WAIKATO FRESHWATER STRATEGY

TE RAUTAKI WAIMĀORI MŌ WAIKATO

A STRATEGY TO DELIVER THE BEST USE OF FRESH WATER THROUGH TIME.

Waikato
REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

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HE KUPU WHAKARĀPOPOTO

OVERARCHING GOAL

Achieve the best use of fresh water through time via better allocation systems using new methods based on better information.

SYNOPSIS OF STRATEGY

This strategy, which identifies a programme of action to progress the above goal, is the third part of the *Let's Talk Water* engagement project. It builds on the understanding of the regional situation summarised in the technical support document[1], coupled with the feedback received and summarised in the issues and opportunities paper[2]. It recognises that freshwater management is a complex problem that has not been addressed in an integrated manner. The current state of the region's fresh water is the result of ad hoc management in response to disparate directions from central government and a preference for economic development that competes with an incomplete understanding of site specific environmental limits.

Issues around freshwater management are continually referred to as a 'wicked' problem. This is because water is neither a private good, nor is it a public good. As a result, neither market-based instruments nor government intervention alone are applicable to solve the problems around the allocation and use of water. An allocation regime that uses a combination of regulatory and market-based instruments and persuasive methods is therefore necessary. This will also require quality evidential support and the ability to model future forecasts.

In line with the Vision and Strategy for the Waikato River, this strategy recognises that many of the region's freshwater bodies are either over allocated or near allocation. They are degrading and are expected to get worse from the legacy effects of historic land use which have a major influence on the quality of the region's fresh water. To make matters worse, the freshwater demands of the future are increasing and will be influenced by changing consumer expectations, cultural imperatives and changing meteorological conditions resulting from climate change. Current allocation options are limited to regulations conferred 50 years ago to address the pollution of point source discharges. They are no longer fit-for-purpose.

This strategy recognises that water quality is a function of the volume allocated, catchment characteristics, climate and land use. It recognises that allocation not only involves using fresh water out of a water body but also using fresh water within a water body for the attenuation of contaminants. Both are quantities and cannot be separated.

The strategy also explicitly recognises the integrating function of the region's freshwater, linking activities occurring on the land with those directly relating to and occurring in freshwaters and then transferring the effects into the Coastal Marine Area. This affects, not only physical processes in estuaries (eg sedimentation and algal growth from nutrient enrichment) but also has human health impacts through direct contact recreation and from eating filter feeding shellfish.

The freshwater choices available to future generations will be limited if we do not change our current use and practices. This strategy proposes the following 'game-changing' actions.

Advocacy

- Seek access to wider policy options to price water that is taken out of water bodies for use and for the use of water remaining in water bodies to assimilate contaminants (eg a pollution charge) to complement the direct regulation Waikato Regional Council already has access to. The ability to price the strength of discharges will allow comparisons between diffuse and direct sources, thus integrating urban and rural effects.
- Partner with regional parties to advocate to central government for legislative change to allow access to a range of economic instruments that augment existing regulatory allocation options. Advocacy would be strengthened by a collective Waikato-wide approach to freshwater management.
- Access to a wider range of policy options would allow each to do what it is designed for (eg use regulation to determine the size of the allocation in each Freshwater Management Unit and then use a combination of market instruments and information opportunities to alter behaviour to decide who gets what, where and for how long).
- Advocate for alignment of other economic and social policy to advance freshwater quality/allocation co-benefits (eg changes to the Emissions Trading Scheme).

Smarter methods

- Move from a predominantly measurement and monitoring approach to one using new technologies including the 'internet of things' and big-data analytics to model future freshwater scenarios with measurement as a check. In short, transitioning from fixing problems to preventing them from occurring.
- Integrating the activities of all Waikato Regional Council directorates through an invigorated land and water facility.
- Confirm spatial boundaries of regional Freshwater Management Units within catchment zones.
- Transition from a predominantly regulatory system to one where rules complement and support other policy options (eg economic instruments and persuasive methods) for behaviour change.

- Continue and upgrade providing freshwater use and condition information in real-time to communities, regional partners and stakeholders to assist their decision making processes and support future trading opportunities.
- Identify and promote engineering options (enhanced natural storage and constructed storage at a range of scales) to better enable identified Freshwater Management Units to accommodate present and future freshwater demands.
- Use natural storage (including Lake Taupō and restored wetland areas) and constructed artificial storage, at a range of scales in rural and urban situations, to offset freshwater scarcity in times of stress to provide choices in addition to regulatory restrictions.

Better information

- Review and upgrade our various databases which have been developed in response to different legislation at different times using different approaches (some are automatically populated, some are manual, some are spreadsheets, some are print) etc. This is not a design and build from scratch, but rather a repair job: review, glue together and fix any gaps.
- Design, build and manage a database system that enables spatial, holistic management of fresh water by integrating:
  - freshwater quality and quantity;
  - high flows with low flows;
  - between ground and surface water bodies;
  - point source/diffuse source inputs over time;
  - climate change projections; and
  - risk management
- Review, upgrade and integrate databases to support modelling freshwater demands and capacity in each Freshwater Management Unit.
- Engage with and partner science providers and with central government science challenges (eg Our Land and Water and Deep South) at every opportunity to seek national consideration of information issues and to, in particularly, encourage and actively support the investigation of relevant freshwater issues with case studies and pilot projects in the Waikato region.
- Continue to partner with communities and citizen groups to create habitat that contributes to the resilience of the region's freshwater resources and to enhance this by providing access to information, funding opportunities and prioritising restoration projects.

https://www.waikatoregion.govt.nz/assets/PageFiles/40487-lets-talk-water/Freshwater%20technical%20summary.pdf

https://www.waikatoregion.govt.nz/assets/PageFiles/40487-lets-talk-water/Issues%20and%20Opportunities%20Paper.pdf

RIVERS

The Waikato has three major river systems: the Waikato (including the Waipā sub-catchment), the Waihou, and the Piako/Waitoa. Other smaller rivers and streams complement these systems.

WETLANDS

More than 95% of Waikato wetlands have been converted to pasture.

GROUNDWATER

In the Waikato, groundwater makes up about two thirds of the total fresh water resource. It is strongly linked to the surface water resource.

LAKES

We have more than 100 lakes, including New Zealand's largest, Lake Taupō. Demand for farmland means many Waikato lakes are now smaller and shallower, with some completely drained. Land use means lakes (and rivers) now receive more nutrients and sediments, impacting on water quality.

1 DISCUSSION

KUPU WHAKATAKI

1.1 INTRODUCTION

Water is New Zealand's foremost strategic asset. In its simplest terms, the New Zealand export economy is primarily engaged in turning our rainwater into exports and experiences for visitors. Communities also depend on it for their domestic needs and amenity. In this way, Waikato water is critical to the interests of the wider regional community and the nation as a whole.

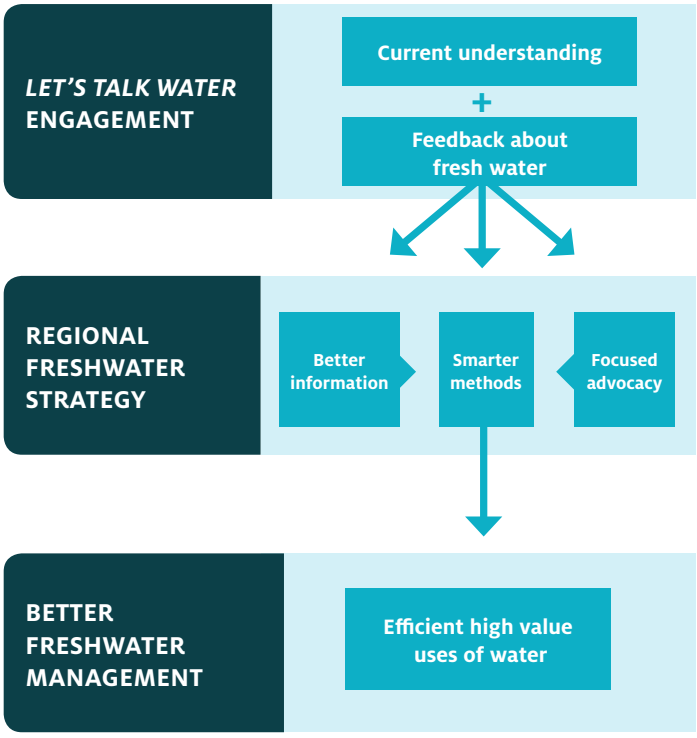
Regional councils and their predecessors have been charged with managing and allocating fresh water at regional scales for the last 50 years. During that time, the emphasis has changed from the direct regulation of discharges into and takes from regional water bodies, to the realisation that surrounding catchment use must also be managed to achieve community and iwi expectations for freshwater quality.

Waikato Regional Council has recognised both the way it manages fresh water and the way society uses fresh water needs to change. Despite extending the regulatory envelope to include the initiatives listed below, monitoring shows water quality is deteriorating in many areas with the clear implication that water quality is not currently suitable.

- The management of land in the Lake Taupō catchment.
- The recent region-wide regulatory prioritisation for allocation of extractable volumes.
- Plan Change One (discharges to Waikato River catchments).
- Non-regulatory investment in catchment conditions.

This has serious implications for the ability to meet community aspirations for clean fresh water and to attract economic investment into the region that requires access to fresh water, either directly for consumptive use or use within water bodies to absorb the contaminants of development. The effects of past activities on the freshwater resources of the region are already limiting the choices we can offer to future generations and unless changes are made soon, opportunities will be reduced further. This is of pressing concern with the expansion of Auckland and its growing freshwater footprint (domestic and commercial) in the north of the region.

This strategy is the Waikato Regional Council's response to the challenges ahead. It proposes a shift in freshwater management from reactively implementing central government's resource management legislation to one of shaping the agenda by working with regional communities, partners and stakeholders to access new tools and use all policy options. It recognises an imperative for change and that to change direction, we need to do things differently. By definition, it is disruptive and challenges the status quo.



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The strategy is the final part in the trilogy of documents from the *Let's Talk Water* engagement project[3]. It builds on the two preceding documents below.

- Waikato Regional Freshwater Discussion: A framework for getting the best use allocation through time - summary support document to *Let's Talk Water Me kōrero e tātou mō te wai*. The support document provided a global and national context for Waikato fresh water (including the tangata whenua perspective of iwi rights and interests), a description of the regional resource, present and future influences including demands and climate change projections. It proposed a fresh way of considering the use of fresh water (that of water footprinting) and a description of potential management options.
- Waikato Regional Freshwater Discussion: A framework for getting the best use allocation through time; Issues and Opportunities. *An Issue for all of us – He take mā tātou katoa*. This document collated and presented feedback from the engagement process and identified 17 strategic issues along with possible opportunities and implications.

The Waikato Freshwater Strategy re-works the issues into a list of 16 and groups associated actions into three themes as in the following diagram with the aim of achieving the best use of fresh water through time via better allocation systems using new methods based on better information.

It is anticipated that the strategy will provide a fresh direction for Waikato Regional Council actions in the coming years[4] and a platform from which the regional community can knowledgeably and effectively engage in the national discussion regarding the use of new tools and systems for freshwater management.

The issues are grouped into the following three themes.

1. Focussed advocacy for legislative reform and ongoing decision making.
2. Smarter methods with an analysis of options including allocation methods and economic instruments.
3. Better information including supply and demand balance, allocation pressures, water usage and freshwater climate science.

The design of this strategy around these three themes reflects an internal (within the Waikato Regional Council) and an external approach, and recognises that achievement of the strategy requires both internal changes and working together with external partners and stakeholders. This is represented in the figure in the left hand column.

All proposed actions are summarised in section 2 of the strategy and include existing activities that are critical to the success of the strategy as well as 'game changers' or new activities.

This year (2017) is a general election year and domestically the state of freshwater resources is already shaping up to be the subject of media interest with an increasing number of editorial, NGO and academic sector opinions. This can be expected to continue and increasingly focus on the performance and the effectiveness of management agencies.

Water is possibly the ultimate integrating resource. The cross cutting resource essential to all forms of life. The universal solvent. Most compounds and molecules essential for life are able to be dissolved in water and as a result, it is subject to the potential for contamination.

The need to address water management is more critical than ever before. A more strategic approach is required that recognises the increasing pressures on freshwater resources. For that, a clear understanding of the resource, its value to society and interactions with other resources, is required.

The need to address water management is more critical than ever before.

[3] https://www.waikatoregion.govt.nz/council/policy-and-plans/plans-under-development/waikato-regional-freshwater-strategy/

[4] To be included in the 2018 Long Term Plan and the review of the Waikato Regional Plan.

1.2 BACKGROUND
HOROPAKI
1.2.1 OVERVIEW

New Zealand is well endowed with water, on a per capita or a land area basis. However, it is also unevenly distributed between and within regions.

The main threat to global freshwater supplies is over drawdown of aquifers and use of surface water to assimilate the effects of discharges and land use and this is mirrored nationally. As clean fresh water becomes scarcer, its value will increase and we can expect access to be more keenly contested.

The interconnected global economy can also be expected to respond to a climate driven influence to water demand as the international effects of climate change shifts growing zones to different places. As New Zealand can expect less dramatic changes in supply than many other countries, we may be at a relative advantage with respect to an ability to grow pasture and crops.

It is recognised that the 'best' use of water will change over time. This will be in response to the changing value of water as the international value of water changes. This is likely to occur in response to an expanding global population, projected negative climate effects in current global food bowl regions (which are already stressed through groundwater aquifer drawdown) and contamination of source aquifers.

New technologies are advancing at pace and many scientists are actively researching the production of lab grown 'animal' products (eg meat and dairy). As the price drops, the animal welfare and pesticide residue issues are removed, and the greenhouse gas emissions are much reduced as is the freshwater footprint, it is conceivable that such products will displace but not replace pasture based products in the future.

New Zealand brands itself as clean and green. For example, Tourism New Zealand (through its long running 100% Pure New Zealand brand campaign), Anchor and others leverage this image. To maintain access to high value premium markets, we need to maintain an internationally positive perception to New Zealand brands.

Waikato water is critical to the interests of the wider regional community and the nation as a whole. It is the quality and availability of our natural resources that underpin our economy and our success as a nation, rather than any particular sector that currently uses these resources.

The importance of fresh water to the economy has been recognised nationally with the:

- increase in central government policy activity, including support for the multi-stakeholder Land and Water Forum
- push to understand, define and recognise iwi rights and interests with respect to fresh water
- desire to nationally standardise reporting on the condition of fresh water
- release of the Ministry for the Environment's Clean Water 2040 publication, which introduced changes to the NPS-FM 2014 and a resetting of the government's objectives for fresh water from a bottom line safe for wading to one aspiring to 90 per cent of rivers and lakes being swimmable by 2040.

Alongside the public interest created and sustained by twice daily articles in the mainstream media on the use and quality of the nation's fresh water, three recent reports have provided factual information into the debate. They are:

- **OECD: Environmental Performance Review: New Zealand 2017:** Released in March 2017, this report is the third environmental performance review of New Zealand by the Organisation for Economic Co-operation and Development, and focused on freshwater management and sustainable urban development. The report identified rising freshwater pollution and scarcity in some regions as a challenge and called for a major reform of national freshwater policy to safeguard water quality and availability. It suggests new methods (including economic instruments) currently unavailable to address some of the freshwater management issues.
- **Sir Peter Gluckman: New Zealand's fresh waters: Values, state, trends and human impacts:** Released in April 2017, this report explains the technical nature of freshwater management, the current state and the challenges. It provides some guidance as to the future opportunities by showcasing innovations in freshwater management by regional authorities. It does not go beyond the existing policy options in its suggestions for the future.
- **Ministry for the Environment & Stats. New Zealand: Our freshwater 2017 Data to 2016:** Released in April 2017, this report is the first stand-alone domain report for fresh water produced under the Environmental Reporting Act 2015 (fresh water was a component of the *Environment Aotearoa 2015* synthesis report). As the name suggests, its focus is on the state of resources.

All three reports highlight the degraded quality of the nation's fresh water, particularly in pastoral and urban dominated catchments. All three recognise the legacy effect of past land uses, implying that our freshwater resources will continue to decline unless we make timely and significant changes. This prognosis is at odds with public expectations and requires a response.

Of the three reports, the OECD report most closely mirrors the direction of this strategy in that it recognises that economic tools to address water allocation and pollution are under-used. It states that the New Zealand government needs to further clarify and recognise Māori community rights and interests in water before we can ensure effective water policies. It concludes with the highlight to:

> **'Expand the use of economic instruments to internalise environmental and opportunity costs, promote innovation and encourage efficient use of water (quantity and quality).'**

In particular, economic instruments (of which pricing is one type) have the potential to provide incentives to water users to utilise water in an efficient way (i.e. its 'best use'), and achieve policy goals (for example, relating to water quality) in a cost-effective way.

UNLESS WE CHANGE THE WAY WE MANAGE FRESH WATER, THERE SIMPLY WON'T BE ENOUGH FOR EVERYONE WHO WANTS IT.

Communities will be unable to attract investment and create the kind of outcomes we all want for the region.

Existing businesses may not be able to expand and there may be disputes over who is – and who isn't – entitled to a share of this resource.

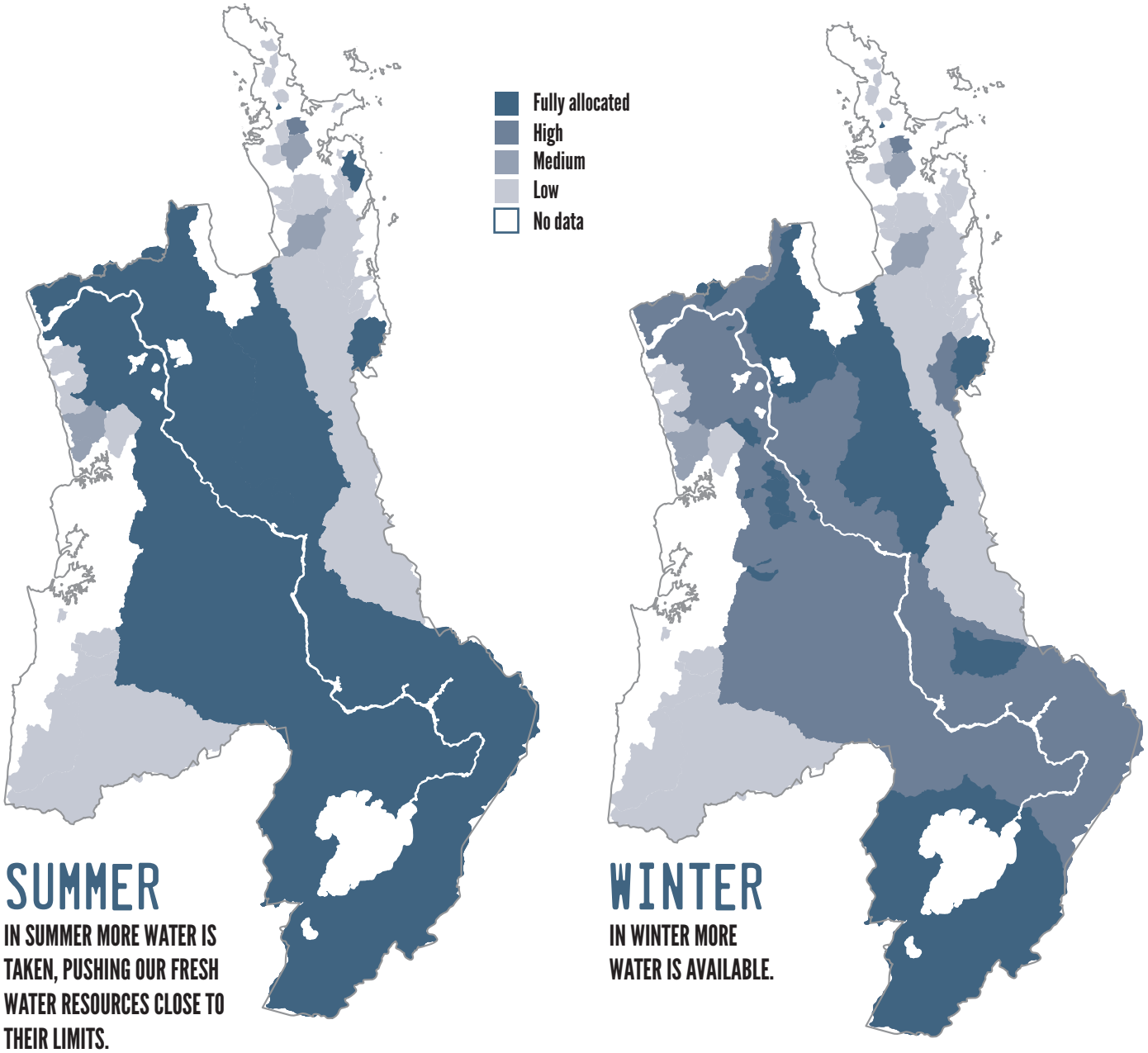
We may be unable to respond to iwi aspirations and interests.

The opportunity cost to the region – and New Zealand – will be huge.

FAST FACT
1. WATER ALLOCATION

As a region, the Waikato is struggling to keep up with the growing demand for fresh water. Already, applications to the Waikato Regional Council to take fresh water exceed allocation limits for much of the region.

By mid-2016, more than three quarters of the region will have its surface water bodies fully allocated during summer.



SUMMER
IN SUMMER MORE WATER IS TAKEN, PUSHING OUR FRESH WATER RESOURCES CLOSE TO THEIR LIMITS.

WINTER
IN WINTER MORE WATER IS AVAILABLE.

1.2.2 IWI RIGHTS AND INTERESTS

The current freshwater allocation system implemented by regional councils is founded on the Water and Soil Conservation Act (1967) extinguishing common law rights to water and reserving to the crown, the sole right to take and use natural water. This has created a situation where iwi rights and interests have not been expressed and have been the subject of Treaty of Waitangi claims. Many claims have historically focussed on management and not ownership of the resource and as a consequence in the Waikato region, Treaty of Waitangi settlements for the five Waikato river iwi are completed and that of the Hauraki Collective have been initiated. This is not to discount ownership as a 'live' interest to iwi.

Of relevance is the recognition by central government prior to the partial sale of state owned electricity generation companies (nationally significant freshwater users) that iwi do have rights and interests akin to 'ownership'. This has prompted further exploration with direct discussions and negotiations between iwi and central government ministers. Discussions have two foci, the state of the freshwater resource and the ability for iwi to access it to derive economic benefit.

The latest development is that the second part of the WAI 2358: National Freshwater and Geothermal Resources Claim to the Waitangi Tribunal is investigating whether the 1967 Act did extinguish iwi rights and interests with respect to water and this will have far reaching impacts on the way freshwater resources will be managed in the future. For example, the need to create 'headroom' in over allocated catchments will question the perpetuation of the first-in-first-served convention through grand parenting of existing allocations.

Freshwater Iwi Leaders Group

The Freshwater Iwi Leaders Group was formed in 2007 to advance the interests of all iwi in relation to fresh water through direct engagement with the Crown. The group comprises the leaders of Ngāi Tahu, Whanganui, Waikato-Tainui, Te Arawa and Tūwharetoa and reports regularly to all iwi.[5]

In September 2014, the Iwi Leaders Group commissioned Sapere Research Group to prepare a series of reports (produced over the Dec 2014-Jun 2015 period) to determine the value (benefits and costs) of an iwi allocation of freshwater in the context of a stronger rights-based regime like the fisheries Quota Management System model. This was undertaken to assist the Iwi Leaders Group to engage with the Crown (and key stakeholders) and discuss the allocation of freshwater to iwi.[6] In addition, during the High Court litigation on the mixed ownership model case, the Crown outlined a commitment to address iwi/hapū rights and interests in fresh water.[7]

The Government is reluctant to fully switch from a consents-based regime to the rights-based trading advocated by Sapere, but have left some scope for discussions at a local level (catchment by catchment for example), to explore potential pricing tools and mechanisms.[8]

Discussions between Ministers and the Iwi Leaders Group around a common approach continue, with proposals being developed through such engagement. Both parties acknowledge the proposals do not address all aspirations of iwi/hapū, nor does the engagement represent all iwi/hapū/whānau perspectives.

Central Government's position - the freshwater allocation work programme

The terms of reference for the freshwater allocation work programme state that the programme will take account of the following bottom lines.

- Nobody owns freshwater.
- No national settlement favouring iwi/hapu over other users.
- Allocation determined catchment by catchment based on resource availability, efficiency of use, good industry practice and a positive contribution to regional economic development.

The Government's position is that no-one owns fresh water – it is a resource that we must look after for the benefit of all New Zealanders. At the same time, our freshwater management system can be improved to recognise and provide for iwi and hapū rights and interests. From the Government's perspective this means ensuring:

- freshwater management gives effect to Te Mana o te Wai
- the relationship of iwi and hapū with, and values for, particular freshwater bodies is recognised
- iwi and hapū are able to participate in decision-making about fresh water in their rohe
- marae and papakāinga have access to clean, safe drinking water. [9]

Proposals

A number of proposals have been put forward for discussion by the government as part of the next steps including:

1. Te Mana o te Wai in freshwater management
2. Iwi and hapū relationships with, and values for, water bodies
3. Recognition of relationships
4. Recognition of iwi and hapū values
5. Participation in freshwater decision-making
6. Enabling iwi and councils to agree how to work together
7. Water conservation orders
8. Implementation support
9. Clean, safe drinking water for marae and papakāinga

[5] http://iwichairs.maori.nz/our-kaupapa/fresh-water/

[6] http://iwichairs.maori.nz/wp-content/uploads/2015/07/FINAL-DRAFT-Freshwater-Regional-Hui-Presentation-August-2015.pdf

[7] http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/Freshwater%20Allocation%20Work%20Programme%20%20Terms%20of%20Reference%20and%20Appointmen....pdf

[8] http://www.stuff.co.nz/national/politics/67700797/Maori-in-freshwater-bid

[9] http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/Freshwater%20Allocation%20Work%20Programme%20%20Terms%20of%20Reference%20and%20Appointmen....pdf

1.2.3 CONTEXT

The current state of regional fresh water can be seen as a result of ad hoc management in response to issue driven directions from central government and a preference for economic development that competes with an incomplete understanding of site specific environmental limits. We have pushed the economic boundaries to the extent that the region's natural environment has lost its capacity to support the chosen economic direction at all times (particularly during times of stress such as droughts and floods) and reduced environmental quality for social opportunities and cultural use. The challenge for the Waikato Regional Council is that we don't have a clear understanding of how close we are to, or how far we have exceeded the carrying capacity of the region's fresh water now and into the future. There is an urgent need to gain such understandings in order to prevent over capitalisation and the creation of stranded economic assets at both the property and processing level.

In the urban areas, we have designed, located and built settlements with little consideration of the disruption these areas make to catchment systems. The operative Regional Policy Statement promotes hydraulically neutral developments, but these do not always cover the effects of historic urban structures and connecting infrastructure on fresh water. In the process we have accelerated pathways for contaminants to be concentrated and directed towards surface water bodies through a combination of built infrastructure and modified natural drainage patterns. The imperative has not been to reduce the contaminant load to receiving waters, but to get rid of the additional water by modifying the natural drainage systems to achieve this.

This is changing for developments in new areas (greenfields) and for large scale inner city developments (brown fields) but for small scale intensification (infilling), this poses a problem and compounds the issues of overwhelming the existing drainage infrastructure. The issues are further exacerbated by the current push for available and affordable housing and the central government direction of creating urban development authorities which have the express purpose of providing for urban social and economic requirements by over-riding freshwater management and potentially compromising future safety from increased climate change effects.

In rural areas, we are starting to recognise that we are storing up problems for the future. The evidence is now starting to show the effects of land use practices 50 plus years ago and we know that this is just the beginning as pastoral farming has intensified since that time.

Under the Resource Management Act (RMA) and sub-ordinate National Policy Statement for Freshwater Management (NPS-FM), we are also required to have regard to the future effects of a changing climate. This will affect the demand for fresh water and (through changes in availability) the ability of fresh water to meet current demand as well as the legacy demand of past land use effects. These will be different depending on season and location. It will require a more sophisticated management regime than we have the data and systems to currently support.

[9] http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/Freshwater%20Allocation%20Work%20Programme%20%20Terms%20of%20Reference%20and%20Appointmen....pdf

1.3 REGIONAL SITUATION
TŪĀHUA Ā-ROHE

This section summarises the characteristics of the region's surface and groundwater. It identifies understandings of the effects of current land use and the potential for future agricultural, industrial and urban demands. It also provides commentary on the reasonably foreseeable effects of climate change on both supply and demand. A more complete understanding is found in the *Let's Talk Water* Technical Support document.

Waikato region has a diverse geology and topography and land use that creates spatial differences in water yields. Seasonality also affects freshwater yields with water body characteristics which will change and potentially become less predictable into the future as projected climate changes to meteorological drivers become apparent.

The changing combinations and permutations of spatial and changing temporal factors will, in the future, require a move to a more dynamic allocation system. Discharge volumes and quality will need to be instantaneously matched to the capabilities of local receiving environments (water bodies within Freshwater Management Units) through flow weighting allowances, finely-tuned seasonal restrictions and a potential pricing structure that incentivises activities within environmental limits. We will need a more comprehensive information management system to support real-time dynamic management.

1.3.1 SURFACE WATER

The total out-of-water-body regional surface water use (including irrigation) is 1.7 million m3 per day. Nearly half of this is for irrigation of pasture and crops.

Regular monitoring of the water quality of surface water provides an indication of catchment responses to past and current uses, and of the success of the present water management regime. The results are not encouraging as they show a decline in water quality highlighting the need for a change in the way water is managed, and by implication, the way land is used throughout the region. These worsening surface water conditions, particularly for total nitrogen, indicate that in some catchments our past (and by extension current) water management is not working. This is not because of a lack of ambition. It is because we are now approaching real ecological limits and we are effectively asking more of freshwater ecosystem services than ever before.

The current regulatory approach of the RMA has worked well when managing activities (take and discharges) directly to water. We now need to manage the freshwater resource indirectly by managing land uses. This will require a new approach.

Lake Taupō is a significant natural storage of surface water for the Waikato River catchment and is primarily managed for hydro-electric generation. This could be extended to ecological support for the Waikato River during times of stress, (low flows). No similar surface water storage influences the Hauraki Plains river systems. The headwaters of the Waihou River in the east of the Hauraki Plains is supplied year round by pristine spring water flowing from and through the Mamaku Plateau. This is natural and is not able to be artificially managed. It is, however, vulnerable to contamination.

The quality of Waikato region's surface water have changed over the last 20 years, despite point source discharges being rigorously controlled. Most notable is an increase in total nitrogen from most sites which is an indicator of pastoral intensification. Of particular concern is the time lag it takes for the effects of land use intensification to become measurable in the region's surface water. It is understood that this may be in the order of many decades, meaning that the diffuse source of nutrient contaminants to surface water reflect the land use activities of last century. This means that there is a considerable 'load to come' (see Legacy issues section 1.3.8).

Seasonality is important for water use. Most of the region's surface water are at or near full allocation during the summer with less allocation stress during the cooler winter months. For different reasons, the Lake Taupō catchment (hydroelectric generation) and the Piako/Waitoa catchment (cumulative effects of permitted activities associated with pastoral farming) surface water systems are fully allocated all year round.

1.3.2 CROSS BOUNDARY WATERS

There are a number of regional freshwater entry and exit points that need to be considered in any understanding of the region. Lake Taupō receives a 20 per cent annual increase in flow from the diverted waters of the Whanganui and Rangatikei catchments through the Tongariro Power Scheme. Water is collected from the:

- western side of Ruapehu, Ngaruahoe and Tongariro mountains that originally formed the catchment of the Whanganui River
- southern side of Mt Ruapehu that originally formed part of the Whangaehu catchment
- eastern sides of the three mountains that originally contributed to Tongariro River (this water is the only component that would historically have contributed to the Waikato region)
- western side of the Kaimanawa Ranges that historically drained into the Rangitikei catchment via the Moawhango River and Mangaio Stream.

The Kawa aquifer is critical to the continuation of horticulture and in particular, market gardens that spans the Northern Waikato/Auckland regional boundary in the vicinity of Pukekohe. The Mamaku Plateau is a considerable source of spring water to both the Waihou River and potentially to streams in the western Bay of Plenty.

In addition to the 'hidden or virtual' water embodied in the export products from the region, water directly leaves the Waikato River catchment in the north from the following three consented activities.

- Watercare's take from the Waikato River at Tuakau.
- Watercare's dams on the south side of the Hunua Ranges.
- New Zealand Steel's Glenbrook Mill which discharges into the Manukau Harbour.

1.3.3 ROLE OF WETLANDS

Ninety five per cent of the region's wetlands have been drained for pastoral agriculture. Typically, these were groundwater discharge zones in lowland areas which would have attenuated catchment responses to high flows and land derived contributions to estuaries and coastal waters. The interconnections between surface water and groundwater and the role of wetlands across the region are not well understood and require further work to determine spatial and dynamic implications.

Seepages and small and ephemeral wetlands support unique flora and fauna and provide a range of ecosystem services. These can include:

- denitrification (reducing nitrate levels in surface water)
- carbon sequestration (via the accumulation of plant matter)
- filtration and storage of particulates from surface flows (including organic and inorganic matter, as well as phosphorus and bacteria)
- attenuation of surface water flows.

The ability of small wetlands in the upper reaches of water catchments to delay the release of intercepted and stored water in times of stress (drought) has been inferred from anecdotal observations by landowners. These benefits of wetlands contribute to increasing the resilience of catchments to projected climate impacts. The value of the ecosystem services provided by seepages and small and ephemeral wetlands in upper catchment valleys has not yet been quantified, regionally or nationally, presenting a significant knowledge gap.

1.3.4 CLIMATE CHANGE INFLUENCES ON FRESHWATER SUPPLY

Climate change projections are expected to change the frequency, location and intensity of rainfall globally, nationally and within the region. This will change the viability (costs and potentially location) of water dependant activities. Projected changes in meteorological conditions include an expectation of less rainfall across the region overall, but the rainfall we do receive will arrive quickly in the south and west of the region and in the Coromandel ranges.

Projected climate change conditions suggest receiving water bodies may be less able to assimilate the effects of contaminants to water bodies in the future as warmer waters hold less dissolved gasses (eg oxygen). This may be interpreted as more *in situ* demand from the water body. Land use change that reduces the buffering and flow attenuating ability of deeply rooted trees and substitutes that for shallow rooted pastures, deprives the remainder of the catchment of resilience to projected changes in climate (both flood and drought events).

Climate change projections of sea level rise indicate a decrease in the region's freshwater resources in the lower reaches of major river systems, particularly in the Hauraki Plains. Sea level rise will place current infrastructure at risk and prompt the inland migration of the coastal marine area. This will require a transition of the boundary between fresh water and the coastal marine area with a consequential spatial reduction of the regional freshwater resource.

1.3.5 CATCHMENT INFLUENCES

Catchment responses to meteorological events have changed and are dynamic. The changes in catchment responses from past land use changes and to intensification of present uses are not likely to have reached equilibrium and the effects are not fully understood. We do know that pastoral land use in upper catchments has created fast responding catchments that require considerable investment in flood mitigation infrastructure in historic floodplains. This is compounded by the projected future effects of climate change including the future distribution of rainfall.

Increased land use intensification (rural and urban) has degraded the quality and changed the habitats of lowland waterways to the extent that many are no longer fit for swimming and as sources of food, nor have the ability to maintain conditions for life. This compromises our international environmental credentials and our increasingly valuable tourism industry. It is specifically covered in the Vision and Strategy for the Waikato River.

1.3.6 GROUNDWATER

Groundwater is largely derived from rainwater that has travelled through the soil to underground aquifers, making up approximately 90 per cent of the region's freshwater resource. Groundwater and surface water are recognised as different bodies of the same resource. Until a better understanding of the linkages between the two water bodies are known and uncertainty reduced, the allocation from groundwater is conservative. When too much groundwater is taken:

- the level of the groundwater left (water table) is lowered
- springs and seeps can dry up with less water flowing into streams (during extended dry periods, the base flow of streams are maintained by groundwater)
- land may subside
- there is increasing competition for use.

FAST FACT

We're already reaching our allocable water limits, but our population continues to increase.

By 2043, Waikato's population is projected to grow by a third, largely in Hamilton and the surrounding Waikato and Waipā districts.

Growth will put further pressure on our finite water resource, which during summer is already nearing its limits in these districts.

1.3.7 WAIKATO IWI AND HAPŪ REGIONAL PERSPECTIVES[10]

Te Mana o te Wai

Te Mana o te Wai is a core concept for fresh water. It encompasses the integrated and holistic health and well-being of a water body. It represents the innate well-being and vitality (mauri) of a water body and its ability to provide for the health of the water (te hauora o te wai), the health of the environment (te hauora o te taiao), and the health of the people (te hauora o te tangata).

The health and well-being of our water bodies is integral to the health and well-being of our land and other resources (including fisheries, flora and fauna) and to our health and well-being both as communities and as a nation.

When Te Mana o te Wai is given effect, the water body will sustain the full range of environmental, social, cultural and economic values held by iwi and the community. This is a concept that is relevant to all New Zealanders.

The NPS-FM currently refers to Te Mana o te Wai. However, feedback from regional councils and the Freshwater Iwi Leaders Group through over 100 regional iwi hui is that the status of this reference is unclear and provides ambiguous and inadequate direction.

More clarity will be provided in the NPS-FM to ensure that the concept of Te Mana o te Wai is implemented in a way that is meaningful for the whole community and is used as the basis for community discussions on freshwater management.

Rights and interests for iwi, hapū and marae

Iwi, hapū and marae have social, cultural, spiritual, environmental and economic aspirations for the use of fresh water. The discussions need to focus on providing for the rights of iwi to satisfy iwi interests and aspirations. Iwi, hapū and marae interests in water range from the innate responsibility to care for their water bodies, through to aspirations to generate revenue through the use of water. During discussions in relation to an allocation of water, a key barrier to progress is the provision for an 'iwi allocation' to achieve iwi, hapū and marae aspirations.

Iwi, hapū and marae are not just 'environmentalists', they are entrepreneurs, commercial operators, farmers, tourism operators, forestry managers and resource users. There is a range of mechanisms that could be used to provide iwi with access to water and resolve the nature of rights and interests in water.

Iwi acknowledge that there are existing rights for current consent holders, and do not seek to have those existing rights removed. But iwi do not support that the right be perpetual or expected to be held in such a manner.

Timing to provide an allocation of water to iwi, hapū and marae is likely to be the biggest concern, along with the perceived costs to existing right holders. They are happy to discuss this with all sectors that use natural resources. It is the view of iwi that the following gains would arise for existing resource consent holders following the resolution of rights and interests for iwi, hapū and marae:

- Reduced uncertainty for existing consent holders.
- Reduced conflict around the nature of rights for all users.
- Increased ability to transfer to higher value use.
- Improved investment opportunities.
- Potential for longer term consents.
- Easier capital formation.

Iwi, hapū and marae also understand that the Waikato region is limited in the amount of water available for extraction and use. They are supportive of seeking new ways to generate 'new water' and create 'headroom' that will allow iwi, hapū and marae to unlock the potential economic gains from their lands, including holding an allocation of water for use. As long as the health and wellbeing of water is provided for first, and that everyone (all users) contribute to that goal, then they will consider new ways to access water.

What do iwi, hapū and marae seek?

Iwi, hapū and marae seek the following to enhance their relationship with water and provide for some recognition of their rights and interests:

1. Recognising and providing for the health and wellbeing of all water bodies.
2. Fulfilling their role as kaitiaki through the support of appropriate tools, bylaws, regulations and other legislation.
3. Holding governance roles on council, sub-committees and catchment services.
4. Supporting councils to advocate local solutions with central government.
5. Having priority access to water, fisheries, flora and fauna for customary and contemporary purposes and that these activities are classified as permitted activities, subject to any reasonable mutually agreed regulation of such activities.
6. Providing clean water to marae and papakāinga.
7. Protecting waterways of significance (including wāhi tapu associated with them).
8. Returning the title of waterways to iwi and hapū.
9. Supporting their capacity building to engage in local policy and committees.

Iwi also seek the following to enhance their ability to derive an economic benefit with water:

1. An allocation of water for use as determined by iwi, hapū and marae.
2. An allocation that provides for nutrient discharge to water.
3. The ability to trade, transfer, store, hold and use the water rights as determined by respective iwi, hapū and marae (in relation to the above two points).
4. Engagement in the development of policy to achieve 'headroom' and create 'new water' for iwi.
5. To be a priority partner in regional infrastructure development.

In the Waikato region we have moved in a positive fashion towards achieving some of the above. For example, we have seen the introduction of co-management arrangements, fisheries bylaws, and implementation of iwi management plans, iwi commissioners and inclusion of iwi, hapū and marae values into policy development. In this sense, the Waikato region and iwi are pioneers in this space. There was great opposition to these arrangements at that time, but iwi and council believe that the co-management arrangements have created benefit.

Iwi, hapū and marae believe in creating their own destiny, instead of relying on central government to provide direction.

Solutions can be created locally

Iwi, hapū and marae look forward to finding these solutions alongside the community, business sectors and local government.

[10] https://www.waikatoregion.govt.nz/assets/PageFiles/40487-lets-talk-water/Freshwater%20technical%20summary.pdf

1.3.8 HISTORIC (LEGACY) DEMAND

There is an ongoing requirement for surface water to be available at times of low flow to provide for the assimilation of diffuse nutrient inputs from historic land use change and land use intensification. The impact and future duration of the demand is unknown and will need to be modelled geographically in combination with other projected variables such as future precipitation to estimate the extent of this 'locked in' demand.

This historical use will create an ongoing legacy affecting future assimilative capacity of the region's freshwater bodies.

1.3.9 CURRENT DEMAND

The current regulatory allocation regime does allow for transfers of allocated water, but this is bureaucratic and infrequent with the best example coming from the matching of water requirements from the industries clustered at and around Waitoa in the Hauraki Plains.

Seasonality is important – both for irrigation and *in situ* uses. When working to ecological limits it is important to consider the intra-annual variability and address 'worst-case' situations rather than manage/allocate on the basis of annual averages.

The demand for high *in situ* water quality is often seen as a constraint on pastoral farming. This need not be the case, however, if the product is low volume, high quality and targeted to high value markets. It appears it is more a constraint to high volume commodity production.

Auckland receives 60 per cent of its annual water supply from the Waikato catchment – in 2015, 37 per cent came from the Mangatangi and Mangatawhiri dams and a further 23 per cent from the Waikato River.

1.3.10 FUTURE DEMAND

Under current projections, more water will be required to support current and projected population growth in Auckland. Auckland, though Watercare Services Ltd, currently has an application pending to more than double its existing allocation from the Waikato River.

Tourism is one of New Zealand's largest export industries and on a national scale recently exceeded the dairy industry in terms of foreign exchange earnings. It directly employs 4.7 per cent of the New Zealand workforce and indirectly employs a further 3.1 per cent. Hamilton and Waikato Tourism's Tourism Opportunities Plan, released in 2016, identifies the Waikato River as its premier game changing project, including:

- improving visibility and accessibility
- focussing on water-based activities and river edge accommodation.

This can be expected to lead to an increased expectation of safe water experiences, including navigability of the Waikato River

Demand for water can also be expected to change with a changing climate. This may initially be in the form of businesses seeking to re-establish historic rainfall patterns through make up irrigation.

Due to the time lag between effects from land use change and current use intensification, there will be a legacy of demand for *in situ* assimilation capacity well into the future. The magnitude of this is unknown and will need to be modelled on a geographic basis.

Asymmetric population growth within the Waikato region will alter future demand for water with those rapidly expanding populations (Hamilton City, Waikato and Waipa districts) needing to become ever more efficient with use and those with decreasing populations becoming challenged by the increasing costs of servicing fewer people.

Expansion of Auckland urban areas into the Pukekohe area is already displacing market gardening into the Matamata area with the expectations of increasing population and for municipalities supplying potable water and water for industries. A waste water assimilative demand, on the already stressed Waitoa and Piako rivers could also be anticipated.

High and increasing costs of doing business in Auckland along with high population growth have created conditions for businesses to investigate relocation to the Waikato region where reverse sensitivity issues can be more cost-effectively managed. Investment will increase demand on water resources.

FAST FACT

- The amount of water we can take from waterways is limited, in part, by the amount of water that must remain to keep them sustainable.
- We need to leave enough in our waterways to keep the ecosystem healthy as well as meet water quality standards so people can gather food, swim and enjoy the connection they have.
- We also need to leave enough water to dilute pollutants.
- Unless we are enabled to more actively influence the way land is used, water quality will continue to decline.

1.4 STRATEGY DIRECTIONS
TĀ TE RAUTAKI ARONGA

This strategy recognises that although the current regulatory tools have usefully served the country in managing freshwater takes and direct discharges to fresh water, they are 50 years old and the management imperative has shifted to include diffuse contamination of fresh water from land use. While regulation continues to have a valuable role, it is now expected to address all fresh water contamination issues. Regional councils don't currently have access to the full range of policy options to change behaviours and are left with little option but to try to make carrots from sticks. This reduces the effectiveness of those sticks, which ultimately reduces community trust in the council. In short, the current range of policy options are no longer fit-for-purpose and are unlikely to be able to catch up.

Access to new policy options, such as pricing to increase efficiency of use and to transition to higher value uses of fresh water, is a key element of this strategy. Proposed actions are geared towards transformation and an orderly transition to a new allocation regime rather than perpetuating the status quo.

Concern has been expressed as to the impact of the first-in-first-served convention for freshwater allocations, not only as a constraint to the economic aspirations of iwi, but also for other new entrants with potentially higher value and more efficient water use. Grand parenting of freshwater allocations (either of abstractions or discharges) does not assist transformation but tends to cement the status quo, by doing the same thing with only minor improvements. The strategy will provide choices for land owners for the use of their land in the future and through the use of financial incentives should not lock them into existing uses, the effects of which are increasingly becoming intolerable to the predominantly urban population.

Opportunities for land use change include environmental engineering such as the recreation of wetlands which assist the catchment hydrology and water quality outcomes physically (slowing freshwater run off and promoting groundwater recharge but also chemically through denitrification). Re-creation of wetlands also has other co-benefits including as a carbon sink and for enhanced biodiversity.

The strategy recognises that monitoring is generally showing regional water bodies are degrading and are being impacted by increasing contaminant loads that reflect the assimilative demand now being placed on flowing waters. In many areas, these are a legacy from historical land uses which have intensified over the recent decades. This means that for some contaminants (eg nutrients such as nitrogen) we have already pre-allocated the assimilative capacity of water bodies for many decades into the future.

In degrading locations, there is no scope for additional allocations if the national swimability standards and the wider requirements of the Vision and Strategy (for Waikato river catchments) are to be achieved. In such situations the challenge is to identify the size of the resource at specific locations and time of the year (flows and levels) and then match appropriate uses (takes and discharges) and make up storage to achieve the agreed freshwater objectives. This is of particular relevance to the water uses that peak in summer and to those year round uses that both have an impact during low summer flows when waterways are at their most stressed.

The impacts of future meteorological changes need to be understood and the locations of projected changes identified. It is important to know where current land use will not be viable in its present form without considerable transformation (eg increasing groundwater levels and salt water intrusion in the lower Hauraki Plains).

It is also important to understand the impact of unrelated central government policy responses to climate change and the impact these could have on decisions regarding freshwater use. The strategy identifies alignment of central government policy regarding a price on carbon as a key factor in progressing land use changes needed to address freshwater quality.

The strategy contains a number of key 'game-changing' actions that reflect a maturing of the relationship between the Waikato Regional Council, the regional community and central government ministries and departments. It is moving from a semi-contractual relationship where the Waikato Regional Council acts as an agent of central government to one where the relationship between the region's resource base and the community's social/cultural expectations and economic aspirations comes to the fore. That is, moving from implementing legislation to the extent that the regional community is willing to fund though Annual Plan appropriations to setting the agenda and seeking legislative support for a new regional direction.

This strategy proposes that this relationship move towards one of supporting the regional community to achieve social and economic objectives by ensuring the natural resource base can meet these, all the while being mindful of the Waikato region in relation to the national and international situation. This is the strategic direction of the 2016 – 2019 council.

The strategy will, over time, transition the Waikato Regional Council's freshwater management from:

- a series of actions executed by organisational units, each supported by bespoke information requirements and each fulfilling clear, but often competing national directions frequently limited by the available legislative tools; to
- one that reflects the integrating role fresh water has in the physical world as well as with respect to the economy and the social and cultural needs and expectations of regional citizens and businesses.

It will do this by including the implementation of this strategy as a joint responsibility of all Waikato Regional Council Directors (joint freshwater champions) to oversee the construction of integrated databases capable of being used in a variety of ways, including to:

- monitor the effect of past actions
- model the projected impacts of future demand and plausible resource conditions (legacy effects and climate change projections)
- be available to provide evidential support for an expanding range of policy initiatives.

The strategy will transition the management of fresh water from a reliance on direct regulation of the resource, to one which is complemented by economic instruments to influence decisions that indirectly affect freshwater quality with increasing impact.

It recognises the value of existing freshwater management work, but that the regulatory tools are no longer fit-for-purpose for the bigger job that the Waikato Regional Council must now do.

In addition to the direct allocation role, a wider range of policy options are needed to influence activities that indirectly affect freshwater conditions. This reflects the changing influence of point sourced discharges to diffuse effects of intensified land use. These are compromising the allocation choices for current and future generations. Economic and financial policy

methods need to work seamlessly with regulatory allocation methods to achieve commonly agreed freshwater outcomes.

The strategy does not propose to identify which policy options are best used and where. This is the role of multi-stakeholder processes that focus on the site specific management issues within each identified Freshwater Management Unit (the planning process).

The role of this strategy is to ensure that future decision makers have access to the wider range of policy options in recognition of the wider scope of the job.

A potential model to inform future freshwater management work would use those successful elements of the existing process coupled with additional tools. Recently the collaborative aspect of multi-stakeholder projects has been limited to the regulatory activity of setting objectives and rules. There is no opportunity for multi-stakeholder processes to determine and align the level of works required to achieve freshwater quality outcomes and to determine the use of any funds generated through the use of economic instruments unless. Alignment of Freshwater Management Units with catchment zones would assist this transition.

The following figure illustrates a potential decision-making model that would combine direction setting with an integrated mix of policy levers using differing legislation.

The benefits of this model is that the multi-stakeholder approach can be used to integrate all policy levers so that within each management area (Freshwater Management Unit) the economic instruments are aligned with the level of support for catchment enhancement works and the two are supported by a clear and easily enforceable regulations. Such a model would need amendments to legislation that would require decision-makers under the RMA, LGA and whatever legislation is enacted to provide for economic instruments to reflect upon and give due weight to the direction provided by the multi-stakeholder process. An existing model already exists with respect to the special relationship between the Auckland Council's Unitary plan (prepared under the RMA) and the Auckland Plan (s79 Local Government (Auckland Council) Act).

To achieve its strategic priorities, the Waikato Regional Council needs to refocus its internal organisation with an alignment of freshwater matters that are spread across all the three operational directorates:

- Science and Strategy
- Integrated Catchment Management
- Resource Use; and
- Community and Services and the Finance Office (both in a supporting role).

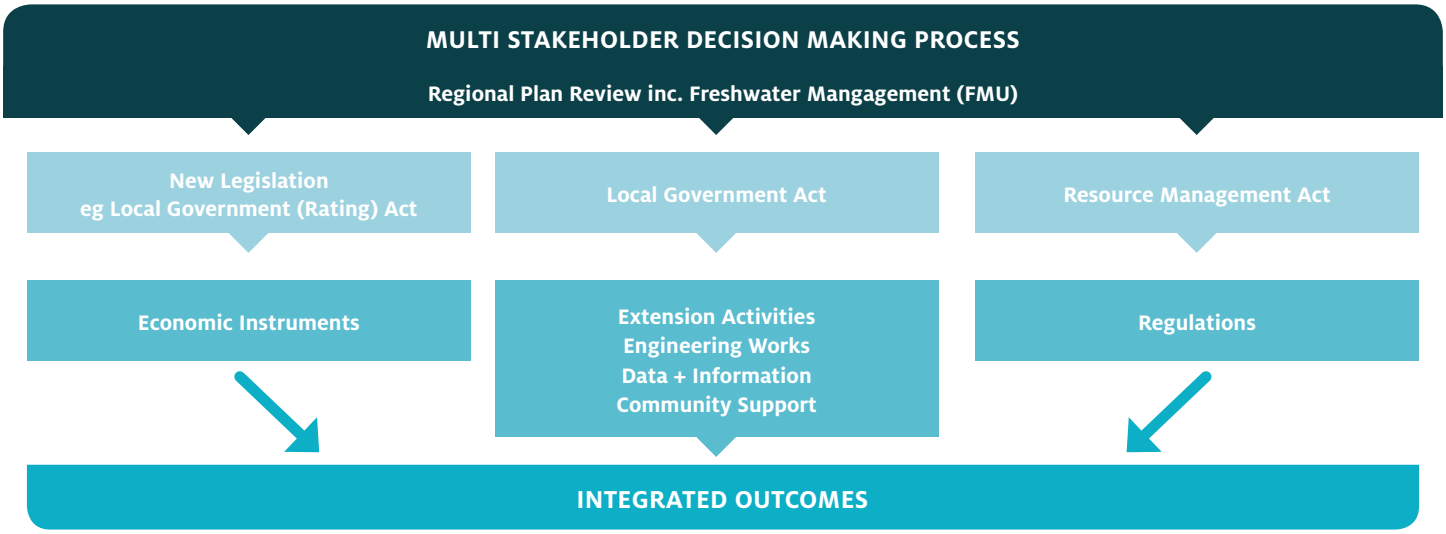
This whole organisation-directorate alignment of freshwater activities can be achieved by upgrading and re-invigorating the Land and Water Portfolio facility and by reporting to the Executive through the Office of the Chief Executive. This would also allow for consistent external expression on freshwater management by providing advice and support to the Chief Executive and the Council Chair.

Organisational consistency of freshwater management would be enhanced by aligning whole Freshwater Management Units with existing catchment zones and this would also recognise the social and economic relationships communities have with their local freshwater resources, and the review of corporate databases that refines, refocuses and fills data gaps.

The present understanding of Waikato Region's natural resources, in particular the extent and quality of water resources, enables the current discussion but does not lead to solutions in all areas. Meaningful water resource management is dependent on a sound evidential base relevant to and optimised for each Freshwater Management Unit. It is not until we develop comprehensive databases (accounts), and can model conditions into the future for specific areas that we can have a rational method to prioritise actions and the mix of policy responses needed. Until that time, expert judgement and pragmatic responses on the basis of ease of achievement and the willingness of partners to participate will determine the order of action.

It is conceivable that in time, modelling will show that in certain areas water bodies will never be deflected from their current trajectories, having already reached a tipping point and therefore additional investment will not be productive. It is also conceivable that modelling will show that even with investment and much social disruption to existing uses, the time to achieve restoration may be so long that other influences become dominant (eg saline intrusion into areas of the Hauraki Plains susceptible to sea level rise).

Many of the actions can be executed under present legislation, but are not easily implemented either without access to more innovative funding mechanisms, or they would be more successful as part of a balanced response package, some of which may require legislative changes. In addition, the choice of policy options and the degree to which they are applied will vary with the specific issues to be addressed, as well as the physical, social and economic characteristics of each Freshwater Management Unit.



1.5 STRATEGY ACTIONS
TĀ TE RAUTAKI MAHI

Part two describes the actions needed to implement the strategy. The timing of proposed actions reflect a sense of urgency associated with the community interest in this topic. As a result, an aggressive implementation timetable is proposed with much of the investment (all three themes) would occur at the start of the next 10 year long term plan. An estimate of staff resources and budget has been made for new positions and for new work. This is indicative only and further investigation will be required to fully scope these actions. It is recognised that some activities already underway will need to continue and is essential to support new work. These activities have been identified but have not been costed to avoid double accounting.

The following table summarises resource estimates for the additional work needed to implement the strategy over the next 10 years, after which the actions will be reviewed and/or updated to reflect changing understandings, learnings and resource use pressures.

The investment profile reflects parallel processes in the first three years to:

- combine with regional partners, sector peers, communities and stakeholders to advocate for and secure access to new policy options from central government. This would also form part of an enhanced regional/central government relationships programme for regional development and green growth
- review and upgrade corporate databases and build an integrated regional database system.

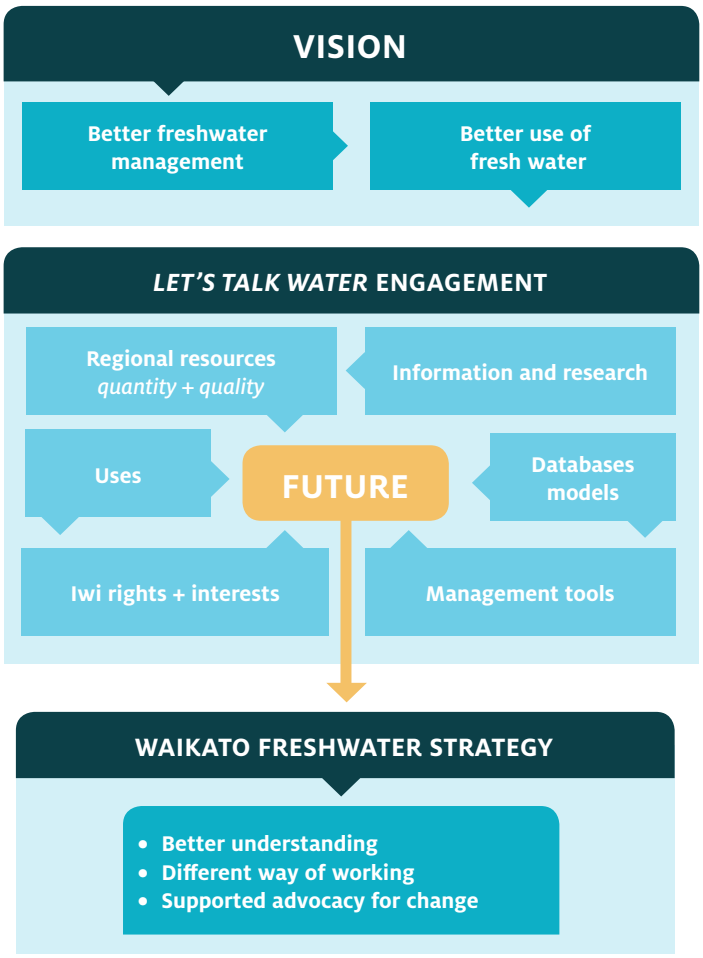
This strategy will need periodic review and refinements as market and technological drivers and resource characteristics change, both from external influences and as a consequence of the exercise of new management opportunities as defined in this strategy (ie successful execution). Evaluation and review is covered in Part Three of this strategy.

INDICATIVE COSTING SUMMARY OF ACTIONS

FY YEAR		2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
FOCUSED ADVOCACY	STAFF TIME (HRS)	200	180	180	80	80	80	850	600	80	80	80
	COST ($000)	33	8	8	-	-	-	100	150	-	-	-
SMARTER METHODS	STAFF TIME (HRS)	640	1,650	900	150	150	900	900	750	300	300	300
	COST ($000)	450	1,950	1,400	1,100	500	250	250	250	250	50	50
BETTER INFORMA-TION	STAFF TIME (HRS)	4,050	4,400	7,500	4,950	4,350	3,900	2,400	2,400	2,400	2,400	2,400
	COST ($000)	550	2,050	2,450	2,900	2,475	1,650	700	650	650	650	650
TOTAL HOURS		**4,890**	**6,230**	**8,580**	**5,180**	**4,580**	**4,880**	**4,150**	**3,750**	**2,780**	**2,780**	**2,780**
TOTAL COSTS ($000)		**1,033**	**4,008**	**3,858**	**4,000**	**2,975**	**1,900**	**1,050**	**1,050**	**900**	**700**	**700**

1.6 PROCESS TO DATE
TE TUKANGA Ō MOHOA

This strategy builds on feedback received from the 2016 *Let's Talk Water* engagement process and the responses from the seven 'conversation starter' questions in the engagement document which informed the definition and grouping of issues and opportunities. The *Let's Talk Water* initiative, which addressed the freshwater resource and its management in a holistic way, has been widely accepted and welcomed. Many parties have commented that this should have been done years ago. The relationship between the *Let's Talk Water* engagement and the freshwater strategy is summarised in the following diagram.



The following summarises the key messages received from the meetings and written feedback from the *Let's Talk Water* engagement process. [11]

Summary of key messages

- New policy tools should not replace existing management methods but should be available to augment the current regulatory and educational approaches.
- Water management is now largely land management.
- From historical monitoring activities, we also have a good understanding of the current state of our freshwater resources (recognising that in many areas this reflects the effects of land use back to the 1960s) and of the current use.
- Good information and accounting of water resources is essential. Databases/systems must be transparent, trustworthy, accessible and capable of clear interpretation by the public.
- We need to know a lot more about the links between water bodies (groundwater and surface) in identified locations.

[11] Is summarised as part of the Issues and Opportunities document with written feedback available at: https://www.waikatoregion.govt.nz/assets/PageFiles/41030/LTW%20feedback.pdf

- Recognition of the need for a wider range of policy options including education, (eg embodied water in exports, good management practices, and financial eg taxes, royalties and charges to complement regulations).
- Perception that regulatory tools are not being applied rigorously and enforced to the disadvantage of passive users and the tourism industry.
- Support for economic tools including pricing water but not for ownership, monetising water or for grand-parenting existing allocations.
- This is seen as an ongoing process - the strategy is an opening phase with a clear expectation of ongoing involvement in strategy implementation and freshwater management.
- Efficient use should be prioritised with the priority to reduce demand for water.
- Activities that suit the capability of land should be encouraged.
- An emerging understanding that most surface water bodies have already been allocated to the assimilation of contaminants from various sources and this is limiting future choices.
- Water storage (including the natural storage of Lake Taupō) is an opportunity that should be given more attention.
- A price on water supplied to urban users already creates a signal that should be available to provide awareness to users in urban situations.
- The opportunity to price fresh water taken from water bodies (volume) and required to remain in water bodies to absorb contaminants (volume) should be taken in addition to the price for administering use.
- We need a more detailed understanding of the future situation. In particularly, we need to be able to geographically model:
  - the legacy effects of past land use yet to come
  - projected changes in freshwater supply and demand as a result climate change
  - interactions between fresh water and other elements such as the economy (critical for inter-regional value)
  - location specific relationships between land use and resulting condition of our waterways
  - The effects of a range of current and potential public policy interventions including 'what if' scenarios and sensitivity analysis of central government's economic policy.
- There needs to be an orderly and planned transition to a new freshwater allocation and land use regime.

The Let's Talk Water initiative, has been widely accepted and welcomed.

1.7 THE CASE FOR CHANGE
TE TAKE ME PANONI
1.7.1 POLICY TOOLS ARE NO LONGER FIT-FOR-PURPOSE

There are three classes of policy levers available to influence and create behavioural change. These are positive incentives, regulations and information, colloquially known as carrots, sticks and sermons. For the last 50 years, regional councils and their antecedent bodies, the regional water boards, have managed freshwater allocation using regulations. This was appropriate at the time as many of the uses were from point source takes and discharges in need of controls. Irrigation was almost non-existent with the major impacts being the strength of industrial and urban discharges and the effects of sediments from land clearance which also has the effect of modifying stream and river bed habitats.

The situation is now very different with much of the assimilative capacity of freshwater bodies now being allocated to diffuse contaminants from intensive land uses. Regulatory tools are still needed to ensure takes and discharges are within the capacity of the freshwater resource, but they are very blunt instruments when attempting to influence behavioural changes and the actions of individuals on private land.

The following questions need to be asked.

- Is it rational to expect regulations to do all the work?

And more importantly:

- Can the regional community rely on regulations and subsequent compliance with enforcement to do all the work?

The Waikato Regional Council, in collaboration with communities, partners and stakeholders, along with the rest of the regional council sector has been innovative in using regulations to encourage rather than to regulate behaviour. The process of trying to make carrots out of sticks runs the risk of using policy levers for a purpose they are designed to address but are not particularly suited to. The issue then arises as to whether the effectiveness of a bright line regulation is diminished by turning it into a devolved negotiated requirement. It is clear that the transaction costs are increased and enforcement is problematic, but as yet there is little evidence as to effectiveness. This has the potential to create mistrust and reduced community confidence in the ability of the regulator to fulfil its functions. One of the universal messages from the *Let's Talk Water* engagement process was that regulations are no good without enforcement.

Because of their punitive effect, there are many checks and balances in the development and proposal of regulations linked to freshwater use. As a consequence, and depending on the degree of interest, these can take many years before they come into force. This is a direct reason for the high cost of RMA plans, and also for a reluctance to make changes to existing plans in response to changing conditions. Regulations are inherently inflexible and are best used when certainty is required. Attempts to impart flexibility in response to geographic and temporal changes can be left to site specific solutions but run the risk of developing ad hoc, de facto policy.

An allocation policy package that allows responsive options, such as economic instruments, to be used would be less likely to be out-of-date by the time they become operative and also likely to be flexible to adapt to changing conditions.

1.7.2 EVIDENTIAL SUPPORT

Databases have been developed in response to separate requirements under continually reviewed legislation - some are still print and physical file form, others are state of the art digital – by definition they do not 'talk' to each other. The way information is collected, stored, managed and used needs to change form one based upon a disciplinary understanding to a system that is readily available and able to be combined with other data to identify implications of past, current and future use.

There is a pressing need to complete and combine existing freshwater quality and quantity data bases so that we can connect these two dimensions of freshwater management. The resultant water quality is the outcome of how well water quantity is managed. Moreover, the increasingly contaminated state of some regional water bodies attest to the need to improve.

Some regional water bodies are degrading. These are being impacted by increasing contaminant loads reflecting the assimilative demand placed on water bodies. This is a legacy from historical land uses which have intensified over the recent decades. State of the Environment monitoring measurements reflect the effects of:

- current withdrawals of fresh water
- current point source discharges, storm-water and overland flow
- diffuse discharges from land uses many decades ago and which may be potentially a century ago.

FAST FACT

- The RMA was developed at a time of few resource constraints. Within the existing framework, there are few incentives for users to use water more effectively.

It is this latter influence that has emerged as a dominant factor and that has increased, particularly over recent decades. It has the potential to be the dominant factor influencing the quality of regional freshwater resource for many years into the future. It has been referred to as the 'load to come' and there is a pressing urgency to be able to quantify the effects so that we can establish the envelope of choices that future generations will be left with. This will require dynamic modelling of catchment/climate and historic land use type and intensity so that it can be included as a future allocation of assimilative capacity. Sole reliance on the measurement of freshwater quality will only ever tell us where we have come from – like driving by looking through the rear vision mirror. Models will give us an indication of what's ahead – they will never be as clear as the measured effects, but they should be able to give an understanding whether there is a bend or obstacle in the road as illustrated in the following figure.

This potentially means that we have already pre-allocated the assimilative capacity of some rivers for many decades into the future. Much of the influence comes during summer low-flows when demand is highest and when, in terms of ecological health, the waterways are at their most stressed. This creates a need to reduce use or supplement the natural low flows with stored water collected when it was plentiful, perhaps in the form of enhanced natural storage such as wetlands. In general, rainfall has the effect of increasing the assimilative capacity of waterways through dilution, unless the intensity of the inputs is sufficient to accelerate erosion and the transport of sediments. In such a situation, new problems are encountered particularly by in stream biota, through streambed modifications.

The key reason to review and combine freshwater databases is to allow future supply, demand and use scenarios to be modelled and explored in the knowledge of the ongoing legacy effects from past use. This will help define potential choices for future generations and ensure policy responses are proposed which are sensitive to and understanding of the dynamic situation. This is in contrast to the current situation of basing regulations that take on average eight years to be put in place and are expected to last for a further 10 years by measuring the state of current resource state which increasingly reflect historic land use many decades ago.

1.7.3 POLICY MISALIGNMENT

The declining state of freshwater resources and wider environmental degradation are a direct result of pursuing economic objectives supported by effective nationally driven financial policies and instruments that have outweighed the effects of local environmental regulations.

This lack of alignment has been compounded for years through the erroneous interpretation of Part 2 RMA which has only been recently been clarified by the Supreme Court in what has been come to be known as the King Salmon case.[12] The implications of a broad overall judgement approach to Part 2 RMA are akin to 'weak sustainability' where it is considered appropriate to trade off or balance economic, societal and environmental matters. This interpretation has always been problematic as the environmental effects have not been apparent and the technology has not been available to model the complexity of potential impacts.

These unintended consequences to freshwater quality are only now becoming obvious. It is considered unacceptable to large elements of society and to iwi and the realisation that we have committed the assimilative capacity of regional water bodies for decades to come. This leaves future generations with few choices regarding the use of freshwater resources. In short, it will take generations to clean up some waterways.

The policy misalignment is not just historic (eg state support for creation and support of pastoral farming following the Second World War), it has occurred recently in response to economic policy that collapsed the price of carbon following the 2009 amendments to the Emissions Trading Scheme. At the start of the first commitment period under the Kyoto Protocol, the price of NZ carbon emission units was sufficient to encourage retention of plantation forests in the south of the Waikato region.

Following the ability to buy and surrender much cheaper international units for emissions incurred and the removal of agricultural emissions from the scheme, approximately 22,000 hectares of plantation forestry was felled and converted into pasture in the upper Waikato catchment. This has the effect of not only requiring fresh water for irrigation of pasture but also demanding additional freshwater in receiving water bodies to assimilate the nutrient run off from the intensified land use. The recent social policy proposals to encourage housing in urban areas explicitly overrides regional freshwater regulations through the creation of Urban Development Authorities.

This strategy recognises that policy alignment is critical to achieve both regional and central government freshwater quality objectives as stated in the Clean Water: 90% of rivers and lakes swimmable by 2040 document. It provides a direction and a Waikato Regional Council position on future central government economic and social policy and invites regional partners, communities and stakeholders to join in promoting a pan-regional position.

[12] EDS Inc. v NZKS Ltd. [2014] NZSC 38 [17 April 2014]

Transitioning from measurement to modelling, hindsight to foresight.

1.8 WAIKATO REGIONAL COUNCIL STRATEGIC DIRECTION 2016 – 2019

TĀ TĀTOU RAUTAKI WHAKAMUA

The current degradation of regional fresh water has been assisted by a 20th century understanding that there is a balance to be had between social, economic and environmental aspirations. The environmental consequences of successfully pursuing compelling economic objectives coupled with effective policy initiatives for the best part of a century is now becoming apparent in the reduced state of our regional freshwater resources and their dependant aquatic biodiversity.

Moreover, the time lag between cause and effect means that the current state of our freshwater resources reflects past land uses. Alongside this, the future conditions will continue to degrade and improvement will depend upon the rate at which the legacy effects migrate through catchments and the rate of transition to sustainable land uses.

The Waikato Regional Council has agreed upon its strategic direction for the next three years [13] that has embraced a strong sustainability framework through the recognition that the region's communities and the economy are bounded by the physical limits of the environment in which they exist. It is an explicit recognition that a healthy economy and vibrant communities require a solid natural resource base. The diagram above reflects this ideal relationship.

The Waikato Regional Council has agreed upon its strategic direction for the next three years.

Unfortunately the current situation is that in some areas, economic use of fresh water has degraded them to an unacceptable level as evidenced by regional monitoring results and recent national State of the Environment reports. This can be interpreted as the present economy demanding more than the freshwater resources can sustain.

The environmental effects of economic activities on land and in freshwater are not confined to these domains. The integrating function of the regions freshwater systems ensures that effects are also transferred to the Coastal Marine Area affecting not only physical processes in estuaries (eg sedimentation and algal growth from nutrient enrichment) but also has human health impacts through direct contact recreation and from eating filter feeding shellfish. Such effects in the Coastal Marine Area are not limited to rural activities but also to urban wastewater discharges and stormwaters containing heavy metals and hydrocarbons.

This can be referred to as exceeding the carrying capacity of the environment and goes beyond fresh water, as in the diagram to the left.

This hasn't happened everywhere, but where it has, we need to shrink the demand for fresh water from present use. One way of doing this is to move up the value chain and create more value from the amount of fresh water that is available. The way we use freshwater resources in the future will need to change.

As we approach real environmental limits, the 20th century view that implies elements of one wellbeing can be substituted (balanced or traded) by another or assigned a monetary value is losing support. This is evidenced by recent Court decisions that have rejected the idea of a 'broad overall approach' to the interpretation of Part 2 RMA and is reflected in the public concern for freshwater quality and the associated media attention. This is also reflected in the strong sustainability interpretation that underpins the United Nations' 2030 Sustainable Development Goals.

The council's strategic direction for this council term includes seven priority areas with the following two directly relating to the Freshwater Strategy.

- Manage freshwater more effectively to maximise regional benefit.
- Positively influence future land use choices to ensure long term sustainability.

A further two priority areas (listed below) are associated with the development of the strategy.

- Increase communities' understanding of risks and resilience to change.
- Shape the development of the region so that it supports our quality of life.

[13] https://www.waikatoregion.govt.nz/assets/Uploads/5304-Strategic-Direction-DOCUMENT-WEB.pdf

2 STRATEGIC ISSUES AND ACTIONS

NGĀ TAKE RAUTAKI, MAHI

Actions required to address strategic issues and to implement the strategy are summarised in this section and detailed in the companion document.[14] The companion document is not Council policy and has been prepared to assist the development of the 2018 – 2028 Long Term Plan.

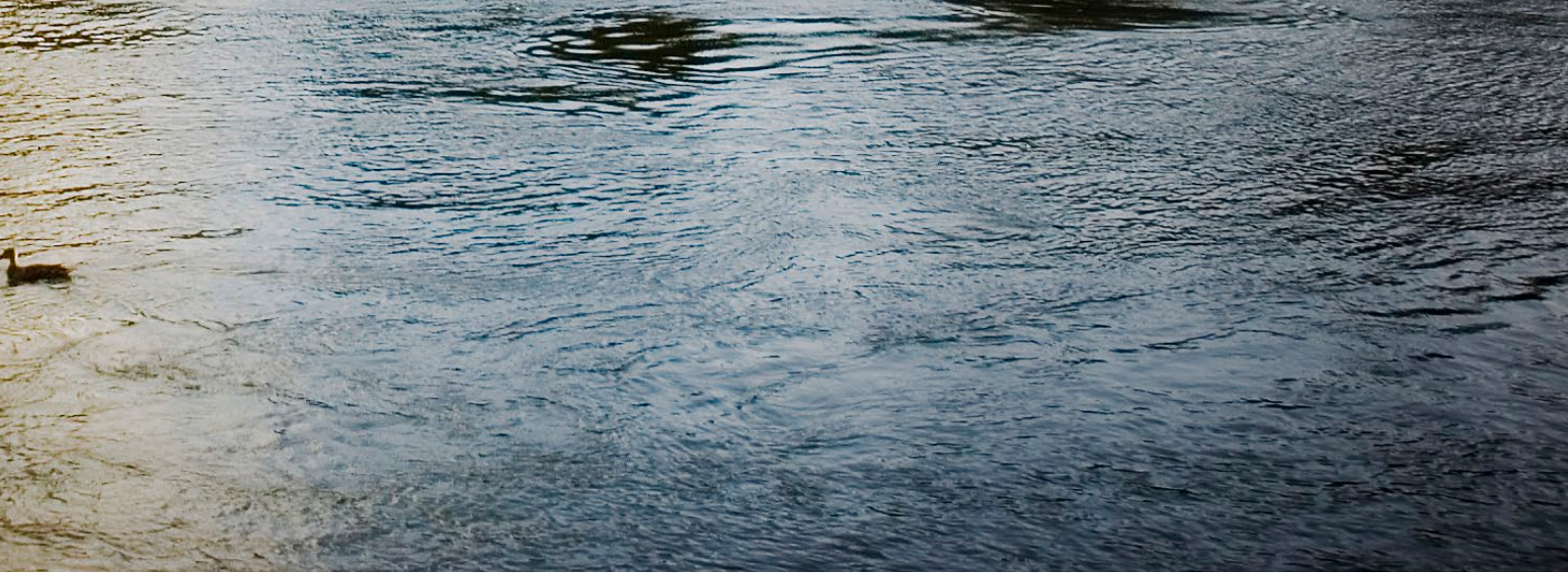
The following table summarises proposed actions detailed in this part to address the strategic issues and have been grouped into the below three themes of the strategy.

- Focussed Advocacy
- Smarter methods
- Better information

Key actions are summarised in the table below.

	ISSUE	SUMMARY OF KEY ACTIONS
FOCUSED ADVOCACY	**1 Providing information to the public:** The state of, and influences on, the regional freshwater resource are not widely understood. At the moment, there is no detailed plan for communicating the existing information. The Waikato Regional Council needs to maximise the effectiveness of communication to the public. This should redress a lack of awareness about pressures on fresh water and achieve public acceptance that changes will require resourcing. There will be increased costs associated with increased freshwater management and that there is a need to distribute those costs.	• Continue to empower community actions and understanding through developing and expanding information provided on fresh water to the regional community. • Provide spatially defined information on use and condition of fresh water to communities, partners and regional stakeholders in real time. • Engage iwi partners in support of the strategic direction for fresh water to advance a region-wide consensus for change.
	2 Resource Management legislation reform and advocacy: In many areas, the Waikato Regional Council has yet to determine its preferred alternative to current first-in-first served water allocation arrangements. The range of options is currently limited to existing regulatory methods. Any addition to the tools available to regional councils for allocation – such as market instruments either directly for allocation or to fund infrastructure and catchment enhancements - will need legislative reform. Proposed reforms will need justification from information and modelling.	• Seek access from central government to new freshwater allocation policy options, including financial and economic options, to allow Waikato Regional Council to consider their use in support of existing methods where Freshwater Management Units are yet to be identified. • Assist legislative change through partnerships (eg regional sector) and prepare a draft Bill for adoption.
	3 Iwi rights and interests: The development of any resource allocation framework will need to be cognisant of iwi rights and interests. It is already a fundamental prerequisite in statute for the Waikato river catchments for water quality outcomes and a critical dimension for allocation for economic opportunity in the future. There is no international precedent to look to for this aspect of freshwater management opening the door to show global leadership.	• Ensure selected policy options are aligned with iwi rights and interests as they apply in each Freshwater Management Unit and tribal rohe. • Opportunities are available for iwi to be actively involved with the selection of policy options for each Freshwater Management Unit, including resource pricing and restoration projects.
	4 Transitional arrangements: Failure to consider transitional arrangements has the potential to create barriers when moving to a new allocation framework. Any move from the current rule based allocation framework needs to be planned with the input of current and potential users. This will allow recognition of existing investment in infrastructure and the value of current consents to be realised.	• Recognise that for the Waikato River catchments, statutory processes are already underway and unless included in submissions received, the benefits of this strategy will only be available upon review. • Recognise that a new allocation framework and data, including management systems to support it, will take time to develop and for parties to adjust to. A transition pathway will need to be planned and agreed with support for incentives to change.

[14] Waikato Freshwater Strategy – Actions (Internal working document -Not Council Policy reference)



	ISSUE	SUMMARY OF KEY ACTIONS
SMARTER METHODS	**1 Use the full range of policy options for freshwater allocation:** We are reliant on a predominantly regulatory approach to allocate water. Typically, regulation is recognised as a relatively inefficient way of achieving objectives if used in isolation.	• Transition freshwater allocation from a regulatory system to one where rules are complemented by other options for behaviour change such as incentives and persuasive methods. • Continue to refine and use multi-stakeholder, collaborative processes to address water allocation and to select the suite of policy responses for each Freshwater Management Unit. • Investigate the use of 'Green Bonds' and Impact Investments to support water allocation objectives.
	2 Efficiency via transfers and trading: Market-based approaches are, in theory, an effective way of allowing resources such as water to move to their 'highest value' uses. Transfers and trading of water between users, combined with a regulatory approach, have the potential to improve the value obtained from water. Designing an appropriate system of transfers needs to be done with care to avoid unintended consequences.	• Continue to publicise the existing ability to transfer freshwater permits. • Collate information and evidence to demonstrate the benefits of using transfers in over allocated Freshwater Management Units.
	3 Pricing freshwater: The Waikato Regional Council does not currently have access to freshwater pricing options. Pricing can be focussed on efficient allocation and can include both abstracted volume and volume required to assimilate contaminants (effluent strength). Prices can be a highly effective way of providing incentives for water users to use resources more efficiently. However, putting a price on water would also raise important questions of equity.	• Collate and summarise knowledge on the range of potential policy options. This information will support advocacy to central government for legislative change to provide for new financial and economic allocation methods. • Ensure financial and economic policy options are considered to support traditional water allocation methods. • Recognise the need for data to fine tune freshwater allocation models and require data to be provided by as a condition of use. • Recognise the cost of data collection and provide for information gathering and exchange, potentially as a condition of use.

Table continues on following pages.

	ISSUE	SUMMARY OF KEY ACTIONS
SMARTER METHODS	**4 Environmental and engineering options** There is a lack of knowledge of potential engineering options, whether they are cost-effective, under what circumstances they are best used and whether they are preferable to or could be used in conjunction with economic instruments and regulation. Many options can be adopted now, but require location specific information and access to funding created by use of economic instruments: includes construction of wetlands, storage, aeration structures, water body shading etc. Using Lake Taupō as a natural reservoir to support the ecological health of the Waikato system needs to be considered amongst the other potential engineering options.	• Develop criteria and methodologies (eg Waikato lite) for prioritising wetlands, potential wetlands and other water bodies for restoration. • Evaluate and identify potential technologies and locations for in-situ enhancement options. • Continue with identification of priority locations for riparian planting opportunities. • Identify potential natural and engineered storage options at a variety of scales and locations. • Establish a regional freshwater enhancement fund to assist construction and deployment of technologies in identified Freshwater Management Units. To be funded from the revenues collected for discharge and takes from within the same management unit. • Waikato Regional Council owned and controlled lands are used to demonstrate state of the art practices (mitigation of legacy and current effects and transition to new land uses) for achieving freshwater and biodiversity outcomes.
	5 Alignment with the Waikato Regional Plan: The present central government approach of incremental changes to the current regulatory system has resulted in more complexity for plan development and increasing costs for policy and plan preparation, decision making and often implementation as well. The current review of the Waikato Regional Plan and the inclusion of the Regional Coastal Plan provide a number of opportunities. For instance the Healthy Rivers/Wai Ora plan for change has already established protocols for the definition of Freshwater Management Units and these can be tested and if appropriate be applied to the remainder of the region. If not appropriate, these will need to be reviewed as part of the wider regional plan review. The next step should ensure that water quantity and quality are effectively integrated.	• Use consistent and agreed criteria to define Freshwater Management Units for the remainder of the region and align with catchment zones. • Consider a wider range of policy options for freshwater management for Freshwater Management Units in the remainder of the region. • Align Freshwater Management Units for the Waikato River Wai Ora rohe with the rest of the region upon review. Upon review of Waikato River Freshwater Management Units, consider the wider range of policy options to accelerate achievement of agreed freshwater objectives. • In future reviews of the Waikato Regional Plan explicitly recognise the relationships between water quantity and water quality. • Recognise the contribution and benefits of multi-stakeholder processes for setting direction and for the alignment of policy options using multiple legislative tools. Do not limit use to RMA regulatory processes.

	ISSUE	SUMMARY OF KEY ACTIONS
BETTER INFORMATION	**1 Planning:** There is a lack of prioritisation and sequencing across all the initiatives in this area. The design of information collection programmes will need to be resourced.	• Develop and re-invigorate the Waikato Regional Council Land and Water portfolio under the Executive Leadership Team with responsibilities for Waikato Freshwater Strategy implementation assigned across all directorates. • Scope, design and implement an 'overarching' Integrated Water Information System (Federated databases). • Continue to engage with and leverage relationships with external research providers (including the newly established Te Waiora Joint Freshwater Management Institute).
	2 Freshwater Management Units: All future freshwater accounting and management must relate to Freshwater Management Units. The identification of these will need to precede the design and budgeting for information collection programmes. There is a risk that if these are developed poorly, they may lead to information that is less useful than it could be.	• Decide on criteria and propose the number and location of the region's Freshwater Management Units and factor in environmental (including ecosystem), social and economic factors. This will inform future collaborative processes. • Improve the Waikato Regional Council's understanding of how each catchment or Freshwater Management Unit could change in the future through development pressure, climate change projections on meteorology, demand, legacy effects.
	3 Science support freshwater systems in Freshwater Management Units: There is a lack of detailed understanding of potential future flow regimes and freshwater yields. An improved understanding of catchment scale hydrological interactions will be needed. A transition to a focus on low flow situations will be needed to address water bodies at times of most current and projected future stress. This can be addressed using advances in computing technologies (big data analytics and modelling) that would be scalable to the national situation.	• Determine minimum flow / level requirements for water bodies. • Improve understanding of meteorological projections for each Freshwater Management Unit and update every five years. • Improve understanding of flow extremes (low and flood) in all Freshwater Management Units. • Continue to improve understanding of surface and groundwater link in each Freshwater Management Unit. • Continue to improve understanding of relationship between water quality and quantity in each Freshwater Management Unit. • Research the role and potential role that hydrological seeps and wetlands play in sustaining freshwater quality and quantity in each Freshwater Management Unit. • Continue and accelerate programmed data acquisition to implement water allocation and quality provisions in the Regional Plan. • Research the use of continuous monitoring technology for water quality variables. • Research and model the impacts of manipulating the current management regimes for selected lake systems (currently under resourced).
	4 Freshwater accounts: The operative NPS-FM requires regional councils to develop and maintain freshwater quality and freshwater quantity accounts. There is nothing to say that these should be linked or even relate to a common definition of Freshwater Management Unit, even though they are descriptors of the same resource.	• Continue to improve the regional freshwater quantity database in conjunction with external agencies. • Develop and implement a freshwater quality database to enable quality accounts to be developed for each Freshwater Management Unit.
	5 Freshwater supply and demand balance: There is uncertainty about future supply and demand balances in different catchments under different scenarios, eg for different land uses and economic activities. This makes it difficult to robustly articulate future allocation pressures with any confidence, and to justify the need to change the current water allocation arrangements.	• Collate and understand changes to future supply and model implications to economic sectors, location (Freshwater Management Unit) and season. • Use models including Waikato Integrated Scenario Explorer (WISE) to estimate the implications of future supply and demand compared to reference scenarios. • Shift from reactive measurement to predictive modelling.
	6 Freshwater footprinting: There is currently a relatively low awareness and recognition of the value of water embodied in the products and services from the region, both within Waikato Regional Council and externally. There is currently no framework for how this information could be used in decision making, which could limit the use of this information to education alone. An understanding of the embodied water in export products and tourism services will assist regional understanding and choice of policy options.	• Research and select a consistent methodology for determining the embodied contribution of freshwater in products and services from Freshwater Management Units. • Partner with sector peers and establish a national database allowing comparison of embodied freshwater in export products. • Use footprint analysis to determine freshwater contribution to sectors from a range of Freshwater Management Units and in support of communication and education of the importance of fresh water to the Waikato and national economy.
	7 Using freshwater accounts: There is currently a lack of clarity on the water data needed for environmental reporting (Ministry for the Environment (MfE) / Statistics NZ), 2014 and the Vision & Strategy for the Waikato River. Moreover, there is a lack of data on actual water use, including quantity, timing, location/catchment and use by sector and land use.	• Develop a set of accounts to model links between water use and economic indicators in selected locations (Freshwater Management Units). • Integrate freshwater data with land use, economic and demographic drivers and climate change projections to determine sustainability of current land use.

3 CONCLUSION

KUPU WHAKATEPE

The strategy contains a number of key 'game changing' actions that reflect a maturing of the relationship between the Waikato Regional Council, the regional community and central government ministries. It is moving from a semi-contractual relationship where the Waikato Regional Council acts as an agent of central government to one where the relationship between the region's resource base and the community's social/cultural expectations and economic aspirations comes to the fore.

FRESH THINKING

- Taking a longer-term view (50 + years).
- Alignment of Freshwater Management Units with catchment zones.
- Managing for seasonal and locational assimilative capacity of waterbodies.
- Recognising that meteorological condition will be different with a changing climate.
- Recognising connections between surface, ground and the coastal waterbodies.
- New tools to link urban, rural and industrial uses in Freshwater Management Units.
- Alignment of social and economic policy to reflect freshwater outcomes.
- Better management of information and use of modelling.
- Creating the conditions and incentives to do the right thing.
- Clear simple enforceable rules.
- Pricing of water to reflect demand on and changes to the assimilation capacity of waterbodies.
- More support (information and finance) for local freshwater restoration initiatives.

The existing role is one of control, focussing on implementing resource (freshwater) allocation provisions in the RMA to the extent that the regional community is willing to fund. The strategy proposes that this relationship move towards one of supporting the regional community to achieve social and economic objectives by ensuring the natural resource base can meet these all the while being mindful of the Waikato region in relation to the national and international situation. This is the strategic direction of the 2016 – 2019 Council.

It recognises the value of existing freshwater management work but that the regulatory tools are no longer fit-for-purpose for the bigger job that we must now do. In addition to the direct allocation role, a wider range of policy options are required to influence activities that indirectly affect freshwater conditions. This reflects the changing influence on water quality from point sourced discharges to diffuse effects of intensified land use that is compromising the allocation choices for current and future generations. Economic and financial policy methods need to work seamlessly with regulatory allocation methods to achieve commonly agreed freshwater outcomes.

The strategy does not propose to identify which policy options are best used where. This is the role of multi-stakeholder processes that focus on the site specific management issues within each identified Freshwater Management Unit (the planning process). The role of this strategy is to ensure that future decision makers have access to the wider range of policy options in recognition of the wider scope of the job. The strategy also recognises that the grand-parenting of allocation (takes or diffuse discharges) is a reinforcement of the first-in-first-served allocation convention and that the perpetuation of existing allocations will delay the creation of headroom in over allocated Freshwater Management Units.

To achieve its strategic priorities, the Waikato Regional Council needs to refocus its internal organisation with an alignment of freshwater matters that are spread across all the three operational directorates:

- Science and Strategy
- Integrated Catchment Management
- Resource Use; and
- Community and Services and the Finance Office (both in a supporting role).

This whole organisation-directorate alignment of freshwater activities can be achieved by upgrading and re-invigorating the Land and Water Portfolio facility and by reporting to the Executive through the Office of the Chief Executive. This would also allow for consistent external expression on freshwater management by providing advice and support to the Chief Executive and the Council Chair.

Organisational consistency of freshwater management would be enhanced by aligning whole Freshwater Management Units with catchment zones and this would also recognise the social and economic relationships communities have with their local freshwater resources, and the review of corporate databases that refines, refocuses and fills data gaps.

To be successful, this strategy requires the coordinated support of the wider regional community and in particular partners and stakeholders to advocate for and secure access to additional policy options. The strategy does not identify the individual mix of policy options to use and their respective settings in any identified Freshwater Management Units rather that is considered to be the role of decision makers at the time. In this way it is reasoned that there is less risk of specific geographically or sector issues preventing support in principle for a wider range of policy options being available.

The successful implementation of this strategy will allow the regional community, freshwater users and wider partners and stakeholders to have access to geographically relevant freshwater data and information relevant to their needs and interests through an integrated freshwater information system.

We have a good appreciation of the current state of the water resources management and we have a good understanding of the state of the region's freshwater resources, but we do not have the same level of confidence in the cause and effect relationships between water bodies at all locations, nor the trends in their quality characteristics. However, there is now an opportunity to undertake detailed planning to determine the appropriate content, sequencing and interdependencies for the work streams to add to this knowledge.

This will involve consideration of current sub-regional water and land management related work and reactive advocacy in response to initiatives from other agencies, including central government. An overriding expectation of parties during the engagement process is that this is just the start of an ongoing discussion which will need to be refined periodically as market and technological drivers and resource characteristics change, both from external influences and as a consequence of the exercise of new management opportunities as defined in this report. Additionally, partners, the wider regional communities and regional stakeholders will have the opportunity to participate in the selection of strategy implementation actions through the public participation provisions for Long Term Plan budget consultations and when determining the policy mix for achieving agreed outcomes in individual Freshwater Management Units.

4 REVIEW AND EVALUATION

TĀTARITANGA ME TE AROTAKENGA

The primary purpose of this strategy is to make changes to the way fresh water is allocated in the Waikato region and to set up internal processes and systems to ensure the right information is collected, stored and managed to support new management/allocation options. The strategy will need to be reviewed to gauge effectiveness and to determine the following.

- If objectives are being achieved as a result of carrying out identified actions.
- Whether the operating environment has changed such that some of the proposed actions are no longer appropriate. For example, new technologies may mean that some actions are no longer necessary.

To assist future reviews, the following expectations have been identified along with an optimistic (plausible and in some cases ideal) implementation schedule.

IN THE FIRST YEAR, EXPECT TO SEE THE FOLLOWING.

1. Sufficient budget allocation approved in the Waikato Regional Council's 2018-2028 Long Term Plan to initiate the implementation of the strategy.
2. Budget appropriations are supported by partners, communities and key regional stakeholders.
3. The terms of reference of the Land and Water Portfolio have been revised and a new cross directorate entity established to oversee the implementation of the strategy.
4. Criteria for selection of Freshwater Management Units that are aligned with catchments have been developed.
5. An integrated water information system has been scoped.

1

BY YEAR FIVE, EXPECT TO SEE THE FOLLOWING.

6. Freshwater Management Units are identified for the entire region using consistent criteria such that information is able to be aggregated to form a regional understanding.
7. The entire region has been assessed and opportunities for natural and constructed freshwater storage opportunities have been identified.
8. The Integrated Water Information System is designed, developed and commissioned.
9. Accurate real-time information on the state and use of regional fresh water is freely available to communities, iwi partners and stakeholders.
10. Best practice land management is being actively trialled and promoted on Waikato Regional Council owned and controlled lands.
11. Legislative changes allowing regional councils to use a range of economic instruments, including an ability to charge for water taken from freshwater bodies and strength of contaminants entering freshwater bodies.
12. Collection of freshwater use and condition data is aligned into an integrated system of compatible databases from a range of sources.

5

IN 10 YEARS, EXPECT TO SEE THE FOLLOWING.

13. Freshwater Management Units have been confirmed and are included in regional plans.
14. New information opportunities to collect freshwater related data (directly or modelled from known cause and effect relationships) have been added to the information base.
15. Modelling is now able to integrate the social and economic impacts of freshwater management decisions and reciprocal impacts on fresh waters.
16. New technologies enable portable, rapid trading of available fresh water in real-time.

10

ONGOING

17. Funding assistance to community groups for biodiversity enhancement and habitat restoration on lands giving the best return on investment for freshwater enhancement.

HE TAIAO MAURIORA HEALTHY ENVIRONMENT

HE ŌHANGA PAKARI STRONG ECONOMY

HE HAPORI HIHIRI VIBRANT COMMUNITIES

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