



Implementing Ngā Wai Manga – the Urban Water Principles through policy and practices

The Urban Water Working Group's recommendations to
central government and the urban water sector

Disclaimer

The Urban Water Working Group is an independent group of urban water practitioners with expertise in policy, planning, engineering, and urban design. Group members volunteered their time and were not financially supported by the Ministry for the Environment (Group secretariat). The Group's members work for local government, consultancies and industry groups.

This report illustrates the process, findings and recommendations of the independent Urban Water Working Group. It does not reflect the official position of the Ministry for the Environment and is not a Government policy. The Ministry for the Environment is hosting this report on its website as the Group's secretariat.

Acknowledgements

The Ministry for the Environment acknowledges the input of all the members of the Urban Water Working Group who have volunteered their time, expertise and mātauranga to this project to date. It is estimated that participants collectively provided over 1000 hours of work toward Phase I, and over 500 hours of work toward Phase II of the collaborative process.

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Officials from the Ministry for the Environment also provided administrative support and facilitation as the secretariat for the Group.

This document may be cited as: *Implementing Ngā Wai Manga – the Urban Water Principles through policy and practices – the Urban Water Working Group's recommendations to central government and the urban water sector*. Wellington: Ministry for the Environment.

Published in March 2020

Urban Water Working Group

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The Urban Water Working Group

The Urban Water Working Group

The Urban Water Working Group (the Group) is an independent group of urban water practitioners with expertise in policy, planning, engineering, and urban design. Members work for local government, consultancies and industry groups. The Group formed in late 2017.

The Group has completed two phases of work to date.

- Phase I – developing Ngā Wai Manga the Urban Water Principles.
- Phase II – developing recommendations for policy reform and good practice guidance to give effect to Ngā Wai Manga – the Urban Water Principles. These are referred to as policy and practice recommendations throughout the document.

The Ministry for the Environment (the Ministry) is the secretariat for the Group, facilitating the Group's work but not taking part in any decisions.

Phase I and II of the Group's work are described below.

Phase I: Ngā Wai Manga– the Urban Water Principles

Ngā Wai Manga – the Urban Water Principles (Ngā Wai Manga) set out a vision for urban water in Aotearoa New Zealand by protecting and enhancing Te Mana me te Mauri o Te Wai in urban areas.

The purpose of Ngā Wai Manga is to guide decision making that promotes sustainable behaviours and the creation of water sensitive urban spaces by drawing on mātauranga, the lessons of the past, international best practice, the needs of our present communities, and a vision of a sustainable, resilient future.

The Ngā Wai Manga were developed by the Group and published in October 2018. They are in Appendix E and can be read on our [website](#).

The Group is pleased to hear that Ngā Wai Manga are being used by various people, including councils and community groups.

The policy and good practice recommendations in this document provide further advice from the Group about how Ngā Wai Manga can be actively implemented and promoted.

Phase II: Policy and Practice Recommendations

To promote the implementation of Ngā Wai Manga the Group agreed to develop policies and practices that would promote their implementation. To do this two sub-groups were formed:

- the policy sub-group – which conceptually developed a package of policy options that would support implementation of Ngā Wai Manga, and
- the practices sub-group – which outlined specific practices that could give effect to Ngā Wai Manga.

Both of these sub-groups adopted a collaborative process, meeting on a routine basis with support from the Ministry. In September 2019 the Group met to discuss and finalise a preferred suite of options and recommendations.

Urban water in Aotearoa

A quick introduction to the terms in this document

There are several terms used in this document that we have defined below for clarity and ease of understanding.

Urban water refers to freshwater in urban areas, and the drinking water, wastewater and stormwater from those areas.

Three waters refers to drinking water, wastewater and stormwater.

Water sensitive design is defined in the Auckland Unitary Plan as “An approach to freshwater management, it is applied to land use planning and development at complementary scales including region, catchment, development and site. Water sensitive design seeks to protect and enhance natural freshwater systems, sustainably manage water resources, and mimic natural processes to achieve enhanced outcomes for ecosystems and our communities”.

Urban water is important – but not in a good state

Water is important to Aotearoa and its people. It is one of our most precious resources – water is essential to all life on earth. Water supports our unique ecosystems, is key to our cultural identity, is critical to a healthy lifestyle and is key to creating a liveable future for people who live in Aotearoa’s cities and towns.

At present the design, management and use of urban areas in New Zealand is having adverse effects on water quality, aquatic ecosystems and people’s relationships with them. Some of these effects are significant and long-term, including impacts on ecosystem health, biodiversity, mauri, human health, liveability, and climate resilience.

The Te Mana me te Mauri o te Wai framework is key to enhancing urban water

Te Mana me te Mauri o te Wai is the integrated and holistic wellbeing of water. It sits at the heart of Ngā Wai Manga which makes it clear that our greatest obligation is that to which gives us life.

Why we are making recommendations now

Because urban water is in a degraded state, significant changes are required to protect and enhance Te Mana me te Mauri o te Wai in urban areas. Reforms to the management of urban water must be considered as part of the Government’s ongoing reforms of the environmental management system, particularly those described below.

Essential freshwater

The Government's Essential Freshwater work programme is working to develop a package of regulatory changes under the Resource Management Act 1991 (RMA).

The work programme is intended to meet the Government's objectives for freshwater, which aims to stop further degradation, and reverse past damage within a generation.

To meet these objectives in urban areas, the Government has developed a range of proposals, some of which apply specifically to urban waterbodies and some of which apply to urban and rural alike, to improve the environmental regulation of urban waterbodies. These proposals include:

- requiring territorial authorities, who are responsible for urban development, to manage effects on freshwater bodies when making decisions on urban development
- preventing further stream loss through restrictions on the piping of streams, and where this isn't possible, requiring any lost habitat to be recreated elsewhere
- protecting remaining natural wetlands, and putting tighter controls on certain activities that damage wetlands
- introducing new attributes for sediment, which are likely to require tighter controls on earthworks
- ensuring fish passage in all waterbodies, including protecting headwaters
- new attributes and bottom lines.

Three Waters Review

The Three Waters Review (the Review) aims to improve the regulation and service delivery of the three waters (drinking water, wastewater, and stormwater).

The Review is being led by the Department of Internal Affairs with support from the Ministry for the Environment and Ministry of Health.

In conjunction with the Essential Freshwater programme, the Government has made the following proposals as part of the Review:

- strengthen the obligations on regional councils and territorial authorities for managing risks to drinking water sources
- develop a National Environmental Standard for Wastewater Discharges and Overflows to manage the environmental effect of wastewater networks
- increase transparency on the performance of wastewater and stormwater networks through new national reporting and risk management obligations.

As of February 2020 Taumata Arowai – the Water Services Regulator Bill is progressing through Parliament. This bill will implement a new regulatory body to oversee, administer and enforce the drinking water regulatory system.

Proposed National Policy Statement for Urban Development

The Government has also consulted on a proposal to create a new National Policy Statement on Urban Development (NPS-UD). The NPS-UD focuses on the role of the planning system in enabling growth and regulating land use in urban areas.

The NPS-UD contains objectives and policies in four key areas:

- Future Development Strategy – requires councils to carry out long-term planning to accommodate growth and ensure well-functioning cities.
- Making room for growth in RMA plans – requires councils to allow for growth ‘up’ and ‘out’ in a way that contributes to a quality urban environment, and to ensure their rules do not unnecessarily constrain growth.
- Evidence for good decision-making – requires councils to develop, monitor and maintain an evidence base about demand, supply and prices for housing and land, to inform their planning decisions.
- Processes for engaging on planning – ensures council planning is aligned and coordinated across urban areas, and issues of concern to iwi and hapū are taken into account.

This policy has a potential to affect urban water due to:

- the strong relationship between land development and stormwater quality and quantity,
- the perceived and real tradeoffs between increasing housing supply in certain areas and the adoption of good practice, including water sensitive design, and
- the relationship between land intensification, water use and wastewater productions.

Policy context

This section provides an assessment of existing policy and its relevance to urban water and the Ngā Wai Manga – Urban Water Principles.

The Treaty of Waitangi/Te Tiriti o Waitangi

The Waitangi Tribunal has found that under the Treaty of Waitangi Māori have rights and interest in freshwater. While the Group does not have an official position in Māori rights and interest we note recent findings by the Waitangi Tribunal have found that the current water allocation regime under the RMA is inequitable for Māori, and existing structures have failed to support Māori participation in freshwater management.

Resource Management Act 1991

The Resource Management Act 1991 (RMA) sets out a framework for environmental management in Aotearoa. Under the RMA regional councils are required to have Regional Policy Statements, and can (and do) have Regional Plans. Territorial Authorities must have District Plans.

Regional and district plans

Under regional and district plans resource consents are typically required to carry out development and infrastructure projects in and around urban waterbodies. These consents are issued with conditions that may promote the adoption of water sensitive design and practices relevant to urban water.

Regional policy statements

Regional policy statements (RPS) provide an overview of the resource management issues of the region and the policies and methods to achieve integrated management of the natural and physical resources of the region. Regional policy statements enable regional councils to provide broad direction and a framework for resource management within their regions as regional and district plans must give effect to them.

Some RPS make specific mention of urban water through issues, objectives, policies and methods.

Regional plans

Regional plans set out objectives, policies and rules for the management of water and land throughout their regions, including urban areas. This can affect:

- the ability to implement water sensitive design and other good management practices
- the development, management and environmental performance of three waters infrastructure
- land development including infilling
- the discharge from individual sites.

District plans

District plans control subdivision and land use so are an important tool in managing three waters infrastructure, especially stormwater.

Local Government Act 2002

The Local Government Act 2002 (LGA) provides the general framework and powers under which New Zealand's local authorities operate.

The LGA sets out the process that councils have to follow to make decisions on infrastructure investment and operation. This process is important as it provides the community with the opportunity to debate the balance between environmental outcomes and the level of investment in three waters infrastructure.

The LGA requires councils to create and implement asset management plans (AMPs) and long term plans to ensure that three waters assets can continue to deliver on mandatory requirements, and the agreed levels of service over the next 10 years. These AMPs typically inform the management and operation of three waters assets.

The LGA also allows councils to create bylaws to assist the management of their three waters infrastructure. It also allows territorial authorities to take development contributions to pay for the cost of growth, which includes three waters.

Building Act 2004

The Building Act 2004 (BA) sets out the rules for the construction, alteration, demolition and maintenance of new and existing buildings in New Zealand.

Within the BA, the associated building code are multiple provisions that relate to the installation and performance of systems that handle water, wastewater and stormwater.

Recommendations for Urban Water Policy

Urban water policy

A wide range of legislation, policies, and regulations influence how urban water is managed in Aotearoa.

We believe that transformational change is needed in the way urban water is managed, and that central government has a key role to drive this change.

The Group has undertaken an extensive process to identify, assess and recommend a suite of policies that central government should adopt to improve urban water outcomes by strengthening and clarifying the way urban water is managed in Aotearoa.

Our recommendations on policy actions

The Group recommends that the Government should resource, develop and implement a suite of policy related actions to improve urban water outcomes. When doing this the Government must work with its Treaty partners and engage, understand and involve Māori. Successful delivery of these actions will require engagement with local leaders and decision-makers. These actions are:

- **review primary and secondary legislation** to identify changes to be made to protect and enhance Te Mana me te Mauri o te Wai in urban areas
- **review and amend National Planning Standards** to include provisions that require the implementation of Ngā Wai Manga and related practices
- create a hub to **share best practice**, and develop guidance on best practices for urban water management
- **incorporate Ngā Wai Manga and related practices into guidelines** for infrastructure providers and Crown agencies
- **develop a funding and incentives toolbox** to promote best practices for urban water management
- develop the educational pipeline and work with industry bodies to establish a **national training and certification scheme** for urban water practitioners and related professions
- promote **widespread education of**, and **community participation** in urban water solutions.

These policy actions are explained in detail below.

The policy actions explained

Review primary legislation and national direction

A wide range of legislation, policies, and regulations set out how urban water is managed in Aotearoa. It is the professional view of the Group that there is not a coherent approach to urban water management across these policy and legislative instruments and, that in some cases, there are barriers to the adoption of good practices like water sensitive design.

This part of the package involves a review of relevant legislation, policies and regulations to identify options to further protect and enhance Te Mana me Te mauri o Te Wai, give effect to the Ngā Wai Manga, and implement the recommended policies and practices.

The review must clarify the responsibilities between the authorities that manage urban water resources.

The relevant components of the following pieces of legislation, policy, and regulation should be reviewed collectively: the Resource Management Act, Building Act, Local Government Act, Land Transport Management Act, the National Policy Statement for Freshwater Management, the New Zealand Coastal Policy Statement, the National Policy Statement for Urban Development Capacity, the National Environmental Standard for Sources of Human Drinking Water, and the National Environmental Standard for Plantation Forestry.

Recommended actions for the next few years

Over the next one to three years the Government should:

- Understand work that has already been carried out by Water NZ and Activating Water Sensitive Urban Design (WSUD) in barriers to adopting best practice. Identify and advance further work if required.
- Assess the relevant documents to identify the changes that can be made to protect and enhance Te Mana me te Mauri o te Wai and give effect to Ngā Wai Manga.
- Determine how the changes can be made in the Government's future work programme.

Review National Planning Standards

A brief assessment of regional plans around Aotearoa found that the provisions encouraging best practices are variable with most not requiring their uptake. A level of national consistency in plan provisions for water sensitive design could promote its uptake and allow for more effective comparisons nationally. Adding new National Planning Standards is one way of doing this.

National planning standards may specify objectives, policies, methods, including rules to be included in regional and district plans. Therefore it is possible to include provisions in the standards that would implement water sensitive design and give effect to the Ngā Wai Manga and related good management practices.

An added benefit is that individual council would no longer be required to develop and justify planning text on a plan-by-plan bases. This will ultimately save time and money.

Actions for the next few years

Over the next one to three years the Government should:

- understand work that has already been carried out by Water NZ and Activating WSUD in barriers to adopting best practice. Identify and advance further work if required
- conduct research into existing plan provisions (objectives, policies, rules and definitions) that could be effective at promoting best practice urban water management. This research must include newer plans that include provisions specific to urban water management
- consider either including a suite of provisions in National Planning Standards or a National Environmental Standard to promote consistency, or more directive policy in the NPS-FM
- consider how the suite of provisions could be included in the National Planning Standards including what plan chapters they ought to be included in
- consider how to educate planners and advisors for RMA planning or Mana whakahono ā rohe agreements through communications and guidance on how any new national instruments that support water sensitive design should be implemented.

Sharing best practice – creating a national hub

Implementing water sensitive design is no easy task and some urban water authorities lack the capability to do this effectively. Developing guidance and sharing knowledge is one way to address the capability challenges and improve the adoption of good and best practice nationally.

Several regional and district councils have water sensitive design guidance. The Group sees significant potential to draw from and build on to this work, so as to deliver nationally consistent and endorsed guidance.

This part of the package should involve:

- developing guidelines (including policy and structure planning) to be targeted at policy makers and regulators, infrastructure providers, and technical experts
- developing new guidance and reviewing existing guidance/standards (NZS 4404) to further align policy and practices with Ngā Wai Manga
- working with organisations in the urban water sector (such as Water NZ, Engineering NZ, Local Government New Zealand) to create a national hub for sharing guidance and knowledge of good practices for urban water management.

Actions for the next few years

Over the next one to three years the Government should:

- develop national guidelines on policy, monitoring and structure planning – this should be an inclusive exercise and involve the wider urban water sector
- engage with the sector to discuss what guidance can be developed and/or reviewed, and identify what guidance needs to be prioritised
- explore options for creating a central hub to share best practice and what organisations could support its development
- develop and implement a long-term work programme within the central hub to build a robust evidence base.

Incorporate Ngā Wai Manga into guidelines for infrastructure providers and Crown agencies

Infrastructure providers like New Zealand Transport Agency, Auckland Transport, Watercare, and Crown housing providers have a suite of guidelines that they follow in the design and construction phase of their projects. These projects can be large and have a range of adverse environmental effects. Therefore integrating Ngā Wai Manga to the existing guidelines offers significant scope to improve urban water outcomes.

This part of the policy package involves including the guidance developed in the ‘hub to share best practice’ policy into the formal guidelines and standards used by infrastructure providers.

These guidelines should also clarify the roles and responsibilities of urban water authorities.

Actions for the next few years

Over the next one to three years the Government should:

- develop a suite of guidance as per the ‘hub to share best practice’ option
- engage with infrastructure providers to identify issues and challenges they face in adopting best practice for water management.

Develop an incentives toolbox

Developers are conscious of cost when developing land. Therefore financial incentives and disincentives may motivate developers to give effect to Ngā Wai Manga.

Further work will be required to understand the scope of financial incentives/disincentives in Aotearoa, the source of funding for these incentives, and the incentives that can be supported nationally.

Actions for the next few years

Over the next one to three years the Government should:

- assess the findings of the Activating WSUD research group (Building Better Homes, Towns and Cities National Science Challenge)
- engage with councils and experts (Activating WSUD) in New Zealand/overseas that have similar schemes to draw upon their knowledge
- develop options to be included in an incentives toolbox that regional/territorial councils can apply locally
- engage with regional and district councils to consider a national approach to incentives
- develop an award/recognition scheme for excellent urban water management for three waters providers, developers, consultancies and community groups
- identify examples of funding and rebate mechanisms.

National training and certification scheme

Internationally there are formal qualifications and certifications in the water sector. These schemes have resulted in good outcomes for urban water management. Aotearoa does not have any such scheme at this stage.

This part of the package would involve:

- Establishing or supporting the establishment of a national training and certification programme for practitioners in the urban water sector. This should include water sensitive design.
- Promoting capability building in traditional knowledge/mātauranga and how this can be applied in the urban water industry.
- Setting requirements (nationally or locally) for certified practitioners to be required in instances where stormwater management is relevant. Requiring that councils procure from certified practitioners could create a positive change.

Actions for the next few years

Over the next one to three years the Government should:

- Engage with Auckland Council and Water NZ to support them in the development of their training and certification programmes.
- Consider how the Government can fully support and endorse a training and certification programme.

Develop the education pipeline

Education on urban water issues within wider freshwater is important if Aotearoa wants to give effect to Ngā Wai Manga and protect and enhance Te Mana me te Mauri o te Wai in urban areas.

This part of the package looks at how New Zealander's awareness and understanding of urban water issues can be improved. We expect that better education will improve Te Mana me te Mauri o te Wai as people will understand the causes of urban water degradation and change their behaviour. We expect informed groups to want better outcomes and support the adoption of best management practices. This education pipeline should:

- include education on how Te Mana me te Mauri o te Wai can be used as the basis for design rather than an added extra
- be targeted across all age groups from primary school to tertiary education providers
- provide an increased focus on how Te Mana me te Mauri o te Wai can be used as the basis for design rather than an added extra
- connect urban water education to wider environmental issues
- include education on wider environmental issues
- include the environmental, social, cultural and technical aspects of water
- provide a pipeline to a career in the water sector
- engage with a diverse range of urban communities and the wider public. This includes work to enable the community to be able to participate meaningfully (eg, how to engage in a co-design process)
- education strategies to target other related industries (eg, plastics, land development)
- reach out to council management layers and elected members to provide context and needs to improve urban water management practices.

Short term actions

The following should occur within the next year to progress this policy package:

- engage with Enviroschools, Mountains to Sea, and similar organisations to learn what they are doing in this space
- engage with the Ministry of Education to develop new and relevant educational curriculum for various levels
- developing info-packs including presentation(s) for council managers and governance
- make people available to support council staff in making the case for the adoption of better management practices.

Selection of the policy package

This section provides an overview of how the Group selected the proposed policy package.

Critical success factors

The Group defined five critical success factors to assess the suite of policy options. These critical success factors were:

- does the policy implement Ngā Wai Manga - the Urban Water Principles
- does this option resolve some (or all) urban water issues (stated in the Phase I report), including not meeting community aspirations
- does this option optimise benefits in relation to the Living Standards Framework
- does this option strategically prioritise action where it is most needed to preserve Te Mana me te Mauri o Te Wai? Does it help 'Hold the Line' on water quality
- what are the implementation costs of this policy change and where will the costs fall?

Assessment of impacts

The Group has not carried out an impact assessment of the policies. It believes further policy development is required to carry out a representative assessment. An impact assessment can be carried out once the Government has carried out the one to three year actions we have stated above.

Our Recommendations on urban water practices

Urban water practices

The urban water practices are actions that people can take to protect and enhance Te Mana me te Mauri o te Wai in urban areas and give effect to Ngā Wai Manga. The practices differ from our policy recommendations as they are aimed at a wider group of people and encompass a range of actions.

The practices that we recommend people adopt vary depending on the role that the people play in the urban water system. We have developed practices for four groups of people that play different but complementary roles. These groups are:

- policy makers and regulators
- infrastructure providers
- technical professionals
- community.

The practices that these groups could adopt are shown in the Appendices (A–D). Under each practice we suggest a few specific actions that the groups could take to implement the practice.

There are several key groups who could benefit from detailed practices that are not included in this document – specifically land developers, contractors (construction, delivery and operation), product developers, and product stewardship regulators. Due to the makeup of the working group, we believe further industry involvement would be needed to develop additional good practices.

Our recommendations on the practices

The Group’s recommendations are aimed at government, local government and technical professionals to promote the adoption and implementation of the urban water practices. These recommendations are below.

We recommend that the government:

- incorporates these practices into official guidance
- leads the further development of these practices and creates a database of examples and case studies in the ‘best practices hub’ we have recommended
- engages with local government and infrastructure providers to promote and encourage the uptake of these practices

- considers how funding structures and incentives could support implementation of these practices.

We recommend that the local government sector as policy makers and regulators:

- incorporates these practices into their resource management plans and other council policies and plans
- promotes the adoption, uptake and implementation of these practices, both within their organisations and in their community
- works with infrastructure providers to promote the adoption and implementation of these practices,
- creates pathways to enable innovation, and demonstrates willingness to take the risk on new approaches
- measures progress toward meeting Ngā Wai Manga, and provides good information to the public using State of the Environment and other environmental monitoring metrics
- resources non-regulatory methods, civic action and behaviour change programmes which support the implementation of the practices.

We recommend that infrastructure providers (including councils, council controlled organisations and Crown agencies):

- incorporate these practices into their policies and projects
- promote the adoption, uptake and implementation of these practices both within their organisations and in their communities
- works with key stakeholders and partners to promote the adoption and uptake of these practices.

We recommend that technical professionals:

- adopt and promote the uptake of these practices within their organisations, industry sector, and clients
- support the establishment of a national training and certification programme for practitioners in the urban water sector and related professions
- support the establishment and ongoing development of a best practices hub
- share knowledge and help upskill and mentor others.

The people these practices apply to

Policy makers and regulators

Who are policy makers and regulators?

Policy makers and regulators are elected members and officials working in organisations, and tangata whenua groups, that make, monitor and enforce policy relevant to urban water.

How do policy makers and regulators protect and enhance Te Mana me te Mauri o te Wai?

Policy makers and regulators can protect and enhance Te Mana me te Mauri o te Wai in urban areas by:

- engaging with Māori to understand their perspectives
- working with mana whenua to manage freshwater resources in their region and district
- engaging with mana whenua and the community to understand what Te Mana me te Mauri o te Wai means to them, and setting policy to encompass this
- setting policy that promotes the adoption and uptake of the Ngā Wai Manga, and reflects the integrated nature of water with itself and the environment
- prioritising the importance of sustaining the integrity and health of the water, before providing first for essential human health needs and then for other uses
- monitoring and enforcing policy in a way that is effective
- monitoring and evaluating the effectiveness of policy against the te Mana me te Mauri o te Wai framework and Ngā Wai Manga, making changes where necessary.

Practices for infrastructure providers

Who are infrastructure providers?

Infrastructure providers are the local and central government agencies responsible for delivering, operating and maintaining infrastructure that effects the urban water cycle. These agencies include:

- **district councils** (including unitary councils) in their role of delivering three waters, roading and parks/reserves
- **regional councils** (including unitary councils) in their role of delivering flood protection, public transport and parks/reserves
- **central government agencies** responsible for delivering transport and housing
- **council controlled organisations.**

How infrastructure providers protect and enhance Te Mana me te Mauri o te Wai?

Infrastructure providers can protect and enhance Te Mana me te Mauri o te Wai by:

- working with mana whenua to manage urban infrastructure and its environmental impacts in their region and district,
- engaging with mana whenua, the community, and the local authorities to understand what Te Mana me te Mauri o te Wai means to them and setting policy to encompass this,
- ensuring the provision and operation of urban infrastructure minimises its adverse effects on the environment, in particular water quality, ecosystem health and biodiversity,
- ensuring the provision and operation of urban infrastructure enhances ecosystem health and biodiversity.

Technical professionals

Who are technical professionals?

Technical professionals are iwi, kaitiaki, and the experts in planning, project management, engineering, landscaping, and environmental science. They provide their expertise to the sectors that impact urban water including:

- three waters infrastructure - technical professionals are often engaged by three waters providers to assist them in their work. They typically get involved in the consenting and design phases but also assist with operations and maintenance
- land development – technical professionals are engaged by land developers throughout the development process.

How technical professionals protect and enhance Te Mana me te Mauri o te Wai?

Technical professionals can protect and enhance Te Mana me te Mauri o te Wai in urban areas by:

- engaging with iwi and mana whenua
- supporting bi-cultural awareness
- engaging with Māori to understand their perspectives
- ensuring good practice processes and technologies are used in development plans
- proactively discussing with all stakeholders how Te Mana me te Mauri o te Wai can be protected and enhanced
- upskilling (regulatory and non-regulatory) staff and local industry in the relevant fields
- staying across recent innovations in the water sector
- taking a multidisciplinary approach to work.

Community

Who is the community?

The community is anyone who has an interest in the environment and urban water.

While these practices are geared towards communities; councils and water providers should consider how they can proactively promote and involve the community in protecting and enhancing Te Mana me te Mauri o te Wai.

How can the community protect and enhance Te Mana me te Mauri o te Wai?

The community can protect and enhance Te Mana me te Mauri o te Wai in urban areas by:

- recognising that wai is the life-blood of the country and the planet
- engaging with iwi and mana whenua, and learning more about Māori perspectives relating to wai
- recognising and understanding the role of healthy water in contributing to human health and wellbeing
- taking care not to waste or pollute water in every action
- engaging with development and restoration projects to raise the need for, and values aligned with, water sensitive design and the multiple benefits it can achieve
- undertaking democratic participation in local, regional and central government decisions, including voting, making submissions on long term plans and policy decisions, participating in community engagement activities on infrastructure projects, and activism/campaigning.

Appendix A: Practices for policy makers and regulators

The practices that we recommend policy makers and regulators consider and adopt are described in this section.

Papatūānuku – “Our relationship with the land –papatūānuku – will predetermine our relationship with water”.

Protect and enhance ecosystem health of all receiving environments

Use urban development (greenfield, brownfields, renewal, intensification) to improve freshwater outcomes.

To do this you can:

- assess and document the existing state of sub catchments and plan early for future growth through understanding the potential implications of land use change and the optimal means of avoidance and mitigation and use any change in the urban fabric as an opportunity to improve and meet Ngā Wai Manga
- encourage infrastructure providers and developers to engage with you early to discuss how the project can improve freshwater outcomes
- have clearly defined outcomes for freshwater bodies in the region and require projects to be assessed against these outcomes
- consider how each development type can improve freshwater outcomes and have specific objectives, policies, and rules to address this
- have mandatory objectives, policies and rules giving effect to meeting the Ngā Wai Manga

Incentivise the uptake of water sensitive design. To do this you can:

- develop an incentives toolbox that consists of a range of regulations and incentives. Activating WSUD has published some research on what makes an effective incentives toolbox
- work with other councils and three waters providers to develop a comprehensive incentives package on a regional or catchment scale.

Prohibit development on wetlands or where it will result in a loss of urban waterways. To do this you can:

- apply an effects management hierarchy. Develop objectives, policies and rules, that prohibit or restrict development on or near wetlands, or where it will result in a loss of urban waterways
- clearly identify the waterbodies where these provisions would apply
- assist infrastructure providers and developers by providing guidance on alternative options and discuss this during initial engagement
- develop objective, policies and rules that prohibit piping of streams and stream modification (including riparian margins) to ensure stream habitat is maintained/improved.

Where possible encourage the daylighting of streams during development. To do this you can:

- consider how an incentives toolbox can promote daylighting
- identify and name (in GIS) where historical streams are now within reticulated pipe network beneath urban areas
- discuss daylighting with infrastructure providers and developers when consenting projects
- provide local guidance on daylighting and how it can improve freshwater outcomes
- develop objectives, policies and rules that prohibit piping of streams and stream modification (including riparian margins) to ensure stream habitat is maintained / improved
- develop objectives, policies and rules that encourage daylighting, and restoration/enhancement.

Understand the effects that a business as usual approach (BAU) will have on the urban waterbodies. To do this you can:

Protect and enhance ecosystem health of all receiving environments

- understand the effects the current policy framework in your region and district is having on urban water outcomes, and identify where improvements can be made
- carry out a multi criteria assessment (MCA) of policy options when considering changes to policy affecting urban water. The More than Water Tool available on the Activating WSUD website is a good tool to use
- develop a policy framework to require consent applications to provide a multi criteria assessment of several options ranging from BAU to optimal freshwater outcomes.

Manage urban waterways using as natural assets. To do this you can:

- develop a natural asset management plan, similar to asset management plans for man-made infrastructure, invoking asset management Ngā Wai Manga including the need to identify and secure funding to manage natural assets
- develop operational policy guiding how decisions will be made where water sensitive design solutions that provide better freshwater outcomes may be more expensive (ie, in terms of upfront capital investment and/or operations and maintenance) than other solutions. This should consider multiple other outcomes as well (climate change resilience, amenity, biodiversity).

Co-design with nature an integrated and regenerative approach to urban development

Understand and integrate urban ecology into the planning and consenting process. To do this you can:

- identify and protect/enhance urban ecology and constraints (flooding) using structure and development plan processes as a basis
- consider best way to take a full watercycle approach into the (re)development of urban water use including re-use
- consider how you can promote good outcomes for urban ecology when setting objectives, policies, rules, and consent conditions
- understanding the urban habitats, ecosystems and biodiversity in your region/district
- including how modified ecosystems function and how built green infrastructure interacts with natural systems
- require infrastructure providers and developers to carry out an assessment on how they propose to protect and enhance urban ecology and biodiversity in their consent applications
- prohibit development in or near wetlands and waterways (see above)
- consider how best to prevent/minimise stream modification/stream loss including headwaters and riparian margins
- consider how best to minimise earthworks (work with the land) and minimise compaction.

Use water sensitive design to enhance connections with nature and waterways. To do this you can:

- prevent/minimise stream modification/stream loss including headwaters and riparian margins
- consider how development can promote daylighting (see above), and the protection and enhancement of green corridors
- integrate urban ecology into developments (see above)
- consider how water sensitive design offers other positive benefits, such as improving recreational and amenity value, and resilience impacts of climate change.

Apply Te Aranga principles (the Māori design principles) when planning urban spaces. To do this you can:

- partner with Mana whenua to apply Māori values and principles, such as Te Aranga Urban design principles, when planning urban spaces.

Address pressures on waterbodies close to source

Encourage (or require) developers to adopt a water sensitive design approach. This can include minimise impacts resulting from changed flowrates through integrating stormwater management into development, limiting impervious surfaces, stormwater/rainwater harvesting, stormwater detention and adopting WSD approach.

To do this you can:

- consider how an incentives toolbox can promote this
- require new developments to maintain or improve ecosystem health
- seek mitigation for the hydrological effects of development

Encourage (or require) three waters operators to investigate and action methods to reduce stormwater discharge volumes to receiving waterbodies through reuse, infiltration and development design , and slow down flows through attenuation methods.

Ensure that small changes at a site are still consistent with whole of catchment. To do this you can:

- require a hydrologic assessment (pre/post water balance) to be provided when consenting large projects and developments. Assessment should cover the impact of the project on site and its surrounding catchment. You will need to ensure there is a policy framework to allow this
- be mindful of the number of developments occurring in the catchment and what the cumulative effects of these are on downstream environments in terms of frequent and infrequent flood events.

Consider objectives, policies and rules that restrict development on flood plains and seek to retain overland flow paths.

Nga Wai Tuku Kiri – “Our waters are a gift of life provided to us by our tupuna”.

Recognise and respect mana motuhake – the whakapapa and relationship that mana whenua have with water ecosystems in their rohe

Form a relationship with mana whenua and consult with them when making decisions. To do this you can:

- work with infrastructure providers to present an integrated approach to urban water management
- include mana whenua from the beginning of the decision making process for infrastructure
- establish formal agreements (such as mana whokohono ā rohe agreements) with Māori and support the development and implementation of integrated management plans) reflect the protection (and restoration) of taonga species, mahinga kai sites and wahi tapu sites as key objectives for development projects with consideration given at the catchment scale.

Create opportunities and provide support for Māori to care for urban waterways and undertake cultural monitoring. To do this you can:

- engage with mana whenua, regional and district councils, and infrastructure providers to discuss how this can be done. Agree what will be measured and how the results will be used to make decisions.

Develop an understanding of iwi and hapuwhakapapa with urban waterbodies through direct engagement and collaborative research. To do this you can:

- formally commission mana whenua and an appropriately qualified historian to understand this whakapapa and consider how this can be recorded and brought into the decision making process
- read the many recorded statements that iwi have already made about their relationship with waterbodies, eg, Māori land court and Waitangi Tribunal statements, previous submissions etc.

Tāngata – “Our environments are places of human occupation”.

Identify and consider the community values for urban water and reflect them in decision-making

Engage with the community and identify the values that they hold for freshwater in the region and urban areas.

To do this you can:

- ensure the community is adequately educated on the natural and existing state of water in their catchment including where streams have been piped, historical wetlands reclaimed and untreated stormwater is able to impact downstream environments
- use Te Mana o te Wai as an overarching framework for community values for freshwater management in the regions
- incorporate the communities’ values when setting objectives, policies and rules for urban areas and urban water
- ensure these values are reflected when issuing consents and monitoring and evaluating policy
- develop processes how best to work with property owners and communities in protecting, improving and taking care of our urban waterways (as many waterways are in private ownership)
- present water sensitive design options during community engagement, and to Council decision makers, clearly expressing the long term benefits and costs of water sensitive design and other options.

Optimise environmental, social and cultural benefits when investing in buildings and infrastructure

Consider the environmental, social and cultural impacts when making decisions on policy and plans or resource consents. To do this you can:

- when setting objectives, policies and rules in plans consider their implications on the environmental, social and cultural values of the area
- consider how the provisions can work together to enhance outcomes for the area
- when making decision on consents assess the impacts of the project against the relevant environmental, social and cultural values as well as the relevant provisions
- lead by example in all initiatives (council buildings, reserves, roads, Green star rating – water component minimal 99 stars)
- express benefits for water sensitive design work in terms of multiple objectives of councils (eg, biodiversity enhancement, amenity and recreation, climate change resilience, natural hazard risk reduction, freshwater ecology, cycle and walkways, etc).

Te Hāpori me te Wai – “The community’s love and care for water is enduring”.

Uphold and foster kaitiakitanga and custodianship of urban water ecosystems

Work with three waters providers to create opportunities for communities to engage with the three waters system. To do this you can:

- consider how you, other councils, and three waters providers can support community projects and initiatives aimed at improving urban water and/or Te Mana me te Mauri o te Wai
- consider how you can support citizen science and how the results of this can be communicated and used in decision making
- work with educational providers to incorporate urban water and kaitiakitanga into their educational programmes
- consider what information you can provide the community to help them better understand urban water.

Collect and share information to promote common understanding of urban water issues, solutions and values

Collect and share high quality data with three waters providers. To do this you can:

- engage with three waters providers to identify what data can be collected
- engage with mana whenua and the community to identify what data they would like council to collect
- collected data to support the Te Mana o te Wai framework
- consider how existing data platforms such as Land, Air and Water Aotearoa (LAWA) can be expanded and improved to encompass more data in an easily accessible manner for communities.

Utilise publically accessible data platforms for the sharing of information with participants in the urban water cycle – including mana whenua and the community. To do this you can:

- engage with mana whenua and the community to identify what data they would like council to collect
- collaborate with other councils and three water providers
- consider how the data collected can be fed into platforms like LAWA.

Implement specific data standards and methods for data collection, modelling and reporting and require three waters providers to meet these. To do this you can:

- engage with three waters providers to come up with an agreed approach
- consider how these standards will support regional reporting and monitoring and how they align with national and international best practice.

Use citizen science and cultural monitoring tools that can integrate with existing council monitoring. To do this you can:

- engage with groups interested in carrying out citizen science to develop a methodology that can be easily adopted and scientifically validated
- consider how the results of citizen science can be communicated and used in decision making.

Tikina mō Apōpō – “In building future resilience, our connectedness with the environment is our strength”.

Increase resilience to natural hazards and climate change

Perform risk assessments to explore possible natural hazards and climate change impacts on waterways/water systems. Explore possible solutions and mitigations including mataraunga Māori.

Conserve and reuse water resources

Require three waters service providers to investigate or develop and implement a ‘Demand Management Plan’ that will outline how a provider intends to increase the efficiency of their water takes. To do this you can:

- require providers to identify and report on where water losses are occurring throughout their networks
- require providers to prepare a demand management plan as they renew water take consents; a policy framework will be necessary to support this
- understand the patterns (temporal, spatial, seasonal) of water takes in their region for various land use types, and assess applications against these land use types and trends
- resource three waters providers to provide education and behaviour change programmes and work with communities to reduce demand and the pressure on water supply, especially during dry months
- encourage three waters providers to proactively identify where water sensitive design solutions could reduce the pressure on the their network and the need to fully utilise their consented takes.

Conserve and reuse water resources

Require three waters service providers to investigate or develop and implement measures to reduce inflow and infiltration into wastewater networks, to reduce overflows and discharges from the wastewater network. To do this you can:

- require providers to identify priority catchments for investigation, especially those where new development will increase pressure on the stormwater and wastewater networks
- require providers to identify and report on degraded wastewater and stormwater infrastructure, and implement a proactive programme for identifying cross connections
- resource three waters providers to actively work with the community to identify and remediate inflow and infiltration risks on private property
- as the asset owner, work with the three waters provider to educate the community about behaviours that can cause wastewater overflows.

Encourage the installation and use of water saving and storage devices in developments. To do this you can:

- consider how an incentives toolbox can promote the installation of water saving and storage devices
 - gather data and case studies about the benefits of water saving and storage devices, and buyer demand for these types of additions to standard developments
 - run or support community workshops on the types of devices available to increase community understanding of and demand for these innovations
 - work with three waters providers to develop local guidance on these features and support existing innovations from abroad (such as SMART Tanks).
-

Appendix B: Practices for infrastructure providers

The practices that we recommend infrastructure providers consider and adopt are described in this section.

Papatūānuku – “Our relationship with the land – papatūānuku – will predetermine our relationship with water”.

Protect and enhance ecosystem health of all receiving environments

Incentivise the protection of urban waterways. To do this you can:

- work with regional and district councils to develop an incentives toolbox. Activating WSUD has published some research on what makes an effective incentives toolbox.

Incentivise the uptake of water sensitive design features for the management of stormwater. To do this you can:

- work with regional and district councils to develop an incentives toolbox. Activating WSUD has published some research on what makes an effective incentives toolbox.

Understand and integrate urban ecology into the design process. To do this you can:

- set up and implement structure planning process for (re)development that meet Ngā Wai Manga
- include this as a key design requirement, and engage specialist to implement this on your projects
- engage across council, other providers and the development industry to see how this can be done.

Take a water balance approach to design, using landscape and water cycle to your advantage by integrating water management measures into the landscape to enhance flood management. To do this you can:

- include this as a key design requirement and engage with landscape designers
- work with regional and district councils to make this a consenting and/or engineering approval requirement.

Apply Te Aranga principles (the Māori design principles) when designing and planning urban spaces and infrastructure. To do this you can:

- include this as a key design requirement. Engage a team that can deliver this
- consider how these principles can be applied in the operation of infrastructure.

Minimise the production of wastewater discharges, and the use of water.

Co-design with nature an integrated and regenerative approach to urban development

Understand natural waterways so that a landscape and water cycle approach can be used for flood management. This will integrate detention basins, wetlands, swales, and tanks to reduce daily runoff events, and peak run off.

To do this you can:

- include this as a key design requirement. Engage a team that can deliver this
- work with regional and district councils to coordinate flood control measures.

Use water sensitive design where possible in both greenfields and brownfields developments for the reduction of the adverse effects of wastewater and stormwater discharges. When scoping renewal projects look for opportunities to include water sensitive design. To do this you can:

- minimise loss and modification of streams (including headwaters)
- make this a key priority when making decisions on infrastructure
- include this as a key design requirement. Engage a team that can deliver this
- work with regional and district councils to make this a consenting and/or engineering approval requirement.

Co-design with nature an integrated and regenerative approach to urban development

Address pressures on waterbodies close to source

Reduce connectivity (impervious surfaces and pipes).

Understand the effects that a ‘business as usual approach’ will have on the receiving waterbodies. To do this you can:

- when making decisions carry out a clear multi-criteria assessment of all options including business as usual. This assessment should include impacts on water quality, ecosystem health, and biodiversity
- make this MCA a requirement for engineering approvals, commensurate with the scale of the development.

Investigate and implement methods for reducing inflow and infiltration into and out of the wastewater system.

Investigate and implement methods for reducing discharge to surface waterbodies.

‘Consider treatment of areas with a high source of pollutants (eg, high traffic roads) in close proximity at the time of new redevelopment.’

Seek alternatives to pollutant generating materials. To do this you can:

- work with the building consents team to determine how pollutant generating materials, and their alternatives, can be considered in the building process
- encourage cleaner production through council bylaws, ie, stormwater and wastewater.

Consider treatment of areas with a high source of pollutants (eg, high traffic roads) in close proximity at the time of new redevelopment.

Nga Wai Tuku Kiri – “Our waters are a gift of life provided to us by our tupuna”.

Recognise and respect mana motuhake – the whakapapa and relationship that mana whenua have with water ecosystems in their rohe

Form a relationship with mana whenua and consult with them when making decisions. To do this you can:

- engage with councils to determine who has mana whenua
- include mana whenua from the beginning of the decision making process for infrastructure.

Create opportunities and provide support for urban Māori to care for urban waterways and undertake cultural monitoring. To do this you can:

- engage with mana whenua, and regional and district councils to discuss how this can be done. Agree what will be measured and how the results will be used to make decisions.

Develop and understanding of iwi and hapu’s whakapapa with urban waterbodies through direct engagement and collaborative research. To do this you can:

- formally commission mana whenua and an appropriately qualified historian to understand this whakapapa
- consider how this can be recorded and brought into the decision making process.

Tāngata – “Our environments are places of human occupation”.

Identify and consider the community values for urban water and reflect them in decision-making

Give the community opportunities to provide input on what their ideas are for an urban water system. Use this community vision as a check when making decisions. To do this you can:

- involve the community at the strategy and planning stage and capture their feedback in a way that it can be used for assessing design options
- form a community advisory group. Consider connecting with the regional and district councils.

Identify and consider the community values for urban water and reflect them in decision-making

Consult with the community (commensurate with the scale of the project) when making decisions on infrastructure projects. Involve the community early on and keep in touch with them throughout the project.

To do this you can:

- hold community engagement sessions on overall strategy and specific projects
- agree with the community how you will keep engaged throughout the process.

Provide educational opportunities to the community to learn about the urban water system and its importance to them. To do this you can:

- engage with district and regional councils to discuss the possibility of a region wide approach
- engage with schools and other community organisations to amplify urban water education.

Optimise environmental, social and cultural benefits when investing in buildings and infrastructure

Design infrastructure to improve resilience to climate change and natural hazards as well as providing community amenity. To do this you can:

- make this a key design requirement and engage a design team that can put this into effect.

Opportunities for optimising co-benefits should be well documented throughout the design process. To do this you can:

- make this a key design requirement and engage a design team that can put this into effect
- specify to the design team how this should be documented.

Enhance social amenity through multiple use corridors, lot landscaping and integrating water management measures into the landscape to enhance visual, recreational, cultural and ecological values. To do this you can:

- make this a key design requirement and engage a design team that can put this into effect.

Te Hāpori me te Wai – “The community’s love and care for water is enduring”.

Uphold and foster kaitiakitanga and custodianship of urban water ecosystems

Involve mana whenua and the community in decision making to foster a sense of community ownership. To do this you can:

- see other comments on engaging with mana whenua and the community.

Provide support to users to adopt best practices for water management at home. To do this you can:

- work with regional and district councils to develop a package to promote good urban water practices
- consider what resources and educational initiative you can champion.

Provide support to community groups and projects that wish to assist with the protection and enhancement of urban water systems. To do this you can:

- work with regional and district councils to develop a regional approach to this.

Provide educational opportunities to the community to learn about the urban water system. To do this you can:

- provide signs/info boards to communicate the history and significance of an urban waterbody, the community’s connection and/or an explanation of any water sensitive design features in place.

Collect and share information to promote common understanding of urban water issues, solutions and values

Use citizen science and cultural monitoring tools that can integrate with existing council monitoring. To do this you can:

- engage with groups interested in carrying out citizen science to develop a methodology that can be easily used
- consider how the results of citizen science can be communicated and used in decision making.

Collect and share information to promote common understanding of urban water issues, solutions and values

Collect and share high quality data and modelling of urban waterways. To do this you can:

- engage with councils, mana whenua and the community to discuss what a data needs to be collected
- utilise publically accessible data platforms for the sharing of information with Participants in the urban water cycle, including mana whenua and the community.

Tikina mō Apōpō – “In building future resilience, our connectedness with the environment is our strength”.

Increase resilience to natural hazards and climate change

Perform risk assessments to explore possible natural hazards and climate change impacts on waterways/water systems.

Map natural freshwater systems (rivers, margins flood plains, overland flow paths) and understand their functions during extreme events. In the first instance, design to retain these natural systems where possible, otherwise mimic these functions using water sensitive design.

Design infrastructure to improve resilience to climate change and natural hazards. To do this you can:

- make this a key design requirement and engage a design team that can put this into effect.

Conserve and reuse water resources

Actively monitor and respond to water loss in the water supply networks.

Manage inflow and infiltration into the stormwater network.

Encourage customers to reduce water consumption.

Appendix C: Technical professionals

The practices that we recommend technical professionals consider and adopt are described in this section.

Papatūānuku – “Our relationship with the land –papatūānuku – will predetermine our relationship with water”.

Protect and enhance ecosystem health of all receiving environments

Co-design with nature an integrated and regenerative approach to urban development

Address pressures on waterbodies close to source

Take a water balance approach to design integrating water management measures into the landscape to enhance flood management and natural hydrology. To do this you can:

- see below practices. This can be met through meeting those.

Implement WSD approach to projects which considers water at the outset and ensures that the urban design, stormwater system, building typologies and green spaces are co-designed with a multi-disciplined team to support the following:

- protect streams, prevent loss of streams including headwaters, minimise modification, protect habitat, no piping except for unavoidable stream crossing (ie, no reclamation)
- protect existing green spaces included but not limited to areas of natural significance
- minimise earthworks, minimise compaction, prohibit compaction in riparian buffers
- no development in floodplains, flood ways, use ‘green fingers’ approach, protect overland flow paths
- minimise impervious areas, minimise compacted areas
- stormwater is treated via wetlands or raingardens prior to any discharge off site (including to ground water)
- wetlands and raingardens designed as focal points in landscape to connect community with water
- stormwater is managed to mimic pre development hydrology where feasible
- development layout/landscape developed to reduce stormwater through pervious surfaces, green roofs, passive irrigation and extensive canopy trees
- landscaped areas (road berms, parks, reserves) are used to receive stormwater where practicable in addition to stormwater treatment
- wider application of water sensitive design is used.

Use existing wetlands and waterways for flood management. To do this you can:

- understand the hydrological cycles of the site and catchments relevant to it
- understand the sensitivity of any natural systems to changes in hydrology including infrequent inundation
- understand the hydrology and biophysics properties of wetlands in and around the site and distinguish between natural and constructed wetlands
- understand which streams are perennial, ephemeral and intermittent. Ensure that the boundary changes of the streams are considered in the design
- use water sensitive design to enhance connection with nature.

Develop in a way that protects and enhances wetlands, urban waterways and their margins. To do this you can:

- make this a key design parameter
- understand the impacts of developments in terms of contaminants, changed hydrology and physical characteristics (such as temperature)
- undertake thorough site investigations (including downstream) to assess where improvements can be made and document for reference in the design process
- discuss this with a multidisciplinary design team.

Protect and enhance ecosystem health of all receiving environments

Co-design with nature an integrated and regenerative approach to urban development

Address pressures on waterbodies close to source

Avoid developing/building on wetlands and flood plains and seek to retain overland flow paths. To do this you can:

- understand and map the overland flow paths through developed catchments
- consider how your design can maintain overland flow path while meeting local engineering guidance
- understand the risks of removing these wetlands, flood plains and overland flow paths.

Create landscaping that does not require watering, except with harvested rainwater, and slows water movement during times of heavy rainfall. To do this you can:

- make this a key design requirement and assess design options against this
- ensure that you engage a multidisciplinary team early. Include the whole team from the concept development stage
- ensure the plants used in the design are able to slow water movement and require minimal maintenance
- consider the aesthetics of the plants used.

Ensure that small changes at a site are still consistent with whole of catchment. This will involve integrated and whole of catchment planning. To do this you can:

- develop a hydrological model that can be used in the design process
- carry out a water balance over the whole of catchment.

Understand and integrate urban ecology into the design process. To do this you can:

- engage with a multi-disciplinary design team and make this a clear design parameter.

Apply Te Aranga Principles. To do this you can:

- engage with councils and infrastructure providers to see how these principles can be applied in your development
- discuss how these principles can be incorporated with your project sponsor
- once an approach to using these is agreed consider how they can be incorporated into the design process and procurement and construction.

Use urban renewal/brownfields developments to improve freshwater outcomes. To do this you can:

- recognise that this is a critical practice to adopt when developing brownfields sites
- discuss how you can achieve this with your client and project sponsor and offer it as an option
- engage with infrastructure providers and councils to align actions and understand their plans for the area.

Follow agreed approaches to estimate rainfall and runoff in urban catchment planning and climate change. To do this you can:

- refer to local guidance on this to ensure you are using the correct methods.

Daylight urban streams where possible. To do this you can:

- identify where daylighting onsite is possible and discuss this with the client/project sponsor
- engage with regional and city/district councils to see where benefits can be maximised
- consider how daylighting can be incorporated into the site design.

Adhere to best practice guidelines (eg WSD Guidelines and NZ Fish passage Guidelines). To do this you can:

- identify what guidance is relevant for use onsite
- identify what elements of the guidance are relevant and translate that to design criteria
- ensure all systems consider lifecycle maintenance as a key requirement and that ongoing operational expenditure is well understood by owner (council).

Seek alternatives to pollutant generating materials. To do this you can:

- when choosing materials consider their impact on water and the receiving environment.

Protect and enhance ecosystem health of all receiving environments

Co-design with nature an integrated and regenerative approach to urban development

Address pressures on waterbodies close to source

Understand the effects that a ‘business as usual approach’ will have on the receiving waterbodies. To do this you can:

- assessment approach looking at business as usual and water sensitive design
- use the assessment as a communication tool to show status quo versus the outcomes after good practice is adopted
- treat all water prior to discharge to natural environment or offsite (including stormwater). Consider the best arrangement of raingardens and/or other water sensitive design measures
- engage a multidisciplinary design team.

Nga Wai Tuku Kiri – “Our waters are a gift of life provided to us by our tupuna”.

Recognise and respect mana motuhake – the whakapapa and relationship that mana whenua have with water ecosystems in their rohe

Discuss this with client and council – consenting and design. To do this you can:

- discuss the importance of recognising māori rights and interests with your client/project sponsor. This is particularly relevant if the client is a local authority
- engage with councils and infrastructure providers to see how these principles can be applied in your development
- agree on a set of actions that can be taken to give effect to this practice. Ensure these are met in the design process.

For larger projects invite Māori to become involved in the design process.

Tāngata – “Our environments are places of human occupation”.

Identify and consider the community values for urban water and reflect them in decision-making

Discuss this with client and council – consenting and design. To do this you can:

- engage with councils and infrastructure providers to determine the community values
- discuss the values relevant to the project with the sponsor and how they can be met
- agree on a set of actions that can be done to give effect to this practice. Ensure they are met through the design process.

Optimise environmental, social and cultural benefits when investing in buildings and infrastructure

Enhance social amenity through multiple use corridors, lot landscaping and integrating water management measures into the landscape to enhance visual, recreational, cultural and ecological values. To do this you can:

- engage with landscape architects and designers
- engage with the parks and recreation department of councils to identify opportunities to enhance visuals and recreational values.

Te Hāpori me te Wai – “The community’s love and care for water is enduring”.

Uphold and foster kaitiakitanga and custodianship of urban water ecosystems

Discuss how this can be met with councils and infrastructure providers. Consider how you and your company can do this. To do this you can:

- consider how you can engage with the community
- encourage staff to attend tree plantings and/or river cleaning days
- work with other organisations to create a fund for community projects
- offer your technical expertise to community groups at a low price or pro bono
- consider how you can do education
- establish partnerships with local communities to look after the natural environment and man-made stormwater treatment devices such as wetlands and rain gardens

Collect and share information to promote common understanding of urban water issues, solutions and values

Meet specific data standards and methods for data collection, modelling and reporting. To do this you can:

- collect data as required by councils and infrastructure providers
- utilise digital technology and future innovations including in support of asset handover processes
- learning opportunities for particular sites

Tikina mō Apōpō – “In building future resilience, our connectedness with the environment is our strength”.

Increase resilience to natural hazards and climate change

Design infrastructure to improve resilience to climate change and natural hazards. To do this you can:

- make this a key requirement of the design process. Climate change increases the importance of all of this
- when carrying out design include a climate change scenario. Encourage the client/sponsor to add specific weight to this scenario
- consider how the temperature effect on urban water can be reduced through water sensitive design
- use water in the landscape to increase resilience to impacts such as urban heat island.

Develop an understanding of the specific hazards that currently and will affect the urban water system. To do this you can:

- during design carry out a hazard identification process. List and take specific actions to address these
- specific issues that could be considered are: erosion and sediment control, protection of stormwater treatment devices and enhanced treatment efficiencies due to contaminant accumulation and flushing.

Good understanding of the specific site and surrounding issues. Consider how the future site and catchment may look like.

Conserve and reuse water resources

Understand and adopt proven innovations from international cities around water efficient appliances, smart systems and integrated storage tanks.

Design to retain water in the landscape through reduced imperviousness, green roofs, passive irrigation and stormwater harvesting for irrigation of green spaces.

Promote development scale stormwater/rainwater harvesting with re-use for internal (non potable) and external uses to mimic predevelopment hydrology.

Appendix D: Practices the community can adopt

The practices that we recommend councils encourage their community to adopt are:

Papatūānuku – “Our relationship with the land – papatūānuku – will predetermine our relationship with water”.

Protect and enhance ecosystem health of all receiving environments

Councils can support the community to:

- participate in Drains to Harbour programmes and ensure only rain goes down the drain (eg, Puget Sound starts here)
- be a Stormwater Superhero (see Christchurch programme)
- get involved with community groups and projects that aim to protect and enhance urban water, estuaries and coasts
- attend community freshwater lectures and seminars to learn more about what ecosystem health is and what the issues are

Co-design with nature an integrated and regenerative approach to urban development

Councils can support the community to:

- attend public workshops and seminars on how to incorporate water sensitive design into your property or business
- choose to preferentially build or buy properties that include water sensitive design – and tell everyone why you are doing that
- attend community engagement events run by councils about planned water sensitive design projects (eg, wetlands for flood protection or stream daylighting) and provide feedback on the proposals.

Address pressures on waterbodies close to source

Councils can support the community to:

- choose copper-free brake pads for vehicles
- choose zinc-free roofing and discourage the use of copper piping
- use active transport whenever possible to reduce vehicle pollutants washing into freshwater
- choose permeable surfaces around house and garden to reduce property run off
- pick up rubbish when walking around town. Take care when placing rubbish out on the street
- personally commit to actions to improve river, stream and estuary health.

Nga Wai Tuku Kiri – “Our waters are a gift of life provided to us by our tupuna”.

Recognise and respect mana motuhake – the whakapapa and relationship that mana whenua have with water ecosystems in their rohe

Councils can support the community to:

- learn the Māori names of local streams and how to pronounce them
- attend information sessions about mana whenua relationships with local water ecosystems
- seek out information on purakau (library books), especially related to wai.

Tāngata – “Our environments are places of human occupation”.

**Identify and consider the community values for urban water and reflect them in decision-making
Optimise environmental, social and cultural benefits when investing in buildings and infrastructure**

Councils can support the community to:

- get involved with local councils and have a say on council consultations and events. The purpose of this is to help the council get a good idea of what the community wants to see in the urban water system
- submit to council plans (annual plans, long term plans) on the importance of green infrastructure such as rain gardens, green roofs, urban forests
- advocate for the inclusion of water sensitive features in new houses, subdivisions and flood protection schemes when dealing with builders, developers, contractors and consultants
- get involved in discussions with mana whenua, family, friends and other members of the community about water management issues they are passionate or concerned about.

Te Hāpori me te Wai – “The community’s love and care for water is enduring”.

Uphold and foster kaitiakitanga and custodianship of urban water ecosystems

Councils can support the community to:

- let their relevant council know if notice anything wrong with the water system (leaks, smells, pollution, drains not working etc)
- join or start a citizen science stream monitoring group for your local stream and let your council know you are collecting data on the stream.
- learn what the urban water issues are and advocate for action from council, industry and community to improve urban water quality
- identify your local urban stream and learn about it – its Te Reo and English names, why it has those names, its history, where it flows, what is in the upper catchment, what lives in the stream, where it joins the sea
- learn to identify our native fish and macroinvertebrates and see if you can find some in your local stream (but be careful with them).

Tikina mō Apōpō – “In building future resilience, our connectedness with the environment is our strength”.

Increase resilience to natural hazards and climate change

Councils can support the community to:

- advocate for water sensitive design solutions to reduce contaminant transfer to receiving environments, reduce bank erosion from fast flowing stormwater, and protect habitat
- attend community engagement events run by councils about planned water sensitive design projects (eg wetlands for flood protection) and provide feedback on the proposals
- install rainwater tanks to provide water source in case of natural disaster.

Conserve and reuse water resources

Councils can support the community to:

- investigate and encourage green roofs, rain gardens, grey water systems and home-based stormwater detention devices
- collect rainwater, choose water efficient appliances, and conserve water
- have a community competition about who can conserve the most water over two months (using meter reads to gauge).