. Mahinga kai provides food for the people of the rohe and these sites give an indication of the overall health of the water. For this value, kai would be safe to harvest and eat. Transfer of knowledge is able to occur in the preparation, storage and cooking of kai. In catchments or sub-catchments that are used for providing mahinga kai, the desired species are plentiful enough for long-term harvest and the range of desired species is present across all life stages.

To achieve kei te ora te mauri (the mauri of the place is intact) in catchments that are valued for providing mahinga kai, customary resources are available for use, customary practices are able to be exercised to the extent desired, and tikanga and preferred methods are able to be practised.

See Te Mahere Wai for direction on mahinga kai in this whaitua, and the in-development Te Oranga Wai assessment framework for information on the methods and basis for attribute state targets in regional planning documents.

Threatened species.
This refers to the extent to which a catchment supports a population of threatened species has the critical habitats and conditions necessary to support the presence, abundance, survival and recovery of the threatened species. All the components of ecosystem health must be managed, as well as (if appropriate) the specialised habitat or conditions needed for only part of the life-cycle of the threatened species.

Unfortunately, threatened species' habitats and passage requirements have been degraded to a greater or lesser extent in all waterbodies in the whaitua, especially around the coastal margins. In areas of urban development, the requirements of threatened species that live in or rely on freshwater habitats or coastal receiving environments have also been diminished. We must meet their requirements if we're to achieve the first priority of Te Mana o te Wai in the NPS-FM.

Natural form and character.
This refers to the catchment having particular natural qualities that people value. Natural qualities may include exceptional, natural or iconic aesthetic features.

Matters contributing to the natural form and character of a waterbody are its biological, visual and physical characteristics that are valued by the community, including:

- Its biophysical, ecological, geological, geomorphological and morphological aspects
- The natural movement of water and sediment, including hydrological and fluvial processes
- The natural location of a water body and course of a river
- The relative dominance of indigenous flora and fauna and the presence of culturally significant species
- The colour of the water
- The clarity of the water.

See Te Mahere Wai for information on mauri, mana and āhua as related values to natural form and character.

If we're to achieve the first priority of Te Mana o te Wai in the NPS-FM, it's important that we restore natural flow paths, habitat and shading, natural variations in flows and natural features (such as runs and riffles). This provides for the intrinsic values of the life-supporting capacity and integrity of the uniqueness the waterbody has. This has the additional benefit of allowing the waterways to be more easily viewed and accessed, and provides people with visual amenity and a sense of place and connection. This value applies to all freshwater bodies and coastal receiving environments of all sizes and types.

Māori customary use and wai tapu.
Māori customary use refers to the interaction of Māori with fresh and coastal water for cultural purposes. This includes the cultural and spiritual relationships with water expressed through Māori practices, recreation and the harvest of natural materials.

Wai tapu represent the places in a catchment where rituals and ceremonies are performed, or where there is special significance to tangata whenua. Rituals and ceremonies include, but are not limited to, tohi (baptism), karakia (prayer), waerea (protective incantation), whakatapu (placing of rāhui), whakanoa (removal of rāhui) and tuku iho (gifting of knowledge and resources to future generations). In providing for this value, the wai tapu are free from human and animal waste, contaminants and excess sediment, with valued features and unique properties of the wai protected. Other matters that may be important are that there is no artificial mixing of the wai tapu and identified taonga in the wai are protected.

For more information, see schedules B and C of the Natural Resources Plan and further detail in Te Mahere Wai.

Drinking-water supply

This refers to the catchment meeting people's drinking-water needs. Water quality and quantity is sufficient for water to be taken and used for drinking-water supply.

Matters affecting the suitability of water for drinking include:

- Physical, chemical and microbiological contamination (e.g., bacteria and cyanotoxins, viruses, protozoa and other pathogens)
- Any other contaminants identified in drinking-water standards issued under the Health Act or any other legislation
- The effects of contamination on drinking-water treatment processes and the safety of drinking water and its aesthetic value (i.e., appearance, taste and smell).

The Te Awa Kairangi/Hutt River, Wainuiomata and Ōrongorongo River catchments are the major sources of water for the municipal drinking-water network, which draws from surface water takes and groundwater supply from the Hutt aquifer.

The municipal network supplies drinking water for residential, public and commercial uses to the cities of Upper Hutt, Lower Hutt, Wellington and Porirua. All catchments also have small-scale water takes for domestic use and animal drinking water. In a small number of locations, there are surface water takes or bores for small-scale commercial uses through consents for taking water, because even these can be the source of significant risks to mauri and ecosystem health.

Drinking-water supply should not compromise the ecosystem health needs of the waterbody, as well as it being protected from contamination and overuse. We need everyone to be self-responsible for the water they use and for the impacts of extracting water that would otherwise stay in the river ecosystem. In accordance with the kawa, we should all minimise and be as efficient as possible with our water use.

Human contact (primary)

This refers to the extent to which a catchment supports people being able to connect with the water through a range of activities (such as swimming, waka, boating, fishing, mahinga kai and water skiing) in a range of different flows or levels.

Matters affecting the ability to have safe and suitable human contact with waterways include pathogens, water clarity, deposited sediment, plant growth (from macrophytes to periphyton to phytoplankton), cyanobacteria, other toxicants and litter.

Through our public engagement, we've found that the water quality required for safe and direct human contact applies to all fresh and coastal waterbodies of all types and sizes. We've heard that people's long-term goal for urban streams is that they're safe places for children to play, and that this is important to restoring their mana and people's connection to them. It shows that human contact is necessary for much more than recreation, mahinga kai, customary Māori use, mental health or community connection.

Community connection

The 'community connection' value refers to the sense of connection that people feel to the waterways where they live and with which they interact.

Through our public engagement with the wider community, we've received a strong message that the unique nature of our rivers, streams, swimming holes, wetlands and coastal waters, together with their environment, gives people a significant sense of place and contributes to their identities. We've learned that community connections with freshwater deliver value to people, whether through their participating in its care or through mental health benefits, spiritual connections, a sense of identity, a sense of place, stories and culture, or physical health.

This value is clearly significant. It signals that we need to consider, respect and enhance opportunities for community connection alongside our work in maintaining and improving waterbody health. It results directly and incidentally from an extensive range of activities that include fishing, diving, tramping, dog walking, swimming, sunbathing, walking, running and cycling by streams, playing, community events and gatherings, and enjoying the sounds of water and the sight of fish.

Community members and groups, and businesses of all types, in the whaitua have essential roles in leading and undertaking the restoration effort we require to improve the health of our freshwater at the scale and pace required.

We need Greater Wellington and city councils to:

- Partner with them in visioning, planning and delivering change
- Move beyond conventional consultative approaches
- Encourage a long-term commitment
- Boost their enthusiasm, hope and sense of connection to the whaitua by ensuring they understand their roles and the value of their contributions
- Develop clear resourcing strategies with Mana Whenua and council agencies.

The high population density in Te Whanganui-a-Tara enables important community connections to waterbodies of all types and sizes. See Te Mahere Wai for detailed descriptions of Mana Whenua and mātauranga relationships with awa and wai.

Animal drinking water

This refers to the catchment meeting the needs of farmed animals. Water quality and quantity meets the needs of farmed animals, including whether it is palatable and safe.

All catchments in the Te Whanganui-a-Tara whaitua have some pastoral land use and farmed animals, and many smaller 'lifestyle' properties where people hold livestock that require water to drink.

Commercial, industrial use and the production of food and beverages

This refers to the catchment providing economic opportunities for people, businesses and industries.

Water quality and quantity can provide for commercial and industrial activities. Irrigation and cultivation are not major uses in this whaitua, but do exist at a limited scale. The production of food and beverages are significant industries in this whaitua and most people use water from the municipal supply network.

Water quality and quantity should also be suitable for irrigation needs, including supporting the cultivation of food crops, the production of food from farmed animals, non-food crops (such as fibre and timber), pasture, sports fields and recreational areas. In this whaitua, most economic use comes from commercial use of the municipal water supply network, but water is also used from private surface and groundwater takes to support a range of livelihoods.

We now need to develop a strategy to ensure enough water is available for commercial and industrial use without compromising its health, aquatic ecosystems and human health. It's important to also remember that commercial freshwater values are intimately linked to people's mental and physical health through employment and prosperity.

Transport and Tauranga waka

This refers to the catchment being navigable for identified means of transport. Transport and Tauranga waka generally refers to places to launch waka and watercraft, and appropriate places for waka to land (Tauranga waka).

While this whaitua has few waterway reaches that are suitable for navigating waka or watercraft, the tubing and kayaking for recreation does occur in Te Awa Kairangi and the lower reaches can be suitable for larger craft. See Te Mahere Wai for direction on the Mana Whenua values for navigation and Tauranga waka.

Fishing

This refers to how the catchment supports fisheries of species allowed to be caught and eaten. For catchments valued for fishing, the numbers of fish are sufficient and suitable for human consumption. In some areas, fish abundance and diversity provide a range in species and size of fish, and algal growth, water clarity and safety are satisfactory for fishers. Attributes – a measurable characteristic of freshwater (including physical, chemical and biological properties) that supports particular values – will need to be specific to fish species (such as tuna, lamprey, whitebait, salmon or trout).

The PNRP identifies some rivers in the whaitua as significant for sport fisheries. The fish in these areas are healthy and should provide for recreational use for as long as there is demand, and as long as there are no negative effects on indigenous species and the practice of mahinga kai.

The PNRP identifies some rivers in the whaitua as significant for sport fisheries. We also recognise the lower Te Awa Kairangi and coastal receiving environment as important places for fishing native species (such as kahawai and mullet). See Te Mahere Wai for direction on the Mana Whenua values for mahinga kai.

Appendix 3: Te reo Māori glossary

TE REO MĀORI TERM	ENGLISH TERMINOLOGY
Āhua	Natural character
Hauora	Health and wellbeing
Kawa	Protocol, ritual chants, system
Mahi kai/mahinga kai	Food gathering places
Mauri	Life force
Tauranga waka	Canoe landing places, moorings
Wai ora	Water which gives life

Appendix 4: Technical glossary

ITEM	DESCRIPTION
Allocation	The process of distributing water supplies to users to meet the various requirements of a community.
Aquifer	A geological layer in which groundwater is stored. The amount of water stored depends on the geological material (e.g., gravels are likely to store more water than dense rock). Aquifers are recharged by rainfall and surface water (through streams and rivers). Groundwater is taken from aquifers for many uses, including drinking water.
Attribute states	Are a measurable characteristic of freshwater (including physical, chemical and biological properties) that supports particular values. Within the NPS-FM, various states have been determined for different attributes (i.e., nitrate toxicity), which range from A to E. The NPS-FM requires Greater Wellington to set target attribute states.
Bulk water consent	A resource consent (or consents) granted by Greater Wellington for the taking of large amounts of water for municipal use.
Citizen science	A scientific endeavour in which investigations or monitoring are carried out by community members who are not qualified scientists.
Coastal receiving environments	The coastal environment which freshwater runs into.
Constructed overflow (also known as wastewater overflow)	A site where underground flows of wastewater can overflow into the stormwater network when pipe capacity is exceeded, typically during wet weather (driven from inflow and infiltration). These are designed fail-safes to ensure that sewage does not backflow into residential properties, but instead results in discharges to the environment.
Contaminant	Any physical, chemical, biological or radiological substance that has an adverse effect on air, water, soil or living organisms (such as heavy metals, pathogens and nutrients).
Critical source areas	Small, low-lying rural or urban areas where runoff accumulates contaminants in high concentrations, and/or hotspots of activity or contaminant generation (such as stock camps and cattle races, construction sites or industrial operations).
Cross-connection	Where a wastewater pipeline (often from a residential household or development) has been connected to a stormwater pipeline, resulting in a continuous direct discharge of sewage to the environment.

ITEM	DESCRIPTION
Cyanobacteria (also known as blue-green algae)	An ancient group of microscopic organisms found naturally in all water types. They produce a range of natural compounds, of which some can be toxic to people, dogs and livestock.
Diffuse discharge	A discharge that cannot be traced back to a single source/point (such as a stormwater pipe or farm runoff).
Discharge	Any spill, emission, leaking, pumping, injection, deposit, dispersal, leaching, migration, disposal, discharge or release of a contaminant, or water or soil containing a contaminant.
Drinking water	Raw water that has been abstracted from rivers and aquifers and treated to an acceptable 'drinking water' quality, then pumped/distributed around cities to be used for commercial, residential and industrial activities.
Drinking-water network	The network of pipelines, reservoirs, dams, treatment plants and pump stations that moves raw and treated drinking water around cities.
Exfiltration	All leakage of wastewater into the environment through broken pipes (either public mains or private laterals connected to public mains).
Flushing flows	High river flows, usually associated with rainfall, which flush out the river system and can scour out macro-algae. They can be artificially induced as a mitigation measure in rivers where flows have been lowered by dams or large abstractions.
Freshwater Farm Plans	These plans are a central government regulatory requirement for farms over 20ha in area.
Global stormwater network consent	The resource consent granted to Wellington Water to operate the stormwater network in the whaitua.
Grade 1–5	A generic grading assessment used for pipelines. Grade 1 signals very good condition, grade 2 good condition, grade 3 average condition (some potential for leaks) and grades 4 and 5 poor/very poor condition and in need of repair or urgent works.
Green infrastructure	Engineering structures built as part of water-sensitive urban design (WSUD), including constructed wetlands, rain gardens, permeable paving, swales and green roofs.

ITEM	DESCRIPTION
Greywater	Untreated liquid wastewater from domestic sources (such as household sinks, basins, baths, showers and similar appliances). This term does not include toilet, faecal matter or urinal wastes (wastewater).
Hydraulic neutrality	The mean annual runoff and peak flows from a wide range of rainfall event sizes from a completed development is the same as it was prior to development, and should not result in increased stress (hydrologically or ecologically) on the stormwater network or the receiving freshwater environment.
Inflow and infiltration	The connection of stormwater (and groundwater) to the wastewater network, which can lead to wastewater overflows. Inflow is from surface runoff (i.e., down pipes connected to gully traps) and infiltration is from groundwater inflow (through old or damaged pipes).
Infrastructure Leakage Index (ILI)	A technical measure of the drinking water network's performance for leaks. It allows for comparisons to other cities around the world.
Laterals	Small pipes connecting a property to the public three waters network (stormwater, wastewater and drinking water). They are often privately owned with little knowledge about their state/condition.
Main	Primary public network pipelines that many laterals drain to (stormwater or wastewater) or source water from (drinking water).
Mean annual low flow (MALF)	The naturalised mean (average) annual low flow with a duration of seven days.
Minimum flow	The flow or water level at which abstraction from a river or groundwater is restricted by Greater Wellington (or required to cease). This may be below the MALF.
Natural processes	Dynamic natural, physical and ecological relationships and events that are characteristically natural in their occurrence and effects. They act to shape the natural environment and its landforms and features (such as beaches, dunes, wetlands and rivers). They include processes of wave formation, breaking and dissipation; swash run-up; nearshore currents; sediment transport; erosion and deposition; flooding; river meandering; aggradation; and mass movement.

ITEM	DESCRIPTION
Ngā Taonga Nui a Kiwa	Schedule B of the Proposed Natural Resources Plan. Large freshwater and coastal entities from which Mana Whenua derive cultural and spiritual identity, their status as Mana Whenua and the associated responsibilities that come with that including those of kaitiaki. These places are the larger rivers and harbours that have a long history of multiple and complex resource use associated with large populations. Ngā Taonga Nui a Kiwa emphasises the importance of Mana Whenua relationships with rivers, lakes, harbours and estuaries.
NPS-FM	National Policy Statement for Freshwater Management 2020.
Offset	A measurable positive outcome, resulting from an action designed to compensate for the significant residual adverse effects on the environment arising from an activity after avoidance, remediation and mitigation measures have been taken.
Point source discharge	The discharge of water or contaminants at a specific identifiable location (such as a factory) or from a fixed facility (such as a pipe).
Potable water	Water that has been treated to a high standard for drinking. Often used interchangeably with 'drinking water'.
Public three waters network	Territorial authorities (local councils) own the three waters assets that move wastewater, stormwater and drinking water (the 'three waters') around cities. These assets are managed by Wellington Water. Private laterals connect to these public networks for either water supply or wastewater and stormwater discharge.
Relevant three waters agency	This is currently Wellington Water. However, when the Three Waters Reform Programme is completed, the management of three waters infrastructure may change to any 'relevant three waters agency'.
Restoration	The rehabilitation of sites, habitats or ecosystems to support indigenous flora and fauna, ecosystem functions and natural processes that would naturally occur in the ecosystem and locality.

ITEM	DESCRIPTION
Riparian planting	The planting of areas beside rivers and streams to reduce contaminants getting into water, stabilise banks, shade the water and provide natural inputs (leaf and wood fall) to contribute food sources and habitat.
Stormwater	Rainfall runoff that has been intercepted, channelled, diverted, intensified or accelerated by the human modification of a land surface, or runoff from the external surface of any structure (e.g., a roof), as a result of precipitation and includes any contaminants contained in the runoff.
Stormwater network	A network of devices designed to capture, detain, treat, transport and discharge stormwater that includes, but is not limited to, kerbs, intake structures, pipes, soak pits, sumps, swales, and constructed ponds and wetlands.
Stygofauna	Animals that live in groundwater systems or aquifers.
Territorial authorities	City and district councils.
Three waters	Stormwater, wastewater and drinking water.
Toxic algae	The common name for toxin-producing cyanobacteria found in rivers.
Tributary	A river or stream that connects to a lake or a larger river or stream.
Unconstructed overflow	A site where wastewater/stormwater discharges to the surface at a location that has not been designed for it, primarily due to insufficient network capacity during wet weather events. It is typically found at manholes.
Urban stream syndrome	The term that describes the consistently observed ecological degradation of streams draining urban land.
Wastewater	Liquid waste (and liquids containing waste solids) from residential, industrial and commercial premises. It includes, but is not limited to, human effluent, greywater and trade wastes, and should exclude stormwater.
Wastewater network	A community-reticulated wastewater system that includes, but is not limited to, a network of devices, pipes and pump stations, designed to accept and transport wastewater from properties to a treatment plant and the discharge of treated wastewater from a wastewater treatment plant.

ITEM	DESCRIPTION
Wastewater overflows	A state when wastewater discharges to the environment through the stormwater system through a constructed or unconstructed overflow.
Water-sensitive urban design (WSUD)	A stormwater engineering principle that seeks to maintain and enhance the natural water cycle for the built environment, resulting in better water quality, flood mitigation and enhanced natural character.
Wellington Water	The three waters agency that currently manages stormwater, wastewater and drinking water in Wellington, Upper Hutt, Lower Hutt and Porirua.
Whaitua	Te reo Māori for catchment or space. The Wellington Region is divided into five whaitua, each of which will have a Whaitua Committee assigned to develop a programme to improve water quality.
WIP	Whaitua Implementation Programme.
Workforce Development Council (WDC)	Organisations recently created to provide industries with greater leadership across vocational education and training. Each WDC represents a specific sector.

Whaitua te Whanganui-a-Tara

Publication number:
GW/EP-G-21/58

November 2021

gw.govt.nz/whaitua-te-whanganui-a-tara