LAND & WATER FORUM

Third Report of the Land and Water Forum

Managing Water Quality and Allocating Water

October 2012

This report may be cited as:

Land and Water Forum, 2012. *Third Report of the Land and Water Forum: Managing Water Quality and Allocating Water*

Cover image: Photo of Pelorus Bridge

Published in October 2012 by the Land and Water Trust

ISBN: 978-0-473-22904-7

This document is available on the Land and Water Forum website: www.landandwater.org.nz

Contents

Foreword

This is the third report of the Land and Water Forum, and it brings to a conclusion our second mandate from the government. Our first report provided a blueprint for land and water management reform. The second and third deal with the ways in which the reform should be implemented. Managing within limits – the subject of this report – is dependent on setting objectives and limits, which is the subject of the second.

In our second report we recommended further work to finalise a national objectives framework, and offered to carry it out. In the event, Ministers decided to seek advice on this issue themselves, and it is being finalised for their consideration. Obviously the outcome of this exercise will also have important implications for our recommendations here.

This report is about how to implement a dynamic land and water management system in New Zealand which is fair, efficient and accountable. It deals with the linked issues of water quality and allocation of water. It provides a range of integrated tools, policies and approaches which will improve our management of water and the associated land in rural and urban catchments across New Zealand.

The process of reaching consensus is never easy, and our recommendations form an integrated package, both because they complement each other in a policy sense, and also because they are all of them necessary for the Forum to reach its final agreement. There is one split recommendation, where we have offered alternative courses of action; we were not in the event able to complete our consensus on the role of merit appeals in collaborative planning processes. We hope, however, that the government will respond to our reports as a totality. Implementing them in part risks the loss of consensus and the constituency for change which it has generated.

This is the cumulative product of a collaborative process which began more than four years ago, and has drawn on the knowledge, imagination, and energy of people across the country – the collaborators themselves, and also those we engaged with around New Zealand, not only in the public engagements we held in 17 centres following the launch of our first report, but also though extensive discussions with industries, organisations and individuals as our work has progressed.

There are more than 60 members of the Forum itself drawn from the primary sector (including farming, horticulture, and forestry) from industry (including power generators) from the services sector (including tourism) and from civil society (including Green NGOs). It includes five river iwi, without whom we could not have completed our task. Without Treaty Partners any outcome would have lacked legitimacy. We were assisted by active observers from central and local government, who participated fully in all of our conversations, but were not obliged to form part of the consensus. Their contribution was large and essential.

The main task of arriving at consensus fell on the Small Group of the Forum, which had about 30 members. It was assisted by 5 working groups who prepared the ground for agreement, and worked to broaden the consensus with the Plenary. Around 80 participants were involved in working groups, a number of whom were also Small Group members and part of the Plenary as well. The timeframe for our work was tight and the burden on many individuals was heavy, especially as it came on top of already tight schedules. The commitment and contribution – and stamina – of participants have been outstanding.

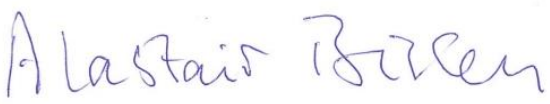
We were supported by the government, who provided us not only with successive mandates, but also with financial support, and – for our second and third reports – with a large part of our secretariat. We are very grateful to Ministers, Hon Amy Adams and Hon David Carter, and also to Hon Nick Smith who was a crucial instigator of our process, for their support and interest. They have set us the task, and given us the freedom, and the space to carry it out.

There is a long list of people who have assisted us in various ways. We could not have functioned without a secretariat, and the one we had has been outstanding. We are grateful to the scientists, social scientists, and economists who helped us, often without payment. I am especially grateful to my fellow trustees of the Forum, who played a key role in the development, guidance and achievements of the process, together with the Chairs of the five working groups. Simon Tucker, David Perenara-O'Connell (and, until she went to Te Oranganui Iwi Health Authority, Nancy Tuaine), Kevin Hackwell, Ken Taylor and Hamish Cuthbert made indispensable contributions. Glen Lauder was our coach – he helped when we got stuck, and kept our eyes on our goal. Alastair Patrick, to whom I owe a great debt, was the project manager. Without his skills and tenacity this and the other reports would never have been written.

We list at the end all the participants that support this report. Strenuous efforts have been made to clear it within organisations in what was inevitably a very tight timeframe. In processes like this one, some resolutions don't come until the very end. We are also aware that some of our members are federal in structure, and a number have large memberships with whom they have not yet been able to discuss this report in detail.

Although the Forum has now completed its mandate, its members feel that it would be a pity to put the huge network of associations, and the social capital they have built, into abeyance. They have decided to meet again in the second half of next year, to assess the outcomes of these reports, consider whether there is some further role that they might offer to play, and if there is, think how they might constitute themselves to do so.

Finally, as at the end of our second report, I must remember Dean Stebbing, whose contribution to the Forum and its outcomes is still present in the minds of all of us who worked with him.



Alastair Bisley

Chair, Land and Water Forum

Executive Summary

Fresh water is a major driver of our economy, it sustains our unique environment, it is deeply embedded in our culture and life-style, and for many of us it is part of our identity. Fresh water is one of New Zealand's most important advantages – it is a national Taonga.

The Land and Water Forum[1] came together in 2009 because we agreed that, although water is critical to our well-being and prosperity as a nation, we have too often made a poor job of managing it. We agreed that we had to do better and decided to work collaboratively to work out how. Over the past three years the Forum, with assistance from the government, has built a very substantial agreement among all key stakeholders in support of a new fresh water management framework for New Zealand – one that is more transparent, efficient and fair, and will help resolve historic issues and provide certainty for the future.

The third report of the Land and Water Forum

Our first report, released in September 2010, set out a blueprint for freshwater management that broke a policy deadlock which had been in place since at least the mid-1990s. This report paved the way for the Government to promulgate a National Policy Statement on Freshwater Management and to establish two multi-million dollar funds to step up the clean-up of iconic waterbodies and facilitate the development of high-quality irrigation infrastructure.

Our second report, released in April 2012, provided detail on key elements of the blueprint and described the nature of fresh water limits, the outline of a framework of national objectives within which catchment-specific limits would be set, a collaborative and agile process for policy- and plan-making. The outcome of the Government's work on the National Objectives Framework will have important implications for our current recommendations.

The proposals in this third report present the tools and approaches required to manage fresh water to meet limits and achieve freshwater objectives, and to realise the potential of New Zealand's fresh water economy. We view these two objectives as two sides of the same coin.

Communities will collaborate (within a national regulatory framework and assisted by national guidance) to identify the specific issues in each catchment, set objectives and limits, and decide on solutions to address those issues effectively and meet their aspirations. All activities in the catchment which have an impact on water quality and flow will be accounted for and brought into the management framework. This in turn will create a more transparent, secure and enabling environment for business and investment decisions.

There are already a variety of methods, techniques and programmes that are being developed throughout New Zealand to enhance the use and management of fresh water. They need to be reinforced, improved, more widely disseminated and integrated at local level into catchment planning. Sector good management practice (GMP) schemes, in particular, will play a key role in helping users achieving freshwater objectives while maintaining and enhancing the profitability of their businesses. Market-based instruments could also play an important part in the new water management regime in some catchments.

[1] Comprising over 60 of New Zealand's major fresh water users and stakeholders and including five river iwi.

More active and dynamic water management in New Zealand

Our three reports together provide a comprehensive package – both blueprint and detail – which aims to establish more active and dynamic management of fresh water and land use practices that have an effect on water quality. This entails:

a. securing the quality of our environment and social and cultural values around fresh water, through the setting and application of catchment-specific objectives and limits within a national framework,

b. identifying robust, advantageous solutions that protect and enhance our fresh water and the communities, enterprises and the regional and national economies that rely on it, through collaborative processes involving stakeholders at catchment level,

c. a more transparent system to support better collective and individual decision making and accountability,

d. developing and supporting a range of methods, techniques and tools to improve (both economically and environmentally) the management and use of New Zealand's fresh water, integrating good management practices with other tools to manage water quality,

e. managing fresh water in a dynamic and adaptive way so that users and managers of the resource can respond to changes in knowledge, expectations, and environmental and economic conditions, and to provide for new entrants.

We believe that it is time to move past the perception that trading-off or balancing values against each other is an almost inescapable part of freshwater management. There are many ways to pursue environmental, economic and social benefits at once, including through accessing new water through efficiency gains and new infrastructure, adding value to our products and services, science and innovation, and leveraging off our environmental performance in export markets. The change we propose sets up the system towards outcomes which are advantageous to all parties, by encouraging people, enterprises and agencies to participate actively and collaboratively to devise and implement local solutions.

Iwi rights and interests

We think that New Zealanders can move forward to create an effective and fair system of freshwater management – one which will enable economic growth, strengthen our communities, enhance our environment and safeguard the ecological systems on which we all depend. Indeed, in many regions around the country we have already begun to do so.

For a system which articulates general rights and interests to be stable and durable, however, iwi rights and interests also need to be resolved. The Forum has developed an integrated catchment management approach to managing freshwater within limits that does not prejudge discussions between the Treaty Partners, but is sufficiently flexible to accommodate outcomes from negotiations between Iwi and the Crown.

The report contains a statement on iwi rights and interests in fresh water.

Catchment planning

Decisions on methods and approaches to manage freshwater quality and quantity in each catchment should follow from, and inform, the setting of objectives and limits (described in more detail in our second report). If limits are to work, they need to have the buy-in of the community, following a comprehensive consideration of local issues, aspirations and opportunities. Regional plans need to be well-understood and properly enforced. Roles, responsibilities and implementation timeframes need to be clear and agreed.

The nature of the issues facing each catchment will vary and the catchment planning process should draw on local knowledge, stakeholder expertise and national guidance to identify the optimal approach and tools – regulatory and non-regulatory – for achieving catchment-specific objectives. The role of existing infrastructure and the contribution that its modernisation and/or further development can make to meeting catchment objectives should be considered in the planning process and reflected in the way that limits are set.

Catchments are under different states of pressure, and prioritisation will be required to target the ones at high-risk. In some cases steps (such as the establishment of targets and interim limits) will need to be taken to prevent further degradation or to avoid over-allocation prior to the development of catchment-specific objectives, limits and water quality management frameworks. For efficiency purposes, it will sometimes be appropriate to initiate a common planning process for a range of very similar catchments in a region.

Managing water quality

The primary goal in managing water quality must be to integrate land and water management within a catchment. To achieve this, all discharges (diffuse and point source) need to be brought within the management regime. Regional councils, with their communities, will need to identify the total current catchment load for each contaminant, identify the specific sources, and consider the most appropriate mix of methods and tools that will achieve the objectives they have set. Different mixes of contaminants, different patterns of land-use (current and historical), and the complexities of natural environments mean that management approaches will need to be tailored to specific catchments. In many cases, there will be a time-lag between interventions and effects – changes to the management regime often won't have an immediate effect on water quality. In some catchments, the legacy effects of historical land practices have yet to materialise. This means that it may be some time before we see improvements in water quality. It is important that we start now.

Water quality will be maintained and improved only if individual enterprises adopt good management practice (GMP). There are also good business reasons to improve practice. GMP schemes are essential methods for achieving limits and freshwater objectives. GMP can be nested in the regulatory framework, but contains a suite of methods and tools, which collectively manage the range of contaminants from a particular land use in an integrated way. GMP should be adopted in all catchments.

Audited self-management (ASM) schemes transfer day-to-day management responsibility to users under agreed terms, and subject to transparent audit (see LAWF1). ASM can be used across most management methods (regulatory and non-regulatory) and is a key tool in implementing GMP.

Allocating water

To make the most of our land and water resources, we need to create an investment environment that allows our communities, our farmers and our businesses to create value. The water allocation framework needs to foster investment certainty and allow water to move to its highest valued use over time. Consents should be exclusive, non-derogable, and effectively enforced, and of a suitable duration to provide the security of tenure necessary to stimulate investment. The transfer and trading of consents should be facilitated through the removal of regulatory barriers.

The act of setting a limit will serve to define the amount of water that is available for use within the catchment. This allocable quantum will need to reflect seasonal and other variations, and the authorisations that are granted in relation to this quantum will need to clearly express the reliability of that water's availability.

Scarcity thresholds should identify when a catchment is coming under demand pressure and signal the need to shift to a more effective allocation regime. Once a scarcity threshold has been met, all takes in a catchment should be formally accounted for and existing users (including those operating under permitted activity rules or statutory authorisations to take stock water or water for domestic needs) should be "grand-parented" into the management framework through a process that ensures users get only what they need.

Communities will need to decide, using collaborative planning processes wherever possible, on an appropriate method for allocating water between the scarcity threshold and the limit. In a context of over-allocation, communities will also need to set policies and timeframes for bringing the total quantity of water-takes into compliance with the limit.

Enabling change

We have emphasised that water management decisions must be transparent and made on the basis of the best available information on their economic, environmental, social and cultural implications – it is not possible to set a limit without understanding what effect it will have on the community and the environment. Social and ecological systems and their relationships are, of course, very complex and decisions will sometimes need to be made on the basis of incomplete or uncertain information. Where this is the case, areas of uncertainty should be identified and key assumptions should be made transparent so that they can be subject to independent scrutiny.

Capability, capacity and the use of information will be critical issues in implementing changes to water management, particularly in the period when objectives and limits, and the methods and tools to achieve them are being developed. Investment is required to speed the development of a small number of interoperable models and efforts are required to improve the communication of science to lay audiences and the integration of Mātauranga Māori into our decision-making processes. All sectors need to invest in the development and implementation of extension programmes to ensure continued and accelerated uptake of good management practice.

Duration and expiry of consents

The investment required to develop and operate large-scale water infrastructure and to change water and land management practices is often significant and complex. To safeguard and enable this investment, water consents need to have clear security of tenure. The duration and certainty of consents, and the way they are treated on expiry has an influence on investment confidence and, ultimately, the efficiency of water management outcomes. We believe that, within the water

management regime we have recommended, councils should not be able to grant consents for less than 20 years unless an applicant is seeking temporary access to water. We also believe that longer consent durations could become the norm.

Within three years of implementing the changes recommended by the Forum, there should be a review – conducted in a manner that is consistent with the Forum's statement on iwi rights and interests in freshwater – on the question of re-issuing consents on expiry and extending beyond 35 years the permissible consent duration for large-scale projects that have been provided for through collaborative planning processes. Some of us believe that there should be an expectation that the review will lead to change.

National Strategy

The regime we have set out across our three reports will involve a significant change of culture and behaviours in the way we use and manage water in New Zealand. It will unfold over time, and its benefits will become visible progressively. Councils and central government will need to work out policy with their communities and to follow transparent decision-making processes. There will need to be more effective stakeholder engagement in plan making, information will need to be generated shared and communicated differently and those with an interest in freshwater management will need to arrange themselves to participate in catchment-planning processes. All parties will need to take on responsibility for implementing plans, managing within limits and meeting catchment objectives.

Central government has a critical role to play in providing guidance and direction for regional councils, disseminating 'best practice' across the water management framework, and providing ways to maintain a sense of momentum and common purpose as the reforms unfold. Regional authorities will continue to play a key part in water management, including through new roles such as facilitating collaborative catchment processes and acting with central government to share expertise and ensure national consistency.

We suggest that there will also be a role for further collaboration at the national level, in particular for the development of the national direction and guidance recommended in this report.

Throughout our reports we have consistently emphasised the importance of adaptive management. The effect of our recommendations should be monitored and the framework we have proposed should be adjusted if necessary. We have decided to come back together in July 2013 to discuss the potential nature of the on-going role of the Forum in New Zealand's freshwater management regime.

Why the Forum was formed and has been asked to do its work

1. All New Zealanders know how important water is to this country and its people – fresh water is one of our primary national advantages. It sustains our unique environment; it supports a wide range of activities which are critical to our economy, including primary production and energy generation; it underpins our social values and our life-style, which attract (and retain) people and skills to the country; it is a key aspect of our reputation abroad, including for tourists and export markets. For iwi, fresh water is a taonga and part of their identity; for all of us, it is deeply embedded in our culture. All these uses and values overlap, and having fresh water of good quality can be just as important as having access to fresh water in large or reliable quantities.

2. The Land and Water Forum came together because we agreed that water is critical to our well-being and economic welfare as a nation, and that we have sometimes made a poor job of managing it.

3. A range of common and different reasons brought us together: frustration with costly, time-consuming and divisive planning and consenting processes; concern over declining water quality; lack of recognition in water management of iwi aspirations about their rights and interests; an inability to enhance and get better economic value out of fresh water that is becoming increasingly scarce in places; concern at the lack of effective central government direction and guidance.

4. We agreed that there had to be a better way, and that it was in the interest of all stakeholders to explore together what this better way might look like. We were aware that other countries have used collaborative processes in similar circumstances to great effect. We were also aware that collaborative processes were gaining traction in a variety of local contexts in New Zealand. We resolved to work together – collaboratively for the first time at the national level – to find ways to address New Zealand's water management issues.

5. The Government supported this process in its efforts to develop a roadmap for freshwater reform that reflected the views and had the buy-in of all main interested parties. Observers from both local and central government joined the Forum and its work programme was formally built into the Government's freshwater policy programme. With the Government's support, over a one-year period from August 2009 to August 2010, the Forum succeeded in building a broad base of stakeholder consensus on a common direction forward for freshwater management – a goal that had eluded successive governments following a more conventional approach to policy development since at least the mid-1990s. We then "toured" that consensus position around the country and found it to be generally well-received.

6. The release of the Forum's first report in September 2010 (LAWF1), paved the way for the Government to take much needed and overdue action to improve freshwater management. The release of our report was swiftly followed by the promulgation in 2011 of a National Policy Statement on Freshwater Management (NPS-FM) and the creation of two multimillion-dollar funds: one to support the development of high-quality irrigation infrastructure and the second to accelerate environmental restoration.

7. The Government then requested that the Forum continue its consensus-building work and from September 2011 to September 2012, again with the support of the Government, we developed the blueprint for change set out in LAWF1 into a more detailed and thorough freshwater management framework. In April 2012 the Forum released a report (LAWF2) that addressed the setting of objectives and limits for freshwater quality and quantity, and proposed the introduction of collaborative processes for that purpose. The present report deals with tools, approaches and strategies for managing fresh water within limits.

Our previous reports

8. In LAWF1 we proposed a number of changes to the New Zealand freshwater management system, including recommending that central government should define objectives for the state of our waterbodies, and regional councils[2] should express these objectives as measureable environmental states and link them to catchment-based[3] limits. The report also:

    a. underscored the importance of better water management to ensure limits were met, and highlighted the need for an improved system for allocating fresh water to enable this

    b. proposed governance changes, including to improve the effectiveness of national direction and to recognise the role of iwi as Treaty partners, and as stakeholders

    c. proposed changes to national and regional planning and decision-making processes, including to recognise the potential contribution of rural water infrastructure to achieving social, cultural, environmental and economic objectives

    d. discussed the essential role of science and knowledge in freshwater management, the issue of improving water services management, and issues relating to the management of drainage and flooding.

9. One of the key recommendations of LAWF1 was that the Government should promulgate a National Policy Statement for fresh water quickly. The NPS-FM set objectives for water quality and quantity, and required regional councils to set freshwater objectives and limits for all bodies of fresh water in their region.

10. In LAWF2, we built on the direction set by the NPS-FM and proposed a national framework by which limits would be set for each catchment. This entails:

    a. enhancement of the objectives currently in the NPS-FM to include acknowledgement of the relationships of tangata whenua with fresh water and their connections with freshwater objectives, and to expand the scope of existing objectives regarding risks to human health from micro-organisms and toxic contaminants

    b. national direction and guidance (including national 'bottom lines') to frame regional council freshwater state objectives and resource use limits for the taking of water and discharge of contaminants for all waterbodies

    c. the effective control of effects on waterbodies, including cumulative effects, through the transparent and predictable application of and compliance with limits

    d. discretion for regional councils to set the timeframes and policies for achieving objectives and limits, taking into account the circumstances of each catchment

[2] In this and subsequent text the term "regional council":

- includes unitary authorities
- refers to an entity comprising both elected and appointed members
- involves iwi, including co-governance arrangements
- recognises that some regions will have specific Treaty settlement obligations that will affect their water management policy and governance framework – for example, the arrangements for the Waikato River Authority.

Note that there is a presumption in LAWF2 that regional councils will employ a collaborative process, involving the community and stakeholders, for the development of freshwater policy and plans, but that this approach may not be chosen in all cases.

[3] In this and subsequent text the term "catchment" means the catchment-based spatial unit of management, and can mean sub-catchment.

e. a collaborative approach being preferred for the development of the freshwater-related components of regional policy statements and related regional plans, including setting objectives and limits (and for freshwater-related national instruments)

f. the involvement of iwi in freshwater management both as decision-makers, and as participants in policy- and plan-making processes

g. a more agile and integrated policy- and plan-making process that enables minor and technical changes to be made to freshwater-related national and regional instruments in a timely and efficient manner.

11. This report follows on from LAWF1 and LAWF2 and recommends how those earlier recommendations are given effect. This report specifically addresses how to manage water quality and allocate water, including ways to ensure that freshwater management encourages investment, incentivises efficient practices and contributes to economic growth. The Forum's three reports need to be read as a package. The first provides a blueprint for land and water management reform. The second and third deal with the ways in which the reform might be implemented. Equally, managing within limits – the subject of this report – is dependent on setting objectives and limits, the subject of the second.

12. In the second report we recommended that further work should be done to populate and finalise the sets of national numeric and narrative water quality objectives, and we suggested it should be done through a collaborative process, which we offered to undertake. In the event, Ministers decided to seek advice themselves on how a potential National Objectives Framework[4] could be populated. This advice is being informed by a reference group comprising representatives of various stakeholders and interest groups, and supported by scientists from several research organisations. The advice is being finalised for consideration by Ministers. Obviously the outcomes of this exercise will have important implications for recommendations in this report.

More active and dynamic water management

13. Our three reports together put forward a comprehensive set of practical recommendations which chart a new approach to the management and use of fresh water – an approach that is more accountable, efficient and fair. In particular this entails:

a. securing the quality of our environment and social and cultural values that rely on fresh water, through setting and achieving objectives and limits

b. stakeholders joining forces at catchment and regional levels to come up with robust solutions that reflect the diversity of catchments, and protect and enhance our fresh water and the communities and enterprises that rely on it

c. a more transparent system to support better collective and individual decision-making with defined accountability for resource users and resource managers

d. managing fresh water in a dynamic and adaptive way, so that collectively we can respond to changes in knowledge, expectations, the environment and economic conditions

e. developing and supporting a range of methods and tools to enable water to be used in a way that is efficient and fair and maximises New Zealand's economic welfare

f. integrating sector good management practices with other tools to manage water quality

g. resolving historic water management issues and providing greater certainty for the future.

[4] Refer to Recommendations 4 & 5 in LAWF2.

14. This approach will imply change for all users and managers of water – in all environments – in order to make it work. Freshwater monitoring and compliance will need to be more effective, and science and information will need to be more comprehensive, more applied and better communicated. The regulatory system will need to foster investment certainty and encourage innovation within the limit. The policy- and plan-making process will need to bring communities together to craft mutually advantageous solutions, and to foster a broader understanding of the values and viewpoints of other stakeholders.

15. Overall we all need to accept that we all have to take responsibility for the management of fresh water if we are to achieve our objectives. Over time this approach will provide a framework that will improve decision-making, and secure better outcomes for New Zealanders and their environment, while at the same time enhancing investment certainty and development opportunities for land users, businesses and investors, with consequent growth and employment benefits.

16. The Forum is convinced that the approach we have proposed will allow us to manage fresh water resources better, even when under increased pressure, and to take advantage of precious opportunities to protect and grow our ecologies, people, economy and culture. This means that we need to take decisions and actions now.

17. An active approach to the management of our fresh water resources will allow us to sustain and enhance our land and water over time, along with all the uses they sustain (including economic uses). Focusing on efficiency, productivity and adding value is important, but so is the need to ensure that new players, including iwi, are able to enter the fresh water economy in order to open the door to future economic opportunities, and to provide for changes in social values. An active approach to freshwater management will ensure that New Zealand and its economy and environment remain resilient in the face of future changes or crises.

18. We believe that it is time to move past the perception that trading-off or balancing values *against* each other is an inescapable part of freshwater management. While at first glance it might seem that some values and interests are in opposition, in many cases it is possible to create economic wealth or to enhance ecological values without diminishing other uses and values of water. The Forum has found that taking an active and collaborative approach to freshwater management can make it easier to identify opportunities and can increase the chances of arriving at optimal solutions that enhance the interests of all parties. The approach we are proposing in our reports sets up the system to develop such solutions. Win-wins will be achieved in various ways, including through:

    a. coming up with smart solutions that draw on local knowledge, skills and experience and which are advantageous to all players

    b. exploring opportunities for partnerships between existing and new users

    c. developing and disseminating more efficient production and management techniques

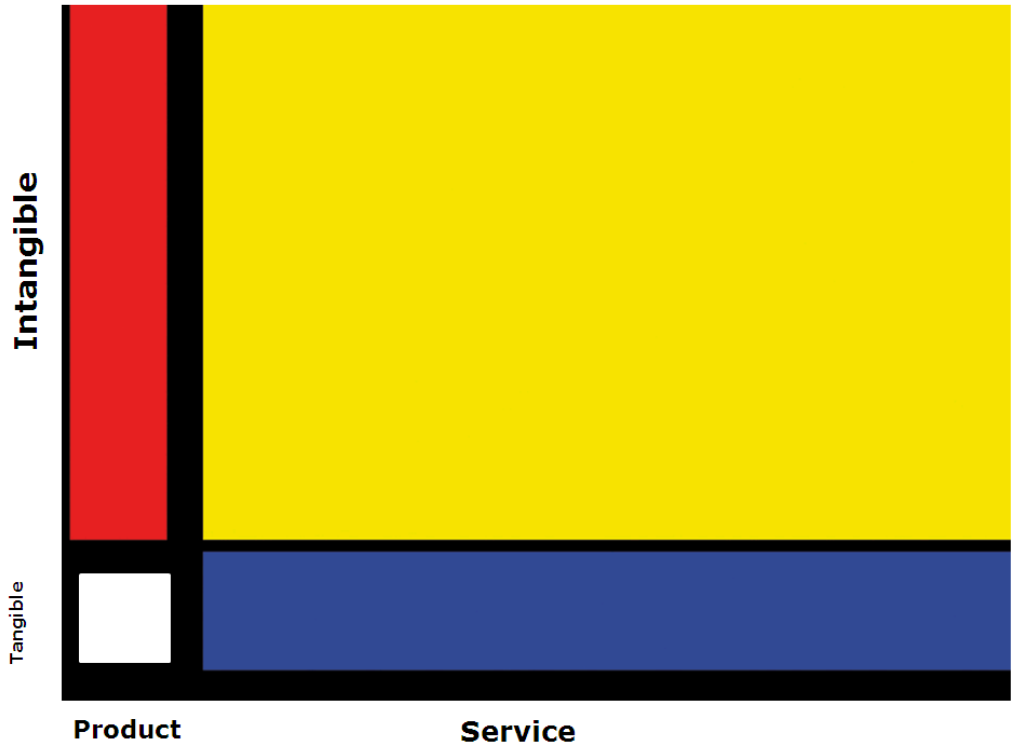
    d. increasing the reliability of water through infrastructure development where appropriate, thereby increasing investment certainty and allowing longer-term thinking

    e. leveraging off our environmental management system in export markets.

19. Overall, future growth, development and employment will occur through efficiency and productivity gains supported by targeted science, research and investment, and through the operation of a dynamic and adaptive freshwater economy, rather than through putting other values or our natural environment at risk. The approach we are proposing will also bring more certainty and transparency for businesses and investors. The setting of objectives and limits – wherever possible taking advantage of collaborative processes – will clarify and secure the resource available for use, in a way that is effectively integrated with local aspirations and objectives for fresh water. An active management framework will drive and incentivise smarter and more productive uses of water, enabling water to be transferred to those who will make the

best use of it, as well as providing ways for all land users to adjust to the new regime. It will also lead to more robust and informed decisions about infrastructure development, in a way that maximises their potential benefits and minimises their negative impacts, and ensures buy-in from the community at large.

20. The following box from Zespri indicates how it is thinking about adding value through a reduced resource footprint.



Adapted from Piet Mondrian, 1872-1944

Water plays a pivotal role in the quality and value of New Zealand's primary industry exports. Although our water resources enable our tangible products to be produced as efficiently as the best in the world, we are also able to use our water to de-commodify these same products in a uniquely New Zealand way. The tangible service attributes that we incorporate into our products, such as reliability of supply to customers through our year-to-year availability of water is becoming more valued in a resource-constrained world focusing on food security. The intangible service attributes associated with our products, for instance the narrative and metrics behind how we balance the four well-beings in our management of water, becomes more essential as global consumers seek out credible purchase options to reduce their impact on the biosphere. Intangible product attributes that include the isotopic characteristics of the hydrogen and oxygen atoms that our water embodies in our products will also play a key role in authenticating our premium products as truly originating from New Zealand.

Source: Zespri

Context of our report

21. This report and its proposals should be read with a number of key points of context in mind.

22. **Water management is comprehensive – the Forum's reports apply to all contaminants, urban and rural environments, and all waterbodies.** While there may be different management systems to cater for different circumstances, water management should be comprehensive.

23. **The water management framework must allow individuals and enterprises to act in ways that support economically profitable and efficient operations**. This includes addressing both those elements of the current regime that discourage transfers or trades of water consents from becoming more frequent and that discourage innovation by land and water users and regulators, and ensuring that the role of infrastructure in facilitating this is recognised in the planning process. By removing those barriers we will be opening opportunities for a market in freshwater consents to emerge. The need for a dynamic management regime that facilitates individual- and enterprise-level decision-making is particularly relevant where water is scarce and where waterbodies have a limited ability to assimilate more contaminants. This will be more straightforward in the context of allocating water quantity than it is in the context of managing water quality - a matter that is discussed in greater depth later in this report.

24. **The NPS-FM requires the establishment of clear objectives and limits for all bodies of fresh water across all of New Zealand's catchments**. New Zealand's freshwater management framework does not, however, require the quality of waterbodies to be uniform – pristine quality across New Zealand is not a realistic goal and fresh water is needed for economic use. But we have proposed that there will be bottom lines to protect the mana and ecological health of rivers, streams, lakes, aquifers and wetlands, and that provision is made to protect outstanding waterbodies. Greater national direction (including the development of a national objectives framework) and improved planning processes will help ensure that the wide range of values and interests in fresh water held by New Zealand communities are taken into account in the setting of these limits and objectives. The NPS-FM anticipates that, over time, the general quality of fresh water in New Zealand will improve.

25. **Policy on freshwater management cannot be seen in isolation, it must be integrated with the wider public policy environment**. There are a number of Government reviews that will impact on water management. The Forum's reports may also influence the Government's consideration of the outcome of these reviews. Details of some of these are known, others are not. They include:

    a. the Technical Advisory Group's review of sections 6 and 7 of the Resource Management Act (RMA)

    b. the investigation by the Productivity Commission into local government regulatory performance

    c. concerns at the timeliness, co-ordination and responsiveness of local government planning activities

    d. the Better Local Government reviews, and the Local Government Infrastructure Efficiency Expert Advisory Group.

26. **Any transition to a new way of managing water must be fair**. A freshwater management system needs to recognise that people and businesses have made capital investments; that new parties need to have opportunities to enter the water economy; and that the implications of the costs and benefits to individuals and enterprises that arise during the transition to a new system (or at other points in the process) need to be addressed.

27. **Land use, soil and freshwater management need to be integrated.** Understanding the hydrological cycle and the influence of land use on fresh water is critical to the development and implementation of a sound freshwater management system. When setting limits and establishing freshwater management frameworks it is essential that we have a good understanding of how land use patterns and management regimes affect groundwater systems and connected rivers, streams and estuaries. These effects could be direct, diffuse, cumulative, uncertain or delayed. Having a clear understanding of the time-lag between an activity and its effects on a waterbody is particularly important as this can have significant implications for the way in which limits are set and managed.

28. **An enduring water management system must resolve the question of iwi rights and interests.** Iwi have participated in the Land and Water Forum from the beginning, and they have always sought to have the full nature of their relationship with water recognised within and across the cultural, environmental, social and economic well-beings. We accept that iwi rights and interests in fresh water are being addressed through direct engagement between iwi and the Crown. In its first report the Land and Water Forum said:

    Iwi see economic development as vital for New Zealand, but subject to the constraints of reducing environmental footprints, including through smart technologies and innovation. They look to formal participation in setting strategic priorities at the national level, and involvement at the local level which allows them to ensure that their values and objectives are taken into account in practice. Iwi seek outcomes from water that sustain the physical and metaphysical health and well-being of waterways as a matter of first principle; ensure the continuation of customary in-stream values and uses; and satisfy iwi development aspirations.

29. The provisions we have recommended regarding these aspirations can be listed in the following ways, although they do not sit as discrete recommendations but are in fact fully embedded in the Reports and constitute an integral part of them.

    a. As to the setting of priorities at the national level, the first report recommended that iwi should participate on a co-governance basis in a New Zealand Land and Water Commission. The Second Report recommends that iwi should participate through collaborative processes to develop freshwater-related national instruments and to review them.

    b. The Second Report recommended that iwi should be enabled to participate throughout the freshwater objective- and limit-setting process both as Treaty Partner and also as stakeholders and made specific recommendations about how this would be done at each stage of the model it put forward. These recommendations went to their engagement with councils in setting up collaborative plan-making processes, their participation in those collaborative processes, their representation on hearing panels, and their involvement in the council decision-making at the end of the process. It also recommended that in the plan-making process, their values and interests should be addressed on a catchment-by-catchment and relationship-specific basis.

    c. To support and enhance the setting of objectives and limits for waterbodies, the Second Report recommended that the current National Policy Statement on Freshwater Management incorporate material on tangata whenua relationships with fresh water. It recommended that national freshwater objectives should be worked out in detail through a process involving stakeholders, iwi and scientists (including those skilled in Mātauranga Māori), which the government is leading.

    d. For its Third Report, the Forum has developed an integrated catchment management approach to managing fresh water within quantitative and qualitative limits. These sets of

recommendations complement the limit-setting processes described above and with them should allow the mana of the waterbodies to be preserved. The allocation processes that the Forum has recommended do not prejudge discussions between the Treaty Partners, but they are sufficiently flexible to accommodate outcomes from negotiations between Iwi and the Crown.

e. The First Report of the Land and Water Forum recommended that the transition to any new system of water allocation should proceed hand in hand with Crown-iwi discussions on iwi rights and interests in fresh water management.

30. We recognise that the resolution of iwi rights and interests rests with iwi and the Crown; but in the light of our conversation with iwi participants, which has continued over four years and has been extremely productive, we have prepared the following chapeau statement.

Forum statement on iwi rights and interests in fresh water

Our experience in preparing this report has given us confidence that New Zealanders can move forward together to create an effective and fair system of freshwater management – one which will create incentives for economic growth, strengthen our communities, enhance our environment and safeguard the ecological systems on which we all depend. Indeed, in many regions around the country they have already begun to do so.

For a system which articulates general rights and interests to be stable and durable, however, iwi rights and interests also need to be resolved. We can see significant win-wins in this process, including the development of under-utilised land and resources, and the ability of iwi to partner with others the growing of the water economy – including through the development of infrastructure.

Recommendations in our first and second reports relate to the involvement of iwi and of iwi values in developing national objectives and instruments and setting catchment objectives and limits. They go to the *mana* of waterways, *rangatiratanga* and *kaitiakitanga.* We believe that giving effect to these recommendations can play an important part in recognising and providing for iwi rights and interests in fresh water. They do not, however, address rights of iwi to access water for customary and commercial use.

In our first report, we also recommended that the transition to a new system of water allocation should proceed hand in hand with Crown-iwi discussions on iwi rights and interests in freshwater management.

In summary, the Forum has acknowledged that iwi have rights and interests in fresh water. The responsibility for resolving the nature of these rights and interests, including any options for providing for them, rests with iwi and the Crown.

We also recognise that others have established rights and interests in New Zealand's freshwater resource that must also be respected. Existing rights should not be compromised, and costs relating to Crown-Iwi resolutions should not be transferred on to other parties.

The Treaty Partners should seek solutions which provide win-win opportunities to develop New Zealand's freshwater resource and enhance all parties' interests in fresh water.

Water management to meet objectives and limits

31. LAWF2 sets out the way that clear freshwater objectives and limits will be set to capture the range of values that New Zealand communities have for each waterbody.

32. In order for a limits-based regime to work effectively, a number of elements of the regime will need to be managed more actively – discharges, the taking, damming, diverting and using of water, land use practices that have an influence on water quality, and the allocation of water to users.

33. Choices will need to be made through collaborative processes about the methods and timeframes for achieving limits in particular waterbodies. Choices as to the catchment-specific design of the management regime will need to ensure that fresh water is managed within limits, in a way that is both timely and equitable, so that freshwater objectives are achieved.

34. In some catchments, water quality and water quantity management approaches and outcomes may not meet community expectations – in these cases adjustments to both land use practices and regulatory approaches may be necessary. This reinforces the need for collaborative planning to address these, and implies the need for a degree of pragmatism at the catchment level alongside effective compliance with national expectations – regional councils will need to be held accountable for their performance against the NPS-FM and other national instruments and the proposed national objectives framework.

35. The frameworks for allocating water to users and for managing discharges of contaminants should focus on three related things. First, they need to ensure that freshwater objectives and limits are met over the time period set out in regional plans, including through resource users meeting their obligations in ensuring that limits are met and freshwater objectives are achieved.

36. Secondly, they need to ensure that New Zealand's long-term economic welfare is maximised:

    a. Outcomes need to be **technically efficient** – for example, irrigators should be applying the right amount of water, at the right time, for the soil type; water should be kept at the root level; nutrients should be kept and used on the property; and infrastructure should be maintained and demand managed in urban environments so that water is not wasted.

    b. Patterns of water use need to be **allocatively efficient** – fresh water powers New Zealand's economy and water that is available for economic use needs to be allocated to the highest valued use. The national water management system should not embed preferences for particular users or sectors, and should encourage efficient investment.

    c. The framework needs to encourage **dynamic efficiency** – patterns of resource use need to be able to adjust efficiently to meet changing demands. Transaction and compliance costs need to be minimised.

37. Thirdly, these outcomes need to be achieved in a way that is fair and accepted by the community. For example, the process and timeframe for transition need to ensure we reach our goals as quickly as possible, but it is equally important that they allow time to adjust in order to avoid undue hardship.

Recommendation 1

Central government and regional council frameworks for allocating water and managing discharges of contaminants need to be accountable, efficient and fair. They should ensure that:

a. freshwater objectives are achieved and limits are met over the time period established by the regional planning process
b. water, land and related resource use is efficient, dynamic and maximises long-term economic welfare
c. social equity is considered in decision-making.

Catchment planning

38. It has long been recognised that catchments are the appropriate management scale for fresh water, and much planning at the moment is carried out by regional councils at the catchment scale. The holistic concept of catchment management sits well with the "ki uta ki tai (mountains to the sea)" whole-of-system management approach taken by iwi.

39. Catchment-scale planning (within a consistent framework that includes national objectives) recognises that although activities within catchments may be widely separated, they can have significant impacts on each other and these impacts may take time to materialise. It also recognises that each catchment may have its own specific needs that will require locally developed management approaches.

40. In LAWF2 we set out a catchment management framework for setting measurable environmental state objectives and limits. This report provides further detail on the catchment management framework in terms of achieving those objectives.

41. One of the key themes in this report is that the policy and planning for management of water quality and the allocation of water should primarily be delivered through regional plans, rather than using the consenting process as a planning tool. Regional and catchment planning allows objectives and limits, water allocation methods, and water quality management methods and tools to all be addressed together, and for relevant communities of interest to make their views known. Planning should be done once in this way, rather than in an ad hoc manner through consenting. Among other things, this will provide certainty to resource users about the limits that will apply in a catchment, and about the set of tools that will be used to manage to those limits.

42. Regional plans need to be reinforced as the key policy instrument for catchment-based management, and integration of catchment management planning across land and water must be a primary goal for management of fresh water. Essential to this integration is the involvement of stakeholders and iwi in governance and management planning, as recommended in LAWF2.

43. The availability of and access to data and information are essential requirements for catchment management. Good quality data are not available in all catchments, and a precautionary adaptive management approach that recognises potential risk to environmental outcomes and water users will be required to improve catchment management over time as better or more reliable information becomes available.

44. The scope of integrated planning should be broad, and should include:

    a. management of both water quality and quantity, including interactions among:

        i. surface water, groundwater, and coastal marine water

        ii. water quality, flow, land use, and hydrology

    b. assessment of the current state of the catchment

c. the role of infrastructure, potential opportunities from and impacts of its further development, and any possible inter-catchment infrastructure benefits and impacts

d. setting of objectives and limits within a national framework in tandem with determining the range of tools to be used for meeting them, while ensuring that social, economic, environmental and cultural considerations are incorporated

e. consideration of the complexity of interactions, the state of specific knowledge, and the uncertainty around potential consequences of particular approaches that might dictate caution

f. providing a policy framework that integrates regional and territorial authorities' functions in the application of land use controls that may impact on freshwater quality.

g. the ability to manage the allocation of water with long-term economic welfare as the primary driver

h. how industry, community and council programmes can be integrated

i. how implementation will be resourced and managed to ensure its effectiveness

j. requirements for monitoring and review.

45. Given the nature of this task, and the variability across catchments, it will be important for regional councils to prioritise catchments for planning. These priorities should be based on the state of the waterbodies relative to the National Objectives Framework, and the risks and opportunities provided by areas of resource use pressure (both quality and quantity). The National Objectives Framework will also set out any scope for water quality trade-offs between catchments.

46. Within regions there may well be sets of relatively homogeneous catchments that, for the purposes of planning and the initial setting of objectives and limits, may be grouped under a single set of policies and rules. This is likely to be useful in areas of many small catchments of similar type and land use, and may be necessary to ensure that resources are used efficiently and that planning and limit-setting processes are completed for all catchments in a reasonable timeframe.

47. Decisions on the level of aggregation of catchments for planning processes need to be made as part of a region-wide assessment that also sets planning priorities based on the scale and significance of particular issues (for example, the level of contaminants, desire to promote storage, need to manage scarcity) and the degree of risk posed to overall water management objectives. Such priority setting is already underway at regional councils as part of planning for objective- and limit-setting under the NPS-FM. This initial planning is due to be completed by November 2012.

48. All issues in the catchment for both water-related quantity and quality should be considered in:

    a. creating catchment strategies

    b. proposing policies, methods and rules for regional plans, including objectives and limits

    c. co-ordinating and guiding subsidiary processes, operational plans and implementation activities.

49. The planning process will need to be iterative to some extent, particularly in assessing the relationship between objectives and limits, and the suite of methods and timeframes proposed for achieving them. Assessment and deliberation should be repeated to evaluate a range of scenarios under different combinations of objectives, limits and methods to achieve a clear understanding of the options and their consequences, including their achievability, costs and benefits.

50. Monitoring, reporting, and reviewing are essential for assessing progress towards objectives, identifying opportunities for greater growth and development, and adjusting approaches as additional information is obtained.

51. A dynamic and adaptive management framework should not only respond to new information provided by regular monitoring, but set out to methodically produce new information where significant uncertainty exists. Under uncertainty, interventions should be designed to improve knowledge about the nature and behaviour of the resource system.

52. Comprehensive and integrated catchment management across regions will require significant adjustment of current practices within many regional councils. Some of this adjustment will need to focus on the better co-ordination and integration of existing activities.

53. National guidance material for integrated catchment management and setting limits and objectives using a collaborative approach would assist in guiding a consistent approach across the country. Such guidance should draw upon best practice and learning from existing examples, and should be updated as implementation proceeds. Some guidance might be included in statutory instruments, but the on-going exchange of information based on experiences and analysis of outcomes will be critical to dynamic and efficient progress.

Differences and similarities in managing freshwater quality and quantity

54. This report makes recommendations for improving the way that water is allocated to users, for improving the way that New Zealand manages its land, and for incentivising enterprises to achieve desired water quality outcomes.

55. The management of freshwater quality and quantity have some themes in common, including national objectives, the importance of regional plans and catchment planning, the need to account for resources, the need to monitor outcomes, and the need to constrain resource use and encourage efficiency when there is full allocation. There is a need to manage them in an integrated way – water quality and quantity aspects interact, and need to be considered in an integrated way in the planning process.

56. They also have several differences that mean that a common approach will not always be possible or desirable. It is important to recognise these differences and to design the approach for managing freshwater quality and quantity accordingly. These differences include:

    a. **Different planning and consenting systems have operated for water quality and quantity.** Most water takes require a formal consent (or water permit), but some abstractive uses are permitted through rules in a regional plan or through the provisions of the RMA itself. There is not, however, a well-established understanding that activities that have an effect on water quality require permission through the same methods.

    b. **There is a wide range of contaminants and types of sources that affect water quality**. These include sediment, nutrients, micro-organisms, metals, and other toxic or harmful substances (e.g. poly-aromatic hydrocarbons (PAHs), pesticides). The combination of contaminants also influences water quality outcomes.

    c. **Water takes in general are measured directly, and are attributable and enforceable.** They can therefore can be directly allocated and accounted for relatively easily. The same does not apply for sources of diffuse discharge of contaminants which by their nature are widely spread, enter waterbodies through the soil in a disaggregate manner and whose effects are often cumulative. It is more difficult to monitor and attribute the effects of diffuse discharges to particular sources and to exercise control over them, although the science in this area continues to advance.

57. These differences have a number of implications. First, they will affect the choice of tools for managing to water quality and quantity limits – what might work for one might not for the

other. Secondly, there will be different levels of experience and comfort with different regulatory approaches – having the conditions of a consent changed is different from requiring a consent for an activity that has previously not needed one. These implications will need to be carefully considered when setting limits and when establishing water management regimes in a catchment context. They will also need to be taken into account during the transition to the new regime – it is important that the community understands and buys in to a changing management approach.

Integrating infrastructure into regional planning

58. Consideration of existing infrastructure, its modernisation, and opportunities for further development of infrastructure need to be integrated into catchment management planning. Water storage (in both urban and rural contexts) can provide part of a mix of approaches to water management problems as well as increasing the supply and reliability of water for future economic development. It takes time to understand feasibility and develop solutions for each proposal. Catchment planning provides a good opportunity for the community to engage in considering infrastructure's role in a catchment.

59. Water storage and distribution is the most obvious type of infrastructure. Storage enhances the reliability of water supply allowing greater diversity of uses, and greater overall productivity of land. Infrastructure allows the efficient transfer of water from place to place without moving the point of take, thereby ensuring the environmental impacts of takes are managed, while allowing water transfer. Storage of surface water can also relieve the pressure on groundwater in some circumstances, which can have beneficial downstream effects in catchments, and potentially result in significant energy savings in pumping groundwater. Storage can also be used to generate hydro-electricity, whether stand-alone or integrated with an irrigation scheme.

60. Other types of infrastructure can contribute to water quality improvement and maintenance without preventing new development from proceeding. Examples include:

    a. conveyance, storage and treatment facilities for wastewater, such as

        i. wastewater treatment facilities
        ii. sewage reticulation networks
        iii. effluent ponds and storage on farms
        iv. detention dams for contaminated mine water

    b. conveyance networks and treatment facilities for stormwater

    c. catchment-scale mitigation projects such as artificial or restored wetlands

    d. catchment control and soil control schemes.

61. Planning also needs to consider the potential negative effects of infrastructure, and how the management system might address them. Such effects can include the impact of structures on waterway continuity and ecological systems, and the potential impacts of more intensive land use enabled by improved water supplies. Short and long-term costs and benefits of proposed infrastructure also need careful scrutiny to ensure that opportunity costs are taken into account and that the most efficient means of achieving the objectives is chosen.

62. Infrastructure matters should be considered in an integrated way early in the catchment planning process so that interactions are explored while potential objectives and limits, water quality management approaches and allocation systems are being discussed and developed.

63. Establishing limits and managing water within them, along with a better understanding of each catchment, will provide certainty for more informed decisions to be made on infrastructure solutions.

Transfer and trading

64. In some catchments, the ability to transfer and trade authorisations to take water and to discharge contaminants could make a contribution to improving the dynamic efficiency of the freshwater management regime. This is particularly likely to be the case in those catchments where water takes come predominately from groundwater sources, where infrastructure is in place or is feasible to develop and where contaminant discharges are easily identifiable and attributable. Enabling dynamic transactions of this kind may help drive water use efficiency and improvements in land-management practices, and may be a key mechanism for allowing fresh water to move its highest valued use over time – including by providing opportunities for new participants to enter the water economy.

65. By making it easier for individuals and enterprises to transfer and trade freshwater-related consents, we will be opening opportunities for markets to emerge. Markets of this kind could facilitate entrepreneurial decision-making at the individual and enterprise level. This will be more straightforward in the context of allocating water quantity than it is in the context of managing water quality – a matter that is discussed in greater depth later in this report.

66. That is not to say that facilitating the transfer and trade of consents to take water and to discharge contaminants will be a silver bullet. The capacity and characteristics of markets will be highly dependent on local conditions, public perceptions and the spatial and geographical characteristics of the catchment. These factors vary from catchment to catchment and will need to be taken into account in the catchment planning process – markets will not emerge everywhere. The type of market that might emerge is voluntary, catchment-based, subject to national and catchment planning and subject to physical and environmental limitations.

67. There are some concerns that a regime that supports the transfer and trading of authorisations could have unintended consequences. We have discussed anxieties regarding the potential emergence of so-called “water barons” or “nutrient barons” – people who amass authorisations in excess of what they need to provide for their activities in order to trade and profit from them. We have also discussed the risk that the emergence of markets in freshwater-related consents could make local users of water vulnerable to the influence of “out-of-catchment” capital investment.

68. The general statutory framework, including the Overseas Investment Act and Commerce Act, is designed to protect against these risks. In addition, successive governments have shown a willingness to put in place specific regimes in a number of sectors where there is a need to actively ensure that markets operate fairly and effectively, and are free from abuse or anti-competitive behaviour (e.g. electricity, telecommunications and fisheries).

Outputs of catchment planning

69. The regional plan is the primary policy and planning tool for water management at a catchment scale. The plan should provide significant detail around the overall policy direction being taken, and will incorporate policies, rules and methods decided in collaborative processes, including:

    a. objectives, limits and targets for quality and quantity

    b. methods – both regional rules and other methods – to achieve objectives

    c. any policies regarding initial allocation schemes, transfers, etc.

    d. policies for adjustment in transition (e.g. for dealing with over-allocation)

    e. links and regulatory dependencies for sector schemes

    f. conditions on further rule-making by territorial authorities

    g. setting out any legally binding roles, responsibilities or actions for resource users and their representative organisations

h. monitoring and review procedures.

70. In order to link and co-ordinate the policies, methods and rules in the regional plan with implementation on the ground, an implementation plan should be produced through the catchment management planning process – inclusive of the council, stakeholders and iwi**.** This plan is non-statutory and should not contain binding policy or measures. It should, however, cohesively set out how implementation will proceed, drawing on the full range of methods and approaches available, whether these are in the regional plan or represent local voluntary or cooperative initiatives. It should clearly set out agreed roles and responsibilities for all parties and timing for actions, and provide a communication and reference document for all stakeholders. The implementation plan will need to encourage innovation and will need to have the necessary flexibility to keep pace with changes to the catchment plan. Processes for developing and amending the implementation plan will need to be co-ordinated with our planning agility proposals put forward in LAWF2 (see recommendations 29-31 of LAWF2).

71. Costs to the council of on-going catchment planning processes and implementation and monitoring costs need to be provided for in the council's financial planning. This will include funding, human resources and information resources required for the catchment planning process itself, anticipated reviews and change of statutory plans, implementation programmes (including compliance), and environmental monitoring and reporting.

Recommendation 2

Regional councils should prioritise catchments for planning on the basis of the state of the waterbody relative to the National Objectives Framework[5], and the risks posed by areas of resource use pressure (quality and quantity).

Recommendation 3

Regional councils should conduct regional planning in an integrated way in catchments to:

a. set freshwater objectives and limits
b. manage water takes, land use, and discharges to achieve freshwater objectives and limits having identified key water quality issues and contaminants in the catchment[6]
c. manage the water to be allocated to users with long-term economic welfare as the primary driver
d. consider the role and opportunities for infrastructure to manage water issues including to provide environmental benefits and greater reliability and supply of water.

Recommendation 4

The process for setting freshwater objectives and limits should be undertaken together with the consideration of strategies, methods and timelines for achieving them. The process of assessment and deliberation should be repeated to evaluate different scenarios (objectives, limits, methods and timelines) to achieve a clear understanding of the options including their achievability, costs, benefits and consequences.

[5] Refer to Recommendations 4 & 5 in LAWF2.

[6] In this and subsequent recommendations the term "catchment" means the catchment-based spatial unit of management, and can mean sub-catchment.

Recommendation 5

Regional councils, in addition to setting freshwater objectives and limits, should:

a. create catchment strategies for achieving freshwater objectives and limits
b. agree plans for sharing responsibilities and costs among stakeholders
c. set policies and methods (including rules) in regional plans
d. guide related processes (e.g. Audited Self-Management schemes), operational plans and implementation activities.

Recommendation 6

Regional councils should on an on-going basis:

a. undertake monitoring of the state of the environment
b. review implementation plans and programmes
c. report to the community on progress towards meeting freshwater objectives and limits
d. monitor and review regional policy and plan effectiveness
e. ensure iwi and wider community values, objectives and data are included in monitoring and review processes

Recommendation 7

Regional councils should specify and provide for the resource requirements of catchment management processes (regulatory and non-regulatory activities) in their financial plans.

Managing water quality

The challenge

72. Achieving freshwater objectives (the community's water quality outcomes) and meeting water quality limits is a challenge for the management of fresh water in New Zealand. Very few catchments (less than 5%) currently have water quality limits and few regions have measurable freshwater objectives set in their regional plans. In the past the management of land use and discharges to control contaminants has often not been as well integrated and co-ordinated as it could have been. Measurable objectives and limits will focus the package of management tools required to manage land use and discharges towards a common and clear goal.

73. The requirements of water quality management in New Zealand vary significantly by region and catchment, and are highly complex. Challenges include:

    a. the inherent spatial and temporal variability of natural systems (and how they respond to management interventions)

    b. managing the range of contaminants from a wide range of sources (point source and non-point source), including sediment, nutrients (e.g. nitrogen and phosphorous), micro-organisms and other toxic or harmful contaminants (e.g. organic compounds, pesticides).

    c. dealing with a variety of transport pathways and rates of travel for contaminants, which may interact with each other

    d. dealing with legacy contaminant loads

    e. limited information and data on many waterbodies, and the difficulties and costs associated with measurement

    f. the differing cultural and social expectations for different waterbodies

    g. the differences between urban and rural land uses

    h. the presence of natural sources of contaminants

    i. the costs associated with implementation activities and where they fall

    j. varying timeframes (commonly known as lag times) before improvements or deterioration are observed in waterbodies.

74. The cumulative impact of diffuse sources of contaminants over large areas creates particular challenges for water quality management, including the costs associated with attempting to measure or estimate these diffuse sources, and the issue of time lags. Time lags manifest as either a period in time between the leaching of contaminants from diffuse sources and the appearance of symptoms in the waterbody, or a period in time before the impact of management interventions are apparent. In either case, there is a need to make progress with managing water quality to both limit degradation where it is already occurring, and act to prevent degradation where resource pressures exist.

The water quality management framework

75. The water quality management framework we describe assumes that the limit-setting process has identified the issues (including the contaminants of concern) and values in the catchment. It also assumes that freshwater objectives and limits have been set. However, we envisage that the process of identifying the management methods will be developed in parallel with limit-setting in an iterative process. Scenarios should be developed to assess different management options

and their consequences so that informed decisions are made on the mix of methods and tools that will be deployed, and how the contribution from sector organisations will be incorporated.

76. The NPS-FM provides the national framework within which regional councils must prepare their regional planning documents. For the first time, regional councils are obliged to set both freshwater objectives and limits for waterbodies. LAWF2 recommends that these freshwater objectives meet national bottom lines and sit within a national objectives framework. Limits must then be set to achieve the objectives. The requirement to set limits in an integrated way changes the environment within which water quality will be managed. Water quality issues will need to be considered, options assessed, and solutions designed, transparently analysed to show that they will be effective in achieving freshwater objectives and meeting limits, and comprehensively implemented.

77. The complexities in water quality management mean that there is no one solution that will work for all contaminants, in all situations. Water quality management is best carried out within catchments (or management areas within them), and approaches will need to be tailored to the situation and contaminants, and a suite of management tools considered. A transparent analysis of the effectiveness of the resulting management option to meet the limit is required.

78. A diagram of the planning framework we have proposed is attached as Appendix 1. The framework recognises many of the established methods for water quality management – planning at the catchment or sub-catchment level is appropriate, and there are a variety of methods and tools that regional councils can use to manage for water quality outcomes. However, the framework makes some substantive changes in focus through:

    a. greater national guidance to ensure consistency in approach and an efficient use of resources

    b. integrated management of contaminants through the catchment planning process, formalised in the regional plan

    c. a balanced suite of regulatory, non-regulatory and sector contributions to water quality management

    d. a transparent analysis of the effectiveness of the management options (including their benefits and costs) in meeting the limits

    e. clear responsibilities outlined for regional councils, land and water users, and sector organisations for achieving water quality outcomes

    f. improved and linked planning and implementation

    g. adaptive management and plan agility.

79. The management option councils adopt should:

    a. be cost effective and encourage efficiency (both economic and resource use)

    b. not create new inequities

    c. be able to meet the limit

    d. apply to all manageable contaminant sources

    e. not reward past unsustainable management

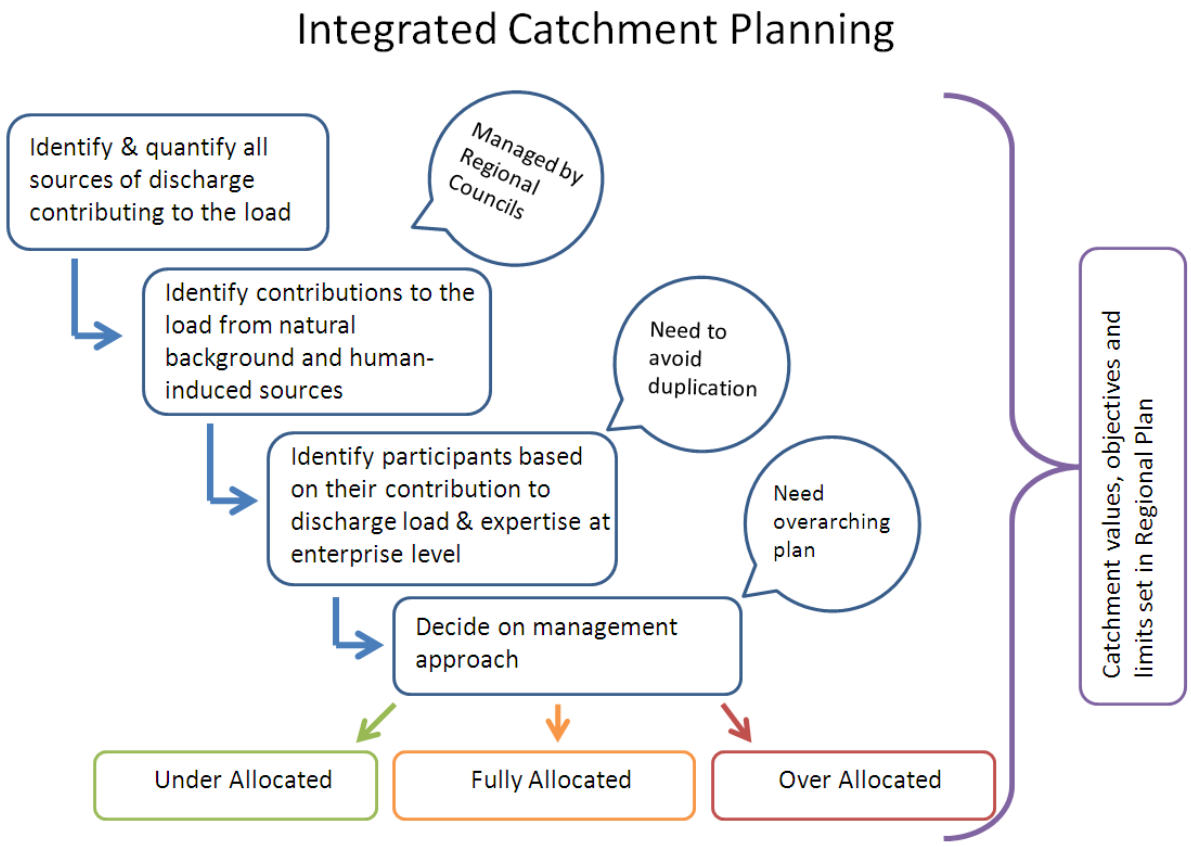
    f. intervene only to the extent required

    g. avoid perverse outcomes and behaviours

    h. be ‘future proofed’ – that is, interventions should be flexible, and not disadvantage future generations.

80. Successful water quality management requires that all water-related issues in the catchment for both quantity and quality are considered, and all discharges (diffuse and point source) need to be brought within the management regime. This means that for each contaminant, regional councils will need to identify the current total load of a catchment, and specific sources, and consider the most appropriate mix of methods and tools that will achieve the objectives. Figure 1 sets out conceptually the stepped process that should be followed.

Figure 1: Integrated Catchment Planning



Recommendation 8

Regional councils should ensure freshwater objectives and limits are achieved through the following steps in the regional planning process:

Account

a. identify the contaminants of concern in the catchment
b. identify the total load of each contaminant of concern, and all sources by way of a catchment contaminant account
c. identify the respective contributions to the load from natural background and human-induced sources
d. consider temporal and spatial aspects of contaminant management
e. consider the inter-relationships between hydrology and water quality

Assess and Evaluate

f. assess and determine the mix of methods and tools that will achieve the freshwater objectives and limits at the least cost
g. encourage and support innovation
h. provide incentives for efficient resource use

Implement

i. assign roles, responsibilities and accountabilities for implementation
j. set out the way that sector schemes will operate within the framework and link with other methods and tools
k. define and plan for the staff and financial resources, knowledge, skills and tools required to achieve the freshwater objectives and limits
l. define a timetable for implementation

Monitor and Review

m. monitor, review and report on regional policy effectiveness, including the effectiveness of the package of interventions to meet limits and achieve freshwater objectives
n. review implementation plans and programmes
o. initiate regional plan changes in response to policy effectiveness monitoring and review.

Accounting for contaminants

81. One of the keys to management of water quality is having a robust accounting system for sources of contaminants. The limit-setting process will have identified the contaminants of concern in the catchment and set limits for these. It is important to identify the total load of each contaminant of concern and all sources of that contaminant, and maintain a catchment contaminant account (or database). As land use and/or practices change, the accounting for the discharge from each source will change. A contaminant source may be attributable to an individual enterprise, and in other cases it may only be attributable to a sub-catchment. For example, point sources are easy to attribute, whereas sediment derived from hill slope erosion may only be attributable at a sub-catchment scale. Natural background sources will exist in many cases. It is important to separate these from human induced sources in the accounting system.

82. Contaminant generation and transport vary both in time and space and this needs to be considered, and accounted for. There is a strong relationship between hydrology, contaminant transport and water quality which needs to inform decisions on optimal mix of management methods and tools.

Models

83. Models are used in a variety of circumstances in a wide range of sectors, from energy to transport to finance to resource management. In water management, models are important

tools for assisting the setting of limits and managing contaminants at a range of scales. Point source discharges are easily assessed using direct measurement of actual levels, and measurement can be used to track improvements arising from management and technological improvements. The measurement of diffuse discharges can be extremely expensive, and often impractical. Identifying and quantifying the sources of contaminants, how they are assimilated within the environment, and whether proposed management options will be effective, necessitates a reliance on models and modelling. Fit-for-purpose models are essential tools for managing water quality (and quantity) at both catchment and enterprise levels. They are also essential tools for managing productivity and assessing the financial implications of proposed management practices.

84. There are a significant number of models in various stages of development and use. Improving a select number of models is required (see recommendation 63). Using partnerships (central and local government, and sector organisations) there is a strong need to continue investment in models that should:

    a. be based on a strategic approach

    b. concentrate on a limited number of interoperable models for application at different scales (catchment and enterprise level) and contaminants

    c. concentrate on a limited number of models that can serve multiple land uses

    d. be undertaken in partnership (central and local government, science providers and sector organisations)

    e. include guidance and protocols for the use of the modelling tools where they are applied to water quality management in a regulatory framework.

85. We regard the improvement of modelling tools as a high priority if water quality is to be managed under objectives and limits while continuing to improve productivity.

86. Models that estimate the rate of diffuse discharge are a useful business tool at an enterprise scale and their accuracy and scope needs to continue to improve. When these models are incorporated in a regulatory framework however, they should be used with careful attention to their margin of error. They should, in other words, be used in conjunction with other indicators in a compliance system.

Water quality management methods

87. There are a significant number of individual methods and tools available to manage to water quality limits (see Table 1). These include audited self-management schemes, catchment-scale mitigation and attenuation, non-regulatory and regulatory measures (both input and output controls), and the use of economic instruments. Good management practice (GMP) is an essential management method. It integrates across all methods and should be adopted everywhere.

88. In almost all catchments a suite of methods and tools will be required to manage water quality effectively. The suite of methods chosen must ensure limits are met and the freshwater objective is achieved. The management regime must also ensure resource users are accountable for meeting their responsibilities in the catchment.

Table 1: Examples of Methods and Tools for Managing Catchments

Non-Regulatory	Catchment-Scale Mitigation	Regulatory	Economic Instruments
• education • extension • tech transfer • funding partnerships • riparian restoration • partnerships • research & development • codes of practice	• storm water management • infrastructure • artificial wetlands • grey water re-use • rainwater collection tanks	• rules & conditions • resource consents • land use rules • incentives • allocations of load • bylaws • compliance & enforcement • national standards • international standards • auditing • other national instruments	• levies • taxation • subsidies • trading • financing • investment • auction and tender • pricing
Good Management Practice			
• benchmarking • nutrient management plans • effluent management plans • farm plans • good forestry practices • accreditation/ certification		• codes of practice • iwi management plans • industrial & trade practices • stock exclusion • water use efficiency • auditing	

89. The mix of methods and tools will be dependent on circumstances, and there are a number of considerations that will influence the mix that will be used. These include:

    a. the objectives and limits in the catchment compared to the current state of the catchment (i.e. under, approaching, at, or over-allocated)

    b. the nature of the contaminants of concern, including their source, transport pathways, and interactions with other contaminants, and how some contaminants change in the environment

    c. the physical characteristics of the catchment, including the mix of land uses, and existing and anticipated pressures

    d. the need for economic efficiency

    e. the level of knowledge and data available

    f. the communities of interest and their expectations

    g. cultural landscapes and iwi tikanga

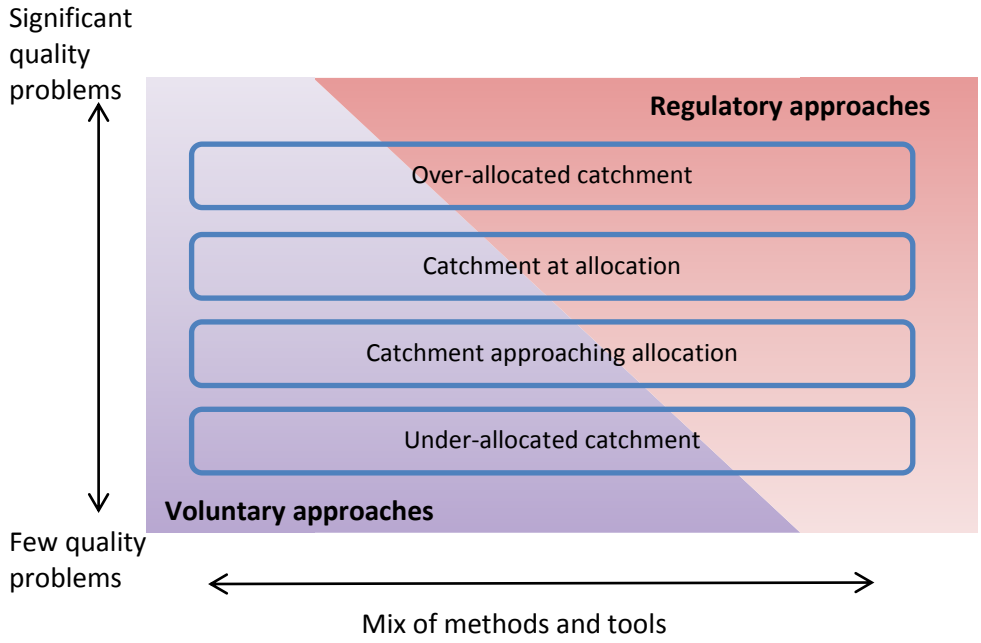
    h. the need to manage the likely effects of climate change.

90. The timeframes before a limit is reached or a target achieved will also influence which mix of tools are adopted in any one catchment.

91. As resource pressures increase, a greater range of methods and tools will be needed to respond to the challenges that exist. As Figure 2 illustrates, the greater the water quality problem

(approaching full allocation or managing back to a target) the more likely it is that regulatory approaches will be needed in addition to the range of non-regulatory interventions.

Figure 2: Response to resource use pressure



Recommendation 9

To achieve freshwater objectives and limits, regional councils should (*in addition to recommendation 14 of LAWF2*) decide from the full range of management methods and tools available (good management practices, non-regulatory and regulatory approaches, catchment-scale mitigation and economic instruments) that will be implemented to manage the use of land and the discharge of contaminants.

Recommendation 10

The particular mix of methods and tools regional councils adopt should be appropriate for:

a. achieving the freshwater objectives
b. meeting the limits in the catchment and the timeframes for meeting them
c. the contaminants to be managed
d. enabling economic efficiency
e. the communities of interest
f. the physical characteristics of the catchment
g. the range of land uses in the catchment
h. the existing and anticipated resource use pressures
i. the level of knowledge and data available
j. cultural landscapes and iwi tikanga
k. managing the likely effects of climate change.

Regulatory methods

92. All discharges are managed within the RMA regulatory framework. There is a wide range of possibilities in the use of regulation for discharges. They range from very permissive to very

controlling. Regulatory controls, in the form of regional rules (e.g. permitted activities) and consents, should be implemented in a way that is most efficient and effective in addressing water quality issues. There is a range of methods (e.g. the use of management plans) which will assist implementing regulatory tools.

93. Limits are a regulatory control. They are given effect as rules in regional plans, which are designed to ensure catchment contaminant loads and/or concentrations are met (see LAWF2). Resource use at levels below the limit is allowed.

94. Regional councils will need to consider how best to bring all manageable sources of contaminants within the regulatory framework to ensure that limits are met. This is essential for managing water quality, and is necessary for fairness and equity across catchments.

95. The regulatory framework may use land use ('input') controls or discharge ('output') controls or a combination of the two. Examples of input controls include restrictions on the time of year earthworks are carried out to minimise sediment discharges during the winter period, management practices which set out how chemicals in industrial sites should be stored, or constraints on livestock access to waterbodies. Output controls tend to focus on how much of a particular contaminant should leave a site - for example, the amount of nitrogen discharged from a farm (non-point source) or a wastewater point source.

96. Input controls may be clearer and more easily monitored, but may not be very flexible. Output controls on the other hand may provide enterprises with greater flexibility in meeting productivity and environmental outcomes. They may be preferred in many cases because they are considered to create the conditions for innovation and allow new practices to emerge.

97. The reality is that there will be a number of influences on whether an input- or output-based approach is appropriate, or a combination of both should be deployed. These include the contaminant of concern, measurement or modelling reliability, and whether a transparent compliance regime can be established. In many circumstances it is not currently possible to use output-based regulatory means to control water quality (e.g. bacteria contamination from stock access in waterbodies or hill-slope erosion of sediment).

98. The use of a pre-established measure (or a threshold) that indicates when a waterbody is under pressure from discharges enables communities to consider how to manage contaminants most effectively as the catchment nears a limit.

99. In some catchments land use change can mean that there is a rapid acceleration toward the limit. Waterbodies can become fully or over-allocated in reasonably short periods of time. It can be difficult and costly to manage an over-allocated catchment back down to a limit – over-allocation is best avoided. In addition, the rights of users should be protected from derogation. Reaching a threshold signals when changes to the management approach should be considered and when steps should be put in place to avoid the social, cultural, economic and environmental costs of over-allocation.

100. National direction will assist in thresholds being implemented in a consistent way across the regions.

Recommendation 11

Existing legislation (Section 15 in conjunction with Section 9 of the RMA) is sufficient to manage and control discharges. All discharges (both point source and non-point source) should be able to be managed within the RMA framework. Regulatory tools should be implemented in a way that is most efficient and effective in addressing water quality issues and fits within the agreed catchment management regime.

Recommendation 12

A threshold (a proportion of the contaminant limit) should be specified in the regional plan to indicate when a waterbody is coming under resource use pressure, and indicate when a change in the management regime should occur.

Recommendation 13

Once the threshold has been reached, all new discharges, and activities that increase the total discharge, should be explicitly managed to maintain the limit and protect existing rights to discharge from derogation.

Recommendation 14

National direction should be given to regional councils to ensure consistency in the process of developing thresholds for each catchment. The threshold-setting process should recognise spatial variation and the interactions between contaminants and should take into account the:

a. size of the resource
b. proportion of the limit that is being used
c. current and expected rate of uptake of the remaining portion of the limit
d. likely scale and extent of unmet demand
e. historic inputs
f. persistence of contaminants in the environment
g. lag times.

Good Management Practice

101. Good Management Practices (GMP) refer to an evolving suite of tools or practical measures that are being put in place at a land user, sector and industry level to assist in achieving both community agreed outcomes (in this instance for water quality) and productivity outcomes for the enterprise. They are both process-based and practical measures and techniques used on the ground. GMP can be nested in the regulatory framework, and contains a suite of methods and tools which collectively manage the range of contaminants from a particular land use in an integrated way. GMP should be adopted in all catchments.

102. Water quality will only be maintained and improved if individual enterprises adopt good management practices and continually improve. There are also good business reasons to improve practice. GMPs are essential methods for achieving limits and freshwater objectives. Water quality improvements will not be achieved without practice changing and GMPs provide the avenue for such changes. They should be encouraged and given preference when the range of methods for achieving water quality objectives are considered.

103. An example of GMP is a process-based suite of management tools used by a forester to create a harvest plan. The plan might document how the impacts of the harvesting operation will be managed, including which 'on the ground' management tools will be used and where, and then a series of practical GMPs such as method of harvesting, and erosion and sediment controls on earthworks to achieve the 'on the ground' implementation of the plan. An adaptive management process may be used during harvesting to modify the plan as circumstances change.

104. GMP has been extensively developed for both urban and rural based activities. Typically, it is documented in codes of practice, guidelines, and knowledge disseminated through a variety of forums such as manuals and user guides, conferences, and field and training days.

105. It can be used to manage comparatively simple issues such as storage of fuel in a bunded container on a construction site through to highly complex situations such as nutrient management on a mixed land use rural operation. The appropriateness of a practice in any one situation is strongly influenced by a wide range of factors (e.g. the changing nature of the operation, land and soil type, land use, weather, season, regulatory and market influences, and financial considerations). Users therefore find a flexible toolbox of options most useful. In some circumstances, individual practices can be applied directly from the toolbox, although most often some degree of modification is required to suit the specific nature of the operation and/or local circumstances.

106. Management plans (e.g. environmental management plans, farm plans, development plans) are useful tools to assist the adoption of GMP. They can be tailored to a particular enterprise, can include regulatory requirements, and their implementation can be audited. Management plans have benefit to the users of the plans in terms of efficiency of resource use. These plans also have the benefit of addressing the management of all contaminants at an enterprise scale. Compliance with actions in the plan can be audited. As a result of audits, management actions can be adjusted to comply with the plan, the plan can be changed to better achieve desired outcomes, and in some cases compliance action may be undertaken.

107. GMP is continually evolving with increasing knowledge and changing circumstances. To continuously improve and reduce the environmental impacts from land use activities and to improve profitability, existing and new tools and solutions must be developed.

108. Innovators should be encouraged and supported - in particular those who see the benefit of investing in new practices that will improve the management of contaminants. Regional councils should make provision for innovation by reducing potential compliance risks (where these may be an issue) if innovations are not as successful as expected.

109. Sector and stakeholder organisations have a significant role to play in developing GMP, and implementing associated supporting extension services. GMP should be implemented everywhere, over time and dynamically improved. GMP provides a key mechanism for industries to both meet environmental outcomes and improve business performance. Sector organisations will need to work closely with regional councils to ensure that GMP is fit for purpose in regulatory processes. An adaptive and innovative approach to freshwater management will work best where parties take up opportunities to pool resources and share information - a more collaborative approach to policy- and plan-making, and implementation, will play an important role in facilitating these opportunities.

110. The accountability of GMP initiatives will be enhanced where it is nested in the regulatory framework. GMP can be further incentivised through the regulatory framework (there are also other incentives) where outputs of GMP in terms of discharge can be quantified (measured or estimated). Where this is possible, activity thresholds (for permitted or controlled or discretionary activity) can be set in regional plans. Those existing enterprises meeting the required outcome (i.e. achieving GMP) could be incentivised by obtaining an easier regulatory course (permitted activity or controlled activity), and those deemed not to be achieving it should have a stiffer regulatory path (e.g. discretionary activity). All new dischargers should be required to adopt GMP.

111. Over time it is likely that properly resourced and co-ordinated implementation of GMP will deliver on community objectives for maintaining and improving water quality in many areas. The setting of objectives and limits should be clearly informed by an understanding of what is achievable with GMP. There will be significant incentives for sectors, industries and urban authorities to deliver on GMP commitments to meet limits.

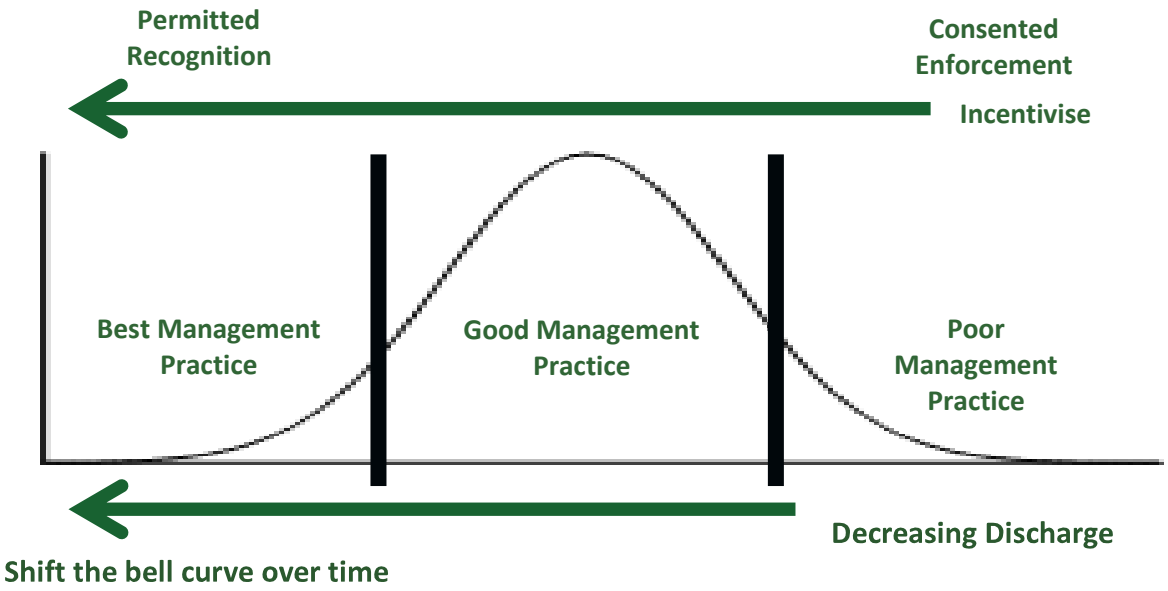
112. Figure 3 gives an example of the way that GMP can be used within a regulatory context in a way that encourages its uptake. It shows a normal distribution (depending on the contaminant and industry the curve may not be a normal distribution) of participants in an industry compared against discharge levels (numeric contaminant load or concentration). Those undertaking

industry GMP can be identified. There is an increase in GMP uptake as you move to the left of the diagram. This can be used for any industry where GMP is recognised, and where these practices have been calibrated with discharge data. This could apply at a variety of scales: catchment, regional or national.

113. Take as an example a region where urban earthworks GMP is well developed, and there is a rigorous compliance regime. Where the majority of contractors are doing GMP, or better, and achieving a high discharge standard, the centre of the bell curve is within the "range of GMP." Those participants in the good or best management practice zones should get an easier regulatory path (e.g. permitted and controlled activity status), but those in the poor management practice zone should follow a stiffer path (e.g. discretionary).

114. The desired result is always to move the bell curve to the left over time. The amount of movement desired will depend on the resource pressure (under, fully, over-allocated), the existing total load compared to the limit (or target), and the desire of the community to create headroom. The resulting regime will also depend on the contaminant, the catchment, and the limit.

Figure 3: Implementing GMP



Recommendation 15

Good Management Practices (GMPs) should be defined and adopted in all catchments. In order to maximise the contribution from GMPs, and ensure their effectiveness as essential methods in achieving limits and freshwater objectives:

a. regional plans need to incorporate and incentivise GMP
b. GMP should utilise sector guidelines and practices
c. management plans (also known as environmental plans, farm plans, effluent management plans, etc.) should be used as a tool
d. GMP should incentivise continuous improvement
e. GMP should recognise and integrate good business practice with the treatment of all contaminants
f. management plans should be reviewed and changed in response to site and catchment responses
g. sector organisations should enhance their capacity to develop GMP, and provide extension, training and support
h. GMP should have wide stakeholder involvement in its design and review.

Recommendation 16

GMP can be further incentivised through the regulatory framework where the outputs of GMP can be linked to a range of quantified discharges. Wherever this is possible, activity thresholds (for permitted or controlled or discretionary activity) should be set in regional plans.

Non-regulatory methods

115. Non-regulatory methods to be employed in a catchment or more generally in a region should be set out in the regional plan (other methods). Their contribution to the management effort needs to be considered and accounted for and be transparent.

116. Non-regulatory methods are voluntary, and often consist of providing assistance in the form of information (guidelines, education, extension and technology transfer), funding or programmes. Some initiatives may include all three e.g. a riparian restoration programme may include dissemination of information on good practice for riparian planting, subsidies for plants and materials, a plant nursery and organised community planting days.

117. Non-regulatory methods may be funded and delivered by a range of players including regional councils, industry organisations, resource users and the wider community. Partnerships and extension programmes by sector organisations are an important element in the delivery of non-regulatory programmes.

Catchment-scale mitigations

118. Catchment-scale mitigations are large-scale (they could in some circumstances be regional in scale) initiatives to manage water quality. Such initiatives may be multi-purpose, particularly in the case of major infrastructure. Examples of catchment-scale mitigations are: stormwater treatment infrastructure; wastewater infrastructure such as the central interceptor in Auckland; major wetland or riparian restoration; soil conservation programmes; catchment flood control schemes; irrigation storage infrastructure; grey-water reuse; and the use of rainwater collection tanks.

Allocation of contaminant allowances

119. The allocation of contaminant allowances (either to groups or individuals) could be an option for the management of discharges when the practicality of allocating of specific contaminant loads to specific parties is not a barrier. Allocation to individuals is relatively common with point source discharges, but has also been used for non-point source discharges in the Taupo catchment[7]. Allocation of contaminant allowances can also be used effectively with other methods. Allocation is a prerequisite for using market-based instruments, but it can also be used effectively with GMP. This can provide flexibility and integrate the management of a number of contaminants at the enterprise level.

120. Contaminant allowances may be allocated to enterprises, or to a collective. The latter approach enables individuals or groups to be accountable for their discharges while operating collectively. In particular, in resource constrained environments, contaminant allowances provide a degree of certainty to resource users.

121. Pre-requisites that should be satisfied for the use of allocative tools are:

    a. whether the manageable sources of a contaminant can be identified

[7] Nutrient trading has been used in the Taupo catchment in conjunction with other measures, to reduce the leaching of nitrogen into the lake. This is the first time this approach has been used in New Zealand, and it will be important to draw learnings from it. These learnings are both technical, and about how stakeholders were engaged during the process.

b. whether the quantum from individual sources can be measured or estimated by an appropriate repeatable method such as a robust model, and therefore is able to be attributed to individuals or groups

c. whether a transparent compliance and enforcement regime can be established

122. There are a number of possible methods of allocation. It is possible to have a mix of methods. While there is limited experience with allocating contaminants, there is a high priority need to develop national guidance around potential allocation methods that could be used. In particular, the issue of initial allocation is difficult. Decisions on initial allocation, where this tool is considered, need to be made through thorough local discussion in a collaborative planning process.

123. Where the decision has been made that allocation is one of the management tools to be used in a catchment, the allocation process, any transitional provisions and transfer mechanisms should be clearly outlined in the regional plan.

Recommendation 17

Regional councils should determine whether allocating discharge allowances (to individuals or groups (legal entities)) is an option for managing to a limit for a particular contaminant in individual catchments. The following criteria should apply in making this decision:

a. the manageable sources of the contaminant (i.e. excluding natural background sources) can be identified
b. the contribution from individual sources is able to be directly measured or estimated by an appropriate repeatable method such as a robust model, and therefore is able to be attributed to individuals or groups
c. a transparent compliance and enforcement regime can be established
d. the allocation status of the catchment.

Recommendation 18

Where allocation is proposed, the provisions, including the initial allocation process, any transition to another allocation method, and any mechanisms for transfer, should be specified in the regional plan.

Recommendation 19

Central government should develop national guidance for regional councils on appropriate methods of allocating contaminants for managing water quality in order to inform regional plans.

Market-based instruments

124. Market-based instruments may form part of the overall mix of methods and tools that could be used. These instruments use price signals to enable stakeholders to make choices about how much of a resource they will use.

125. Market-based instruments such as trading systems may be used where limits have been established and contaminant allowances have been allocated. These are most commonly used for point source discharges, but it is possible in some circumstances to use the method for non-point source discharges. This is a new area. There are lessons to be learned from existing examples before they are considered for use. These lessons include not only technical aspects, but also how new practices can be socialised within user groups. Trading requires allocation of discharge allowances to users and an ability to transfer fractions of the allocations to other users

to balance authorisations with actual use. Where allocation of discharge allowances is not possible, trading is not practicable.

126. Some communities in resource constrained catchments may choose the use of innovative approaches such as market-based instruments to enable dynamic efficiency. Market-based instruments coupled with an enhanced ability under the RMA to transfer entitlements (i.e. reduction of transaction costs) may promote more efficient resource use.

Managing over-allocation[8]

127. LAWF2 discusses the setting of limits in over-allocated catchments and we recommended the setting of interim limits to prevent further over-allocation and the setting of targets (a limit to be met at a defined time in the future). The setting of the timeframe to meet a target is key to getting community buy-in to reducing contaminants loads. Timeframes should be well defined, not cause unnecessary economic and social dislocation, and should not be unnecessarily extended.

128. There is a range of methods to reduce contaminant loads including:

a. adoption of good management practice, and continued practice improvement

b. regulatory reductions ("haircuts")

c. voluntary or negotiated reductions

d. market-based methods

129. The methods adopted should be tailored to the particular circumstances (contaminant, catchment and community).

Recommendation 20

In over-allocated catchments (where the existing load exceeds the desired limit) regional councils should set both interim limits and targets (a limit to be met at a defined time in the future). Timeframes should:

a. be well defined
b. not cause unnecessary economic and social dislocation
c. not be unnecessarily extended.

Recommendation 21

In addition to setting the time frame for adjustment, regional councils should set out the adjustment policy and methods (to be used to manage to a target) in the regional plan at the time the target (as defined in the NPS-FM) is set. This should describe responsibilities for meeting the target and how the policy will affect land users and others discharging contaminants, including how rules and resource consents will be adjusted.

Compliance monitoring and auditing

130. Compliance monitoring, auditing and enforcement provide accountability to the management framework. The community has assurance that resource users are meeting their obligations. Resource users are also assured that there is a level playing field within which they operate. Resources users need to be assured that the compliance and enforcement regime is transparent, fair and minimises transaction costs. Compliance will be assisted by making it easy for people to comply. Rules need to be certain and understandable and all parties need to understand the

i. [8] Over-allocation is defined in the Glossary.

reason for rules and how to meet them. Compliance will be assisted by the use of a range of integrated approaches, from education to audits to sanctions.

131. The primary compliance and enforcement function lies with the regional council. However, regional councils may delegate some of their functions to others. Audited self-management schemes are one example of this.

Audited Self-Management

132. Audited self-management schemes (ASM) transfer day-to-day management responsibility to users under agreed terms, and subject to transparent audit (see LAWF1). ASM can be used across most management methods (regulatory and non-regulatory) and is a key tool in implementing GMP. The core principles of ASM schemes can be found in Appendix 2. The use of ASM schemes has increased in recent times and we believe that they are one of the methods that will be increasingly important in managing water quality.

133. ASM schemes create a shift in behaviour from one of strict compliance (i.e. do the minimum required) to one of performance where greater ownership (by individuals and others) of environmental issues results in action greater than the minimum required. There are a number of inherent attributes of ASM that facilitate behaviour change including ownership of the issues and solutions, support structures such as one-to-one guidance, peer support, and adaptive management.

134. Third party auditing is an essential element of ASM as it provides the check that self-management, monitoring, and self-reporting are accurate, sufficient and of appropriate quality. In particular, auditing provides assurance for regulators where ASM is being used in a regulatory framework that agreed actions and associated outcomes are being achieved.

135. ASM can operate at a range of different levels and can be effective at national levels (e.g. Fonterra's Every Farm Every Year initiative) as well as more localised levels (e.g. the North Otago Irrigation Company, see example below). ASM schemes can also effectively integrate the requirements of a number of different industry initiatives, and provide a co-ordinated and holistic response to complex water quality issues at a range of scales.

136. Provision for ASM schemes needs to be included by regional councils in regional plans to facilitate greater uptake and use of this management tool. Sector and stakeholder organisations, and iwi, have an important role working with regional councils to further develop ASM schemes and ensure that they can be incorporated into regulatory frameworks in a consistent manner nationally. Sectors also need to provide on-going support such as extension services for ASM schemes once they are developed.

Recommendation 22

Relevant sector and stakeholder organisations, iwi and regional councils should work together to ensure the integrity of the auditing system, and to ensure consistent practice in recognising and implementing relevant Audited Self-Management (ASM) schemes across the country.

Case Study – North Otago Irrigation Company

This is an example of implementing GMP through an Audited Self-Management programme, utilising environmental farm plans and auditing, as recommended above.

North Otago Irrigation Company (NOIC) is based in Oamaru and holds consent to take up to 8 cumecs of water from the Waitaki River for spray irrigation. The scheme has operated since 2006 and currently delivers 4 cumecs of water to approximately 13,000 hectares via a piped network. Expansion projects are being developed to use NOIC's remaining water allocation.

NOIC's land use resource consent with Otago Regional Council requires that all properties receiving water for irrigation have an environmental farm plan and are audited regularly against this plan. NOIC has worked with the Regional Council to develop a comprehensive Environmental Farm Plan System to meet these consent requirements. The key components of this system are:

- a shareholder Water Supply Agreement which incorporates environmental requirements
- a Company Environmental Policy
- Environmental Farm Plans which follow an agreed template and detail the Good Management Practices that must be implemented on each irrigated property. Farm plans cover five main activities:
    - irrigation management
    - soils management
    - nutrient management
    - riparian management, and
    - dairy effluent management.
- annual, independent on-farm audits
- a process to address non-compliance
- an enforcement process to compel compliance. Supply of irrigation water may be restricted or disconnected to irrigators who fail to meet requirements
- an incentive programme to recognise excellence in environmental management
- company-level environmental performance objectives and annual performance review
- reporting to the Regional Council
- an education programme consisting of field days, workshops and other information events to ensure shareholders have the necessary skills and knowledge to implement the GMPs required.

NOIC employs an Environmental Manager to administer the farm plans and support shareholders. NOIC's farm plan system is well supported by both shareholders and Regional Council staff. The system has driven a culture of environmental responsibility within the Company and on-farm environmental performance across the scheme is typically high.

Monitoring and review

137. Adaptive adjustments to the management regime can only be made in the light of robust information. Monitoring at a range of scales is required to achieve an efficient system, and to ensure that freshwater objectives are achieved and limits are met. Monitoring of individual sources (these may be at a range of scales) as well as the objectives in the receiving waterbody is necessary. The requirement to set measurable freshwater objectives and limits provides an opportunity to focus monitoring on measurable outcomes.

138. It is the regional council's responsibility to monitor, review and report on regional policy effectiveness, including the effectiveness of the package of interventions to meet limits and achieve freshwater objectives. They should also review implementation plans and programmes and initiate regional plan changes in response to policy effectiveness monitoring and review.

139. At an enterprise scale, resource users can adjust their practice in response to monitoring at that scale. They will also be informed by catchment scale monitoring which will provide comfort that the collective efforts of the community are achieving their desired freshwater objectives.

Interim arrangements

140. Catchments throughout New Zealand are in different states of pressure (under, approaching, at, or over-allocated). As outlined in LAWF2, the use of interim limits should be contemplated where there are resource pressures from existing or anticipated contaminant loads prior to embarking on the full process to develop objectives and limits for the catchment. Interim limits, which maintain existing levels of resource use, can be used to halt further decline of degraded waterbodies, or prevent waterbodies becoming over-allocated. Interim limits can also be used to manage rapid changes where significant land use change and intensification is occurring or likely to occur before the objectives and limits framework can be developed.

141. There are a number of mechanisms by which interim limits can be implemented. These include moratoria, a national instrument, or a regional plan (as discussed in LAWF2). The alternative to these interim arrangements is to prioritise catchments and insert limits in regional plans for catchments at risk, and avoid doing the job twice.

142. We do not think that any additional mechanisms to those described in LAWF2 are necessary. We think that the use of regulation or moratoria powers is likely to be the most effective. However, in some places the use of regional plans to set region-wide default limits may be an effective tool while catchment based limits are being developed. In other places regional councils may set limits quickly in their highest priority catchments, rather than go through an interim process followed by the main process.

143. Where interim limits are implemented, they should be used judiciously to avoid unanticipated impacts. They should be effective at minimising the impact of existing and future resource pressures, be well defined, not cause unnecessary social and economic dislocation, and should not extend longer than is necessary before objectives and limits are developed.

Recommendation 23

Interim regimes should be considered where:

a. the requirements of national instruments are at risk, and
b. the catchment has not already been prioritised for early collaborative limit-setting processes, and
c. the current suite of industry, community and council programmes is assessed as insufficient to manage the risk of significant impacts, and
d. existing regional plan provisions are not adequate, and
e. the resource is under pressure from existing or anticipated use.

Recommendation 24

Any interim measures:

a. should be established with the involvement of catchment stakeholders and iwi
b. will be time bound
c. may use interim limits implemented through a regional plan, national instrument, regulation or moratorium
d. may take an adaptive management approach
e. should ensure basic environmental monitoring and information collection is maintained

or improved

f. should manage potential perverse incentives
g. need to guard against imposing unnecessary constraints on economic development
h. should build capacity across the region and within the catchment to engage in future planning and management processes.

Allocating water

144. The NPS-FM requires regional councils to set and manage to limits for all the waterbodies in their region. The water management framework proposed by the Forum has been built around this requirement. Limits are a critical tool for achieving freshwater objectives. Setting and enforcing limits protects mana atua, in-stream ecological, environmental, social and cultural values while at the same time more clearly defining a quantum of water that is able to be used productively. This is referred to as the allocable quantum.[9]

145. The way that water is allocated within a limit needs to allow those with an interest in using freshwater to continue to invest while operating within limits. The legislative environment does not provide clear direction on the way that fresh water should be allocated between users or the nature of the rights provided by water permits (or other authorisations such as permitted activity rules in a plan).

146. There has been an absence of clear direction on water allocation. The legislative schema, absence of clear planning incorporating limits and allocation rules, and practice has resulted in existing users individually defending their take rights against derogation as others are granted access that diminishes reliability of access for users.

147. Water availability is variable across the country. Some catchments and regions have plentiful water but in some demand exceeds availability (seasonally or permanently). Councils have used a variety of approaches to manage allocation.

148. Where there is scarcity, regional councils have needed to be more specific in their approach to the allocation of water, and different allocation regimes have emerged across the country – for instance, in Tasman, Waikato, Otago and Canterbury. While it is important that communities have the flexibility to tailor their management approaches to their own contexts, doing so in isolation could lead to the duplication of effort, create unnecessary complexity and uncertainty for users and add to the time and cost of developing and agreeing catchment-based allocation frameworks.

149. The approach we recommend is intended to provide a level of national consistency in freshwater allocation while at the same time leaving scope for local solutions. It draws on both work done by regional councils across New Zealand to establish freshwater allocation regimes and from approaches used in other countries. Specifically, it is designed to protect limits and ensure that freshwater management encourages investment, incentivises efficient practices and contributes to economic growth.

Expectations of the water allocation system

150. The framework for allocating water to users should focus on ensuring that New Zealand's long-term economic welfare is maximised. The broader water management framework provides for limits that determine how much water is taken from the waterbody for productive use while achieving freshwater objectives specific to that waterbody. The water allocation framework focuses on making the most out of the water made available in the allocable quantum through the limit-setting process.

151. The water allocation framework is underpinned by the following principles:

    a. water is a common pool resource and should be managed in a way that meets community needs

    b. access to water for reasonable drinking and sanitation needs is a basic human right

    c. the characteristics of water availability and use vary across the country

[9] See glossary for a more detailed definition.

d. commercial investments have been made on the basis of access to water that have been and will continue to be strategically significant for New Zealand's long-term economic welfare

e. for a new allocation framework to be durable, the nature of iwi rights and interests in fresh water will need to be resolved and provided for.

152. The water allocation framework needs to provide for outcomes that are accountable, efficient and fair. This includes the way that water is allocated and the way it is able to move between uses and users.

153. Patterns of water demand and water availability will shift in response to market and climatic variation. Limits will also need to adjust in response to new information and changes in objectives. Once a limit is set, the total of water takes needs to stay within it and the allocation regime needs to ensure that the risk associated with hydrological change is borne by water users rather than the environment, e.g. during drought users need to adjust the amount of water they are taking rather than maintaining takes and undermining the health of the waterbody.

154. Where clear limits on waterbodies have been established, users will no longer be able to rely on accessing further water from the catchment to fuel growth. This will create an incentive to operate in a technically efficient way (to free up water to enable expansion) or involve consideration of storage and other related infrastructure.

155. A regime based on limits requires easily transferable water consents to allow users to make investment decisions and to adjust their use to maximise profitability. To achieve this, users' authorisations need to be clear, secure and enforced. This will support investment certainty and will allow users to manage more effectively within a limit. Clear, secure and enforced consents will also protect users from their entitlements being undermined by over-allocation.

156. Increasing the ease of transferring water between uses over time will allow for efficiency to be improved. This may not always be possible - the physical characteristics of catchments and where water takes are positioned will have an impact on the extent to which consents can be transferred. The potential for infrastructure to support transfer and trading is also an important factor.

Recommendation 25

Water within the allocable quantum needs to be easily transferable between users, to allow it to move to its highest valued use (i.e. to enable society as a whole to obtain the greatest collective value from water resources across the full range of values). The design of the allocation system should remove administrative barriers to transfer and trading.

157. To ensure that the use of the allocable quantum maximises long-term economic welfare, the water management framework needs to support the establishment of catchment-based water allocation regimes that:

a. protect the limits

b. minimise transaction costs

c. give users (existing and potential) greater certainty of their ability to make productive use of water

d. manage competing interests in a more effective and efficient way.

158. The Water Allocation Model set out in Figure 4, does this through:

a. setting a scarcity threshold to define when a catchment is under demand pressure providing more investment certainty through clarifying and firming access rights to water

b. enabling more efficient transfer of water allocations between users

c. providing avenues for new users to enter the water economy

d. protecting the investments of existing users while using measures to correct potential inefficiencies in the way that water was allocated in the past.

159. The main attributes of the water allocation model are that all water use is accounted for within the limits, thresholds are set to determine when catchments are under demand pressure and once a threshold is reached the approach to allocation changes to manage the scarcity of the water better.

160. In catchments under demand pressure, efficient allocation is achieved through standardising authorisations[10] to access water and through making provision for water allocation permits to be traded. The risk of change is borne by users, but they are provided with clearer rights in terms of the exclusivity of their allocation and longer duration.

161. The model provides for all existing users to be moved to new standardised water consents, and allows for potential new users to gain access through receiving water allocations via an initial allocation process or where there is no further water available, by gaining access through a trading regime.

162. The detail of the allocation model is set out below.

Applying the water allocation model

163. As with the limit setting environment, where communities determine local limits based on national objectives, the detail of water allocation regimes will need to be determined at a local level assisted by clear central guidance and direction.

164. The intrinsic nature and physical properties of water (ubiquitous, variable and not easy to capture) influence how allocation is going to work. It is because of its physical properties and peoples' relationship with it that freshwater management must be able to be tailored to local social, cultural, economic and geospatial conditions.

165. Practice in New Zealand is unusual in the world in that the majority of water used for irrigation does not come from human-created storage sources. This is a result of our landscapes, climatic conditions and history of water use, and increases the need to provide for a dynamic allocation system that can respond to natural fluctuations, while investigating any potential for infrastructural solutions.

166. The uneven distribution of water across New Zealand also means that demand pressure on water for productive use is variable. The water allocation framework must cater for:

a. catchments that have no significant current or foreseeable demand pressure

b. catchments that continue to have water available for use and a trend of increasing demand towards full allocation

c. catchments that are fully allocated

d. catchments where current water allocation levels exceed limits and need to be reduced, and

e. the potential for catchments to move between these different situations, such as when infrastructure creates "new water" or changes in climate cause inter-decadal or permanent changes to the hydrological system.

[10] Authorisation – defined in the glossary.

167. Patterns of water demand and the available quantum will shift in response to market and climatic variation. Limits will also adjust upwards or downwards in response to new information and changes in objectives. The importance of catchment-based management and agility in the regulatory system is to provide an adaptive and resilient regime.

168. For the allocation of water, this will include some common features:

    a. Limits are developed for water quantity and quality at a catchment level, reflecting national objectives.

    b. Iwi rights and interests in fresh water are determined between the treaty partners.

    c. An allocable quantum of water is derived from the limit that defines the water available for use within the catchment. This allocable quantum will need to reflect seasonal and other variations and reliability - particularly in surface waters.

    d. All water use is accounted for within the allocable quantum - to a level that allows councils to determine the relationship between the limits and actual use and between the limits and other activities that impact on the hydrological system.

    e. Scarcity thresholds are identified for the allocable quantum that denote when waterbodies are sufficiently under demand pressure for changes to be made in how water is allocated.

    f. Users can rely on their allocations not being derogated by other activities. This is achieved through clear and exclusive consents that share core elements and separate site-specific aspects of water abstraction or damming from the quantities allocated.

    g. Once catchments are under demand pressure, no use is considered to be above any other use in all cases all of the time.

    h. All users bear the risk of change in the availability of water from the allocable quantum in accordance with the reliability specified in their consents and according to rules in the plan in relation to dry years unless it is agreed otherwise in a plan.

    i. The process of moving to new consents will recognise existing water uses and investment made by existing users while reducing paper over-allocation and potential inequities in past allocation through applying a technical efficiency measure.

Figure 4: Water Allocation Model

1. Direction
National Freshwater Objectives are set
Crown/iwi rights and interest outcomes determined

Planning

2. Setting up the Allocation Regime
Planning process at the catchment level:

- Sets objectives and limits
- Defines the allocable quantum based on the limits and determines the reliability profile where required
- Establishes the allocation regime in the plan including:
  - Defining thresholds for triggering change in allocation
  - Describing the allocation process post threshold
  - Identifying how authorisations will respond to changing limits
- Defining any transition mechanisms
- Accounting for outcomes of iwi rights and interests

3. Accounting

- All water use is accounted for
- Adequate monitoring and enforcement are vital to protecting limits
- Limits are monitored against objectives

At the outset:

- Establish an accounting system and rules including a registry that supports transfer
- Undertake a stock-take inventory of all water use and include unauthorised takes

4. Infrastructural solutions
Potential for community to investigate infrastructure options to find solutions to over-allocation or provide further development potential

Is there pressure on the waterbody (the threshold is reached)?

No

5. Under allocated (low demand pressure)
Where there is no pressure on the limits no change in allocation process beyond setting thresholds and monitoring all use to them is required.

- Initial allocation method able to stay as FIFS
- Technical efficiency drivers may be introduced on new consents, on review and on expiry
- Review of permitted activity rules may be required
- Able to accommodate any outcomes of iwi rights and interests

Yes

6. New approach established (demand pressure exists)
All authorisations (including permits and water use that is permitted through rules in a regional plan and through section 14(3)(b)) are transitioned into a nationally standardised form that operates to protect limits and clarify rights.

- Reasonable technical efficiency is applied to all existing authorisations
- Consents are translated into new consents
- Unconsented takes are translated into consents or conditions are applied in the plan where they are not materially significant
- Unauthorised takes follow a one-time process to determine a level of authorisation
- Reliability levels are recognised where required

New approach

Is the allocable quantum fully allocated?

No

7. Approaching full allocation

Potential for community to identify future needs and plan for them before reaching full-allocation (including reserving water for iwi rights and interests).

Initial allocation method for remaining allocable quantum to be determined in plan.

Transfer is possible.

Yes

Is the allocable quantum over-allocated?

Yes

9. Over-allocated

The community needs to manage down to a limit to meet freshwater objectives and find opportunities to maximise the return to New Zealand.

Approaches to providing for iwi rights and interests may need to be determined.

Methods to manage down to limit ("haircuts", negotiation-based, market-based) are set up in Plan. Management of over-allocation should follow these principles:

- No users are automatically exempted
- Timeframes are appropriate to situation
- Approach will depend on transferability potential in catchment

No

8. Fully Allocated

With a fully allocated resource – the models focus shifts to enabling water to move around more easily to maximise the return to New Zealand while preserving the limit.

No new allocations are permitted.

Approaches to providing for iwi rights and interests may need to be determined.

Managing within a limit:

- Transfer (permanent and temporary) is the primary mechanism for moving water between uses and enabling new entrants
- Compliance is critical to protect the limits and user investment
- Compulsory transfer powers (akin to the Public Works Act) are available to community water suppliers under certain circumstances

Accounting as the foundation for water allocation

169. Water is a "subtractable resource" – water that is used by one party is generally not available for use by others. It is not possible to operate an effective water allocation system without knowing how much water is being taken and whether the conditions attached to authorisations are being complied with.

170. Regardless of the state of pressure on the hydrological system, to protect the limits that are set for waterbodies, all water use needs to be allocated from an allocable quantum. This requires all water takes to be accounted for in a catchment either through direct measurement or through estimation where direct measurement is not possible or required. "All water takes" include all consented water takes (permits) and all water use that is not consented but otherwise authorised through permitted activity rules in a regional plan or through section 14(3)(b) of the RMA.

171. Water takes for fire fighting are considered to be an emergency and not required to be provided for in the allocation of water access rights. This also excludes them from the accounting process that supports water allocation.

Recommendation 26

All water takes (excluding fire fighting) should be accounted for within the allocable quantum. This includes those currently permitted by a regional plan, or authorised through section 14(3)(b) of the RMA, and non-consented takes that may not comply with the provisions of section 14(3) or the rules in a plan.

172. An effective accounting system will inform limit-setting, planning and monitoring and will need data that is suitable for these tasks, including through being publicly available. The accounting systems will also need to be designed to support transfer and this will require consistency.

173. In establishing the accounting system, intellectual property and commercial information will need to be protected while also delivering an effective and transparent database that can support transfer and trading activities.

Recommendation 27

The new water allocation regime should be underpinned by a transparent accounting and registry system that:

a. is consistent across regions
b. publicly identifies location of takes and any transfer of takes from place to place or person to person
c. includes data management protocols that provide suitable protection for intellectual property and proprietary information.

174. There is also likely to be water that is currently used as part of commercial operations (significant or otherwise) that is not authorised either because it exceeds (knowingly or unknowingly) the current permitted take allowances, or is not specified as part of permitted activities (in a regional plan) or section 14(3)(b) authorisations but has either gone unnoticed or unquestioned by regional councils. These water takes (referred to in this report as unauthorised) need to be accounted for so that decisions can be made on how to transition to any new regime.

175. One example of where unauthorised use was materially significant to the total water use in some catchments was in the Waikato during the Regional Council's Variation 6 analysis. In other areas, for example Canterbury, where consent authorisations are more predominant with firmer restrictions on permitted activity takes, unauthorised use may be less significant to the total

takes. These inherited features of the current allocation regimes will require communities to make decisions on how unauthorised use of water is treated once it is brought into the accounting system.

176. Accounting for all water will require a compliance system that monitors and enforces breaches of all types of authorisations and no longer accepts unauthorised use. This will require good quality data and councils will need to put more emphasis on monitoring and compliance.

177. To incentivise the disclosure of unauthorised takes, consideration of their contribution to the community would be a factor in how they are managed in the new allocation framework described in the catchment or waterbody plan. In catchments that do not have demand pressure on them, communities will need to provide clarity about the rules for permitted and section 14(3)(b) authorisations so that there is no further unauthorised water use.

Recommendation 28

There should be a one-time process at the time of transition to the new allocation regime during which unauthorised takes (non-consented takes that may not comply with the provisions of section 14(3) or the rules in a plan) can be dealt with. Decisions on the treatment of unauthorised takes will need to be made through the planning process and should follow a principle that those who have been relying on unauthorised takes will be treated fairly and pragmatically during the transition to the new allocation regime but cannot necessarily expect to be treated on the same basis as authorised takes.

A focus on water allocation planning

178. The water allocation model, as with the water quality management framework, shifts the focus of managing the impacts of water use to plans and away from consents. This allows communities to take into account the full range of issues and options when designing the allocation regime and increases the potential to achieve mutually advantageous solutions. It also ensures that the regulatory framework is clear and transparent, which is important for investment and operating certainty.

179. The specific local situation will dictate the different choices communities will have to make to establish and maintain effective water allocation regimes. Exactly how a water allocation regime will work needs to be determined after consideration of the pattern and level of demand and use pressure on the catchment or waterbody, and its specific physical conditions. In parts of the country this may include some natural climate fluctuations that can have longer-term implications, such as inter-decadal shifts in flows. The allocation system will need to be agile to deal with these natural variations.

180. Several aspects of the allocation framework will need to be set out in the regional plan, including:

a. the parameters of the allocable quantum including a reliability profile if required

b. scarcity thresholds that indicate when waterbodies are under pressure

c. methods of allocating authorisations for both pre- and post-scarcity threshold situations

d. how authorisations will be adjusted when the limits or the hydrological system change

e. policies and rules that describe boundaries on permitted activities, monitoring and compliance for all users and the transfer of authorisations

f. any approaches to managing over-allocation.

181. The allocable quantum may change over time, and consents will need to change in response to these changes when a catchment is fully or over-allocated. The allocable quantum will change in response to a change in a limit. The regional plan should set out clearly in policy how and when authorisations are to change in response to changes to the allocable quantum. This policy should be formulated at the time the limits are set. The administrative adjustments in consents are implemented through the existing consent review provision, and should be made as soon as practicable.

182. Some land use activities that don't involve an explicit take of water do, however, have the potential to affect the flow and recharge rates of waterbodies. Unless taken into account, these effects could derogate the rights of parties in the catchment who hold prior authorisations to take water. This issue, which is only likely to be relevant in a small number of low-rainfall catchments, should be considered during the planning process where the variety of different rights associated with land use and access to water need to be discussed for specific situations.

183. The focus on regional planning allows for regions to shape their allocation regimes to local situations and is based on the principle that there are no overall national water and land use activity preferences that govern decisions on access to water in all situations all of the time. Specific activities of national or regional significance would be provided for in the relevant regional plan. In LAWF1 we said that water allocation methods should not pick winners based on land use.

184. Infrastructure (including storage) can be a solution to a shortage of water availability and reliability, but it takes time to understand its feasibility and develop solutions for each proposal. The allocation model includes consideration of infrastructure during planning when the impacts on overall water availability are discussed.

Recommendation 29

Catchment-based limits should be set as plan rules that define the quantity and reliability of water that is available for allocation (the allocable quantum) and that take into account any flow and water level fluctuations caused by seasonal or other climate variations.

Recommendation 30

Activities other than water takes that nevertheless affect catchment flows and recharge rates may also need to be:

a. considered during the planning process
b. taken into account in the way that limits are set and the allocable quantum is specified.

Recommendation 31

Changes to the allocable quantum in response to unforeseen circumstances or new information should be made through the regional planning process or national instruments.

Recommendation 32

The regional plan should specify how and when authorisations are to change in response to changes to the allocable quantum. A statutory review process already exists to change consent conditions. Changes to consent conditions should be made as soon as practicable.

Using scarcity thresholds to trigger change

185. Using a pre-established measure (a threshold) to determine when a waterbody is under demand pressure enables communities to consider how to manage the allocation of water most effectively. The threshold distinguishes between waterbodies that are not under water demand pressure from those that are. These are referred to as scarcity thresholds.

186. In some catchments water demand can accelerate quickly and communities can find themselves in a context of full or over-allocation in reasonably short periods of time. It can be difficult and costly to manage an over-allocated catchment back down to a limit – over-allocation is best avoided. Reaching a scarcity threshold signals when changes to the water allocation approach should be considered and when steps should be put in place to avoid the social, cultural, economic and environmental costs of over-allocation.

187. Scarcity thresholds will also help ensure that communities don't bear the additional cost of revising their allocation system where there is no need, i.e. when water is not scarce or in demand.

188. It will be easier in some cases than in others to set sensible scarcity thresholds. A range of contextual factors should be taken into account and, given that breaching a scarcity threshold could have implications for the way fresh water is managed in a catchment, the process for setting them should be robust.

189. Accuracy and transparency in the use of scarcity thresholds requires good monitoring and communication. This will be an area where changes are likely to be required to provide sufficient information.

Recommendation 33

A threshold should be specified in the regional plan to indicate when a waterbody is coming under use and/or demand pressure, and to signal pending scarcity in the available allocable quantum.

Recommendation 34

National direction should be given to regional councils to ensure consistency in the development of scarcity thresholds for each catchment. The threshold-setting process should recognise spatial variation and should take into account the:

a. size of the resource
b. proportion of the allocable quantum that is being used
c. current and expected rate of uptake of the remaining portion of the allocable quantum
d. likely scale and extent of unmet demand.

Under-allocated catchments

190. In situations where there is little demand or use pressure from the quantity of water used then there is no need to make changes to the status quo beyond those required to ensure all water use is accounted for within the limit. This will avoid the costs of changing all authorisations into consents.

191. Communities have the opportunity to introduce technical efficiency tests, should they not be in place. The accounting process will deliver clarity for unconsented takes in terms of conditions and rules applied to account for all use within the limits.

Recommendation 35

In catchments that have low demand pressure (are under the scarcity threshold) there is no need to change the way water is allocated.

Water management in catchments that are under demand pressure

192. At the point at which a threshold is reached, the approach to managing the allocation of water needs to become more responsive to demand pressure. This is distinct from managing during periods of drought or extended dry spells. A threshold allows the community to identify future needs and plan for them before reaching full allocation, by which time options may be limited. This approach also helps to avoid becoming over-allocated, which can be difficult, costly and disruptive to manage.

193. All existing uses (excluding fire fighting) should be formalised into standardised water consents once a scarcity threshold is reached unless they don't cumulatively add up to a material proportion of the allocable quantum. There will be situations, such as for the stock water use of high country farms, where the water use is a very small proportion of the allocable quantum and where provision for water is therefore likely to be through a permitted activity rule, rather than being formalised into consents. Regional councils will need to measure or estimate these takes and their effect on the allocable quantum.

194. The formalisation process will provide water users with clarity about their rights and responsibilities, and the reliability they can expect, be it through the provision of consistent and exclusive authorisations, or through rules in the plan that describe the parameters by which water can be taken. The formalisation process may also flush out errors in the accounting of non-authorised or uncontrolled takes and will require a process to understand how much of the allocable quantum is allocated.

Recommendation 36

Once a scarcity threshold has been reached, all new water takes will need to be explicitly managed to maintain the limit and protect existing authorisations from derogation. This includes the cumulative effect of small takes and activities that would dam or divert water to a degree that impacts flow and recharge rates. Regional councils should measure or estimate these takes.

Recommendation 37

Once a scarcity threshold has been reached (or at the time of transition to the new allocation regime if the catchment is already fully or over-allocated):

a. all existing water takes currently permitted by a plan or through section 14(3)(b) of the RMA should be given a consent[11], and
b. the provision for any additional takes under section 14(3)(b) should then cease for that catchment (except where provided for in recommendation 38). Any further applications to take water should be made in accordance with regional plan provisions.[12]

[11] The water consent in this context is a take consent for a specific amount of water, and would be separated from the consents that provides for site-specific aspects of water takes and use of the water.
[12] The consequences of drought conditions on consents are set out in recommendation 39.

Recommendation 38

When translating existing water authorisations into new water consents in a catchment, those takes currently provided for as permitted activities or through section 14(3)(b) of the RMA should be able to continue without consent if they don't cumulatively add up to a material proportion of the allocable quantum.

Managing water use in times of drought and water shortage

195. There are times of drought and severe water shortage when some use values need to be protected. This includes the situation where river flows are below the minimum flow and all users have ceased taking water. The taking of water for fire fighting is provided for in section 14 of the RMA at all times. As well as fire fighting, water is also required to protect human health, by providing drinking water and basic sanitation, and animal welfare. It is likely that community and municipal water suppliers would employ water conservation measures at such times, and farmers would take the minimum required to ensure animal welfare needs are met.

Recommendation 39

Regional councils should include in regional plans policy for managing all water takes in times of drought and severe water shortage, including providing for human health and animal welfare.

Applying reasonable technical efficiency at the transition to the new water consents

196. Where waterbodies are under demand pressure existing users will need to transition to new consents. At this point there should be a reasonable technical efficiency test to ensure that existing users are as efficient as can be reasonably expected given the use to which water is being put and taking the local context into account. This process will help to address unused paper allocation and ensure that water is freed up to be available for use.

197. Existing consents have been made through a first-in first-served approach. There is no guarantee that the use profile that has emerged from this is efficient or equitable - there may be higher valued uses for the water and there may be water that is able to be freed up for further allocation. Water permits do not however provide a full picture of use, as in some parts of the country, permitted activity and section 14(3)(b) takes are significant portions of the water used.

198. The reasonable technical efficiency measure will ensure that inefficient use is not carried through into the new allocation framework. The process by which a technical efficiency measure is applied should be guided nationally but will need to be applied locally.

Recommendation 40

Once a scarcity threshold has been reached (or at the time of transition to the new allocation regime if the catchment is already fully or over-allocated), all existing authorised water takes should be translated into a new consent format that preserves their value. The process of translating an authorised take into a new format should evaluate the take against relevant and

agreed measures of reasonable technical efficiency, and, if necessary, adjust it accordingly to address unused paper allocation and clear cases of inefficient use. [13]

Specifications of the new water consents

199. Once a scarcity threshold is reached, the approach to water allocation needs to manage competition and demand pressure more effectively. The approach for water allocation in catchments under demand pressure is to standardise all water use rights into water consents that follow a nationally prescribed set of core elements.

200. The aim for this approach is to provide secure rights through clear, consistent and well defined consents that provide an exclusive allocation from the available water and that can easily transfer between uses. By providing clear and enforceable rights there will be increased certainty that limits will be protected, increased certainty to users who invest in the water economy, and the potential for use to change over time.

201. To do this the consents would:

a. separate the site-specific elements from allocation amounts

a. define clearly the take amount (flow rate or flow volume) that represents the share of the allocable quantum

b. define the reliability of the allocated water (i.e. provide clear expectations on what happens when there is variation in the quantity of water available)

c. specify how the authorisation links to the regional plan in terms of responding to change.

202. The site-specific aspects of abstraction, damming or diverting water would need to be provided for through consents that are separate from the consent that provides for the quantum of water allocated. These permissions will have very location-specific requirements and conditions that cannot always be provided for in a regional plan. There may be some requirements, such as fish screens, that can be identified in the plan. The consents that identify the amount and reliability of water that a consent holder has access to can be provided separately and cover more than one abstraction site.

203. This structure of consents should ideally create clear divisible consents that are not tied to a particular land use activity and so can be transferred readily. It is anticipated that the plan will describe the areas within which water allocation consents can be transferred and any constraints on that.

204. Reliability identification in the water allocation consents will provide as much clarity as possible about the hydrological risk the consent holders are bearing. This in turn provides greater assurance that limits will not be breached. Managing this practically will require an effective communication channel between regulators and users, and between users.

205. With clearer and more certain consents and a greater understanding of the risks associated with consents there is improved investment certainty. This may also provide an investment environment where different water uses become viable.

206. In catchments nearing or at full allocation, initial allocation is no longer the focus for maximising benefit from the use of water within the limit, and the changing use of water over time becomes more important.

207. We envisage that the water allocation consents would be suitable for full or part transfer within physical limits specified in the plan. Consent holders would have the ability to transfer or trade their consents to other users either temporarily or permanently, should they choose to do so. To

[13] This recommendation needs to be seen in light of Recommendation 51 on managing over-allocation. Recommendation 56 recommends that national guidance is provided on reasonable technical efficiency.

maximise the ability for water to transfer between uses, as much as possible, consents should be divisible by time, quantity, and reliability.

Recommendation 41

Under the new water allocation regime, consents should be:

a. clear so that people can easily tell what they are entitled to now and into the reasonably foreseeable future
b. non-derogable so that no new consents should be granted if the act of doing so would undermine the rights of existing holders of authorisations
c. easily divisible so that transfer of portions of consents are well understood and enabled.

This implies that:

d. consents will need to have their site-specific aspects separated from the allocated quantity
e. the reliability of access to water conferred by consents will need to be clearly defined and easily understood
f. consents will need to be exclusive
g. parties will need to have frequent access to high quality monitoring information.

Recommendation 42

Consents should have standard core elements that are designed to enable transfer with minimal transaction costs and regulator involvement. All consents granted by regional councils should conform to requirements specified in a national instrument.

Water consent duration and treatment on expiry

208. To safeguard and enable investment in improved water management practices and infrastructure, water consents need to have clear security of tenure. There is a range of factors that affect security of tenure including: the clarity and exclusivity of rights afforded by consents, the effectiveness of monitoring and compliance practices, the duration and certainty of consents and the treatment of consents on expiry. We make recommendations elsewhere in this report regarding the design of consents and the role that central and local government will need to play in implementing the regime effectively. Questions regarding the duration of consents and their treatment on expiry have also been discussed at length. This section sets out those points on which we have been able to agree and suggests a course of action for taking these matters forward.

The problem of short-term consents

209. Under the status quo, it can be easier to alter the conditions of a consent on expiry than through a review process during its term. This can make it difficult to give effect to limits until consents expire. Some regional councils have, therefore, granted water consents for short durations including to 'buy time' for the filling of resource information gaps. Resourcing issues and priorities have often resulted in on-going iterations of this scenario.

210. There may be cases where short-term consents are appropriate – where applicants seek access to water for a finite period – but there are significant downsides to this general management approach. First, short consent durations reduce certainty. This forces water-users, developers and investors to think in the short-term and discourages investment in more sophisticated and efficient technologies or practices. Secondly, unless all consents in a catchment expire at the same time, the cost of change is likely to fall inequitably on individuals whose consents expire immediately after it becomes clear that change is required.

211. Elsewhere in this report we have recommended that plans – developed collaboratively – set out targets and limits for water quality and quantity, propose methods for adhering to them, and articulate the policy that will be used to review and modify consent conditions during their term. Under these circumstances there should be no need to grant consents with arbitrarily short durations - councils should not be able to grant consents for less than 20 years unless an applicant is seeking temporary access, and the focus of the council needs to shift towards establishing and implementing limits through the plan.

Terms beyond 35 years

212. The cost and nature of the investment required to develop large-scale community water infrastructure is significant and complex. There is also a need for on-going investment during the life of a development, throughout and beyond its consent term. Where infrastructure has been provided for through a collaborative planning process involving communities and iwi, there is a case for consents to run for longer than 35 years. The term of the consent is likely to become a factor in the financing of such projects, and longer terms will enable different and more creative approaches to this and/or for the additional costs of development to be recovered over a longer time period.

213. The framework we have recommended will ensure that consent conditions comply with target and interim limits set in accordance with national objectives that reflect the full range of values. Consents will respond to changes to limits through an 'adjustment policy' agreed through the catchment planning process. Consents will be able to be reviewed within accepted and pre-agreed parameters at appropriate times throughout their term, thereby protecting the interests of both the community and consent-holders. The opportunity to review or challenge consents on expiry, however, is an important feature of the current regime and some will feel that consent durations of longer than 35 years could reduce this opportunity Until the changes we have proposed are established and working effectively concerns will remain regarding any proposal to extend consent terms beyond 35 years. Iwi have expressed reluctance to embrace consent terms that are longer than 35 years – or changes to the treatment of consents on expiry – until their rights and interests in fresh water have been resolved.

214. In LAWF1 we recommended that the permissible duration for water permits for water infrastructure should be reviewed. We think this review should take place within three years of implementing the changes we have recommended and should be conducted in a manner that is consistent with the Forum's statement on iwi rights and interests in fresh water. Some of us believe that there should be an expectation that the review will lead to change.

Expiry of consents

215. As with consent length, the way water consents are treated on expiry also affects investment certainty and the efficiency of outcomes. Uncertainty and competition for access to water on the expiry of consents can significantly increase the cost of operation and undermine investment confidence.

216. The current mixture of law and practice provides recognition to sunk investment, gives priority to the consideration of existing users' consents on expiry and allows existing users to proceed under existing provisions until their application for renewal has been decided. This helps to safeguard the security of tenure of water consents on expiry, particularly against competition from other parties. As we noted above, however, recommendations elsewhere in the report require regional councils to focus on setting limits, and the policies for managing to them, through collaborative planning processes rather than through the conditions of individual consents. Under this framework, section 128 of the RMA will be more effective as a means to review consent conditions during their term to bring them into line with limits set through the collaborative planning process (including interim limits) as they come into force. Changes should be more timely and less contested, because they will sit within an agreed policy framework. Better planning (including the consideration of infrastructure solutions) and a more stable

platform for consent transfer/trading should discourage the use of reallocation on expiry as a means to shift water between users. It should also enhance the security of tenure of water consents by significantly reducing the likelihood of sudden changes to consent conditions on expiry. Once this regime is in place there should be a review – conducted in manner that is consistent with the Forum's statement on iwi rights and interests in fresh water – of the case for establishing an expectation that consents will be re-issued on expiry provided that incumbents are able to demonstrate compliance with consent conditions. Some of us believe that there should be an expectation that the review will lead to change.

Recommendation 43

Except where short lengths are required for temporary purposes, regional councils should grant water allocation consents for 20 to 35 years once the new water management regime is in place.

Recommendation 44a

Within three years of implementing the changes we have recommended to the freshwater management regime, there should be a review by Government – conducted in a manner that is consistent with the Forum's statement on iwi rights and interests in freshwater – to implement:

a. extension beyond 35 years of the permissible consent duration for large-scale projects that have been provided for through collaborative planning processes
b. establishment of an expectation that consents will be re-issued on expiry provided that incumbents are able to demonstrate compliance with consent conditions.

Or

Recommendation 44b

Within three years of implementing the changes we have recommended to the freshwater management regime, there should be a review – undertaken collaboratively by the Forum or a similar national representative stakeholder/iwi group and conducted in a manner that is consistent with the Forum's statement on iwi rights and interests in freshwater of:

a. the effectiveness of the new national water quality and quantity objectives framework in setting consistent and effective limits in regional plans and whether new consents are being issued subject to the ability to immediate review consent conditions in accordance with limits and policies set through collaborative processes in regional plans
b. the case for extending beyond 35 years the permissible consent duration for large scale projects that have been provided for through collaborative planning processes
c. the case for providing suitable security of tenure by establishing an expectation that consents will be re-issued on expiry provided that incumbents are able to demonstrate compliance with consent conditions.

Catchments approaching full allocation

217. In situations where the allocable quantum for a waterbody is approaching full allocation (the cumulative total of the allocation is between the threshold and the limit) it is increasingly important to ensure the remaining available water is allocated as efficiently and as equitably as possible.

218. The method for allocating any remaining water available in the allocable quantum will be set out in each regional plan and will need to consider the scarcity value of the water. The transition to the new allocation framework includes passing a reasonable technical efficiency measure over existing users' allocations so that any historical patterns of unused paper allocation can be removed.

219. Once transition has occurred, a suite of methods for initial allocation would likely include: first-in first-served, balloting, merit comparison, and market-based options (auctions or tenders). The government will need to ensure that legislation allows a full range of initial allocation methods to be available for use.

220. In catchments that are not fully allocated the choice of initial allocation method will deliver varying efficiency incentives. Some approaches incentivise technical efficiency (such as market-based methods where people pay for access) while others don't (first-in, first-served or balloting). The formulaic administrative methods (first-in, first-served and balloting) provide cheaper options for allocating fresh water, but do not incentivise efficiency or ensure water is allocated to highest valued use. Market-based methods are more suited to allocation of a resource under high demand, and are more likely to result in water moving to highest valued use.

221. The success of all initial allocation methods is conditional on how they are set up and within what allocation framework. Some further discussion of the different initial allocation methods occurs in Appendix 3.

222. National guidance on methods for initial allocation will support communities in planning their approaches and enable them to follow the over-riding principles for allocation such as incentivising efficiency and achieving over the long term productive use of the available water for the benefit of New Zealand into the future.

223. To achieve an efficient regime, there may be a need to apply a technical efficiency measure to applications in those circumstances where the allocation method does not incentivise efficiency.

224. In catchments that are approaching full allocation, the formalisation of the consents will enable transfer, but the number or frequency of transfers will be driven by other pressures on water users (such as quality limit constraints), what the initial allocation method is at this point and the level of infrastructure required.

Recommendation 45

The method for allocating the portion of the allocable quantum between the threshold and the limit (full allocation) should be set through the regional planning process. National guidance should be given to regional councils on the range of methods available, and guidance provided on the circumstances in which particular methods might be more or less suitable.

Recommendation 46

When using administrative methods to allocate water between the scarcity threshold and the limit, the regional council should ensure that new applicants receive no more water than is necessary to allow them to undertake the activities to which the consent relates.

Fully allocated catchments

225. At full allocation the community needs to have a very clear picture of what water is being taken. This requires an effective monitoring and compliance regime and an allocation system that protects the limit by specifying how authorisations respond to changes in the availability of water. Providing investment certainty at this point is also vital to maximise the return on the water made available for use by the limit-setting process.

226. At full allocation, given there are no new authorisations available within the allocable quantum, the primary mechanisms for new users to enter the water economy and for water to move to its highest valued use over time will be through the transfer or trade of consents and/or through water being made available through voluntary surrender on expiry.

227. Trading of water take consents is provided for under the current freshwater management regime but it is not widespread due to various hindrances, including a perceived risk that a history of trading will count against the holder of the consent when it comes up for review or expiry, the absence of necessary infrastructure to store and transport water, and a degree of discomfort in some sectors of the community with the concept. Despite this, a limited amount of trading in water consents does occur both formally and informally in various settings – including transfers between individual consent-holders and between members of irrigation schemes.

228. Another available way of obtaining water consents is to buy the land to which they have traditionally been attached. Our recommendations will not change that possibility. But we think that it would be cumbersome and impractical to effectively insist that transactions for the use of water be tied in all cases to transactions in land. Doing so would, for instance, effectively rule out the leasing of use rights between landholders whose crops need water at different periods of time.

229. In some catchments, where water is scarce and where communities see the advantage in it, water trading could make a significant contribution to improving the dynamic efficiency of the freshwater management regime. This is particularly likely to be the case in those catchments where water takes come predominately from groundwater sources or where infrastructure is in place or is feasible to develop. Enabling dynamic transactions of this kind may help to drive water use efficiency and move fresh water to its highest valued use over time.

230. Trading of water consents will be more likely to occur in catchments where demand exceeds supply – in other words, once the allocable quantum has been fully allocated. The standardisation, divisibility and exclusivity provided by the new consent structure we recommend will support the trading of water consents given local community acceptance and a market of sufficient size (infrastructure has the potential to increase the size of transfer zones and the number of market participants). Regional plans will need to specify transfer zones and rules that minimise the need for regulator involvement in transfers and trades. The government will need to provide guidance and standards relating to the establishment of registries and accounting systems to facilitate the effective development and operation of transfer and trading systems. Regional council monitoring and enforcement activities will also need to be robust.

Recommendation 47

In all situations, except in relation to recommendation 48, transfer and trading of water consents will be on a voluntary basis and supported by the nationally consistent accounting system and the standard core consent elements.

231. Access to water is a basic human right. Cities and towns continue to grow and require water for their growing populations. The allocation framework is built on the principle of non-derogation and so a tension can arise between the growth of urban areas and the protection of others' right to water. A safety net is needed once full allocation is reached to allow community water

suppliers to access additional water from the allocable quantum, while at the same time protecting existing users.

232. The allocation model provides for this through a stringently controlled compulsory transfer mechanism that compensates parties who have their rights derogated. This mechanism would be akin to the designation process embedded in the RMA which allows "network utility operators" to access powers of compulsory land acquisition under the Public Works Act. The onus would be on urban water suppliers to demonstrate that they have achieved sufficient demand management measures and exhausted other opportunities to secure water (such as voluntary trading and infrastructural solutions) before a compulsory transfer option would be enabled. These are not simple hurdles – they would involve suppliers having to show that water use is prudent, and meeting the sort of public interest tests imposed by the Public Works Act.

Recommendation 48

Once a catchment is fully allocated, if more water is required to provide for urban growth, urban water suppliers will either need to increase efficiency, implement demand management activities or obtain more water in a way that does not derogate the rights of other parties or affect limits. If more water is required after these steps are taken, and the urban water supplier is unable to obtain access to that water through voluntary transfer, there should be a mechanism that allows the urban water supplier to prompt "compulsory transfer" in order to gain access to the necessary water. This would be akin to the "compulsory acquisition" process under the Public Works Act – it would require the urban water supplier to demonstrate that it had:

a. implemented suitable technical efficiency and demand management activities and explored all reasonable alternative options for obtaining water
b. undertaken a transparent and participatory process with appropriate checks and balances of "compulsory transfer," which would be accompanied by compensation for affected parties.

Over-allocated catchments

233. Over-allocation can affect the environment and other values maintained by the limits but it can also affect certainty for the pool of economic users. The magnitude of over-allocation will dictate what tools should be used to move use back to a level that is required to meet the freshwater objectives.

234. Decisions will need to be made at the point in time when authorisations in the catchments are formalised. The tool chosen for initial allocation should not necessarily determine what tool is used to manage over-allocation (e.g. first-in, first-served does not necessarily imply last in, first out). The policy for managing over-allocation and for managing within a limit will be agreed by the community through the planning process.

235. If it has been established that the cumulative total of all takes in a catchment exceed the limit, those users in the catchment will need to have their consents modified to conform to the limit, over an agreed timeframe.

236. There are three broad categories of approaches to dealing specifically with over-allocation; administratively determined "haircuts," negotiation-based voluntary reductions and volumetrically driven auctions and tenders. Other demand management tools can help and should be considered in managing over-allocation, such as low-level charging, but there is no guarantee that these will meet the required reductions.

237. The decision on how and when to achieve this will require communities to work together and to apply the following principles.

a. all users that impact on the over-allocation should bear some impact of the transition, although this may vary between users and may exclude human consumption

b. reductions in existing authorisations should reflect the nature of the over-allocation

c. reductions in existing authorisations should reflect the way in which the limit would bind users (e.g. reduced annual take, reduced instantaneous take or reduced reliability)

d. timeframes for transition should be, to the greatest extent reasonable, defined by local communities and appropriate to the situations. As an example, where water abstraction is in danger of creating a salt water intrusion into an aquifer, there may be a need to act with speed, while where no irreversible ecological damage is imminent, longer time periods will be able to be applied for businesses to make the changes required while maintaining their investment.

238. While different catchments will have different situations to manage, to ensure efficiency and consistency, a suite of potential methods should be set out in a national instrument that provides guidance on the methods and the circumstances in which they might be used.

Recommendation 49

National guidance should be given to regional councils on the suite of methods for managing over-allocation and central government should provide guidance on the circumstances in which particular methods might be more or less suited.

Recommendation 50

Catchment-level policies and rules for managing over-allocation should ensure that the allocable quantum meets the interim limits as they come into effect.

Recommendation 51

There should be a principle - expressed in a national instrument - that makes it clear that the objective of changing the water allocation approach where a catchment is over-allocated is to establish a resilient and credible water allocation regime that ensures users operate within the limit. In a context of over-allocation, incumbent users should expect reductions in the amount they can take.

Recommendation 52

There should be principles – expressed in a national instrument – that make it clear that catchment-level policies and rules for managing over-allocation:

a. should not automatically exempt particular sectors or users
b. should take effect over a timeframe that is appropriate to the situation
c. take into account the potential for transfer and infrastructure solutions to address over-allocation.

Moving to the new allocation framework

239. Transition involves getting both the technical solutions and social aspects right. It is important that the transition process takes into account people's ability to make changes. Technical solutions are needed to provide for a more efficient approach, in terms of the use of water and the ability for water to move between uses. The people affected by the transition to a limits-based allocation regime need to understand the change, and to feel that they and their rights are being treated with respect.

240. As with setting limits and managing within them, the nature of the waterbody and its use will influence what transition approaches are required in specific locations. This will mean that decisions on particular tools for transition will need to be made by the community. When considering the approach to transition, particularly in fully or over-allocated catchments, factors such as animal welfare will need to be accounted for.

241. Table 3 outlines the different stages for moving to the new allocation framework. A key element of the transition is that it will be managed locally and may be supported by the social capital and understanding provided through the planning process. Users will need to consider the impacts of their use on others within the catchment and will need to take advantage of opportunities to work together to maintain the limit while improving economic outcomes.

Recommendation 53

The approach to transition, including timeframes and methods, will be set in the regional plan.

Table 3: Stages of transition to a new water allocation regime

Stage	Description
Stage 1: Setting up the framework	Putting in place the foundation for the allocation framework will include both the national guidance and templates to be developed and the catchment-based policies and rules to be established. In all regions, the accounting system is put in place and all water use accounted for. This will involve regions establishing their information collection, monitoring and measuring processes but also bringing all water users, particularly those who don't have formal authorisations, up to speed on the new water management framework. This accounting process will inform limit-setting as well as allocation. Working with the community to inform users of the transition and their responsibilities will be important in this stage.
Stage 2: Formalisation of authorisations	The transition to the new allocation model requires all water takes to be standardised into new water consents in catchments under demand pressure and to have a reasonable technical efficiency measure applied. This will include setting out in the plan how the consents respond to change. In catchments not under pressure the process will involve a transition for users to operate in the new accounting system, which is likely to require users to formally account for their water use.
Stage 2A: Managing down to the allocable quantum	In catchments that are over-allocated, strategies will be needed to reduce use to the limit. This is likely to involve the use of interim limits and some form of tool to move to the target limit. Guidance for this would be provided in a national instrument, to support communities to make decisions appropriate to their catchments.
Stage 3: Managing	This is the on-going management of water use and the allocable quantum

within the allocable quantum	to protect limits while enabling change to occur over time.

Influences on transition

242. An important influence on transition will be the resolution of iwi rights and interests in freshwater. The model is sufficiently flexible to allow for multiple solutions to accommodate iwi rights and interests, noting that certainty supports investment and resolution of these issues will provide communities, iwi and stakeholders with more certainty moving forward.

243. The time it takes and the ease of change on the community will be influenced by both leadership and capacity and the willingness of the community to change. Central government will have a role in formalising and disseminating aspects of the regime that are centrally prescribed or guided (consent core elements, reasonable technical efficiency formula, best practice guidance on methods and tools). Regional councils will have a role in delivering the technical aspects of the allocation framework and facilitating community planning. Both roles will influence and impact on the understanding of the approach to water allocation.

244. It is important to note that the transition to a limits-based regime will need to be undertaken despite potential gaps in information. Limits will need to be set where uncertainty exists to establish the allocable quantum and the limits may need to be refined over time as more information comes to hand.

Enabling change

245. The proposals set out above for managing water quality and water allocation need to be underpinned by other changes in the way that information is collected, shared and used. The role of central government in providing guidance, direction and co-ordination is also an important factor in our overall approach.

246. This section discusses:

a. improvements in how the benefits and costs of planning decisions are assessed

b. the role of central government in providing guidance, direction and co-ordination

c. transparent monitoring and compliance systems

d. capacity and capability

e. science funding and co-ordination

f. data and information.

Evaluating the options, benefits and costs of planning decisions

Problems with benefit cost analysis under the RMA

247. The discipline of analysing options and their benefits and costs has been folded into the resource management policy- and plan-making framework through section 32 of the RMA. Section 32 requires policy options to be evaluated against a prescribed framework – the objective of which is to ensure that a range of options are identified and evaluated, and that decisions are grounded in evidence rather than assumption. The evaluation undertaken in accordance with section 32 is released alongside proposed plans and plan changes on notification, and also accompanies final decisions. This is important as it allows the public to access the evidence base that informed council decisions and gives insight into the council's rationale. Members of the public often focus on the content of section 32 evaluations in their submissions on council plans and policy. Section 32, therefore, plays a very important role in facilitating public participation in planning, safeguarding the rigour of council decisions and reducing transaction costs. A rigorous process of identifying options and evaluating their benefits and costs should improve the quality of council policy- and plan-making and consequently reduce the amount of time and resources necessary to achieve good planning outcomes.

248. The Forum considers that section 32 evaluations are one of the key mechanisms for ensuring transparency and accountability in the context of setting and managing to objectives and limits – it is not possible to set a limit without a robust understanding of the economic, environmental, social and cultural implications of the limit. Once a limit has been set, the community needs to have confidence that councils will play an effective hand in ensuring that it is implemented. It follows, then, that evaluation undertaken in accordance with section 32 must span economic, social, cultural and environmental dimensions and must be grounded in and informed by a practical understanding of the context within which the specific policy and rules will operate.

249. While that is arguably the intent of the current statutory provisions, there have been longstanding concerns[14] with the way this has played-out in practice:

    a. Section 32(4) requires evaluations to "take into account the benefits and costs of policies, rules or other methods ..." but references to benefit cost evaluation are generic and do not specifically require social or economic evaluation, which is particularly important where an issue could have a significant impact on communities. Case law has not clarified the importance of social and economic analysis and in practice their quality is variable.

    b. Some agencies and councils effectively incorporate section 32 analyses into their policy development process – the outcomes of these evaluations genuinely inform and influence decision-making. Some agencies and councils, on the other hand, appear to treat section 32 more as a reporting requirement to be undertaken after decisions have already been made.

    c. Section 32 analyses often fail to identify and evaluate a full range of viable alternative policy options and the suite of tools or methods considered for achieving objectives is often incomplete.

    d. Some agencies and councils appear to have insufficient capacity and capability to carry out effective benefit cost analyses. This could be due to genuine resource constraints or to prioritisation decisions.

Robust decision-making and quality information

250. Limits protect both in-stream values and the ability to put water to productive use. We have consistently emphasised that water management decisions must be robust, transparent and made on the basis of the best information available. In LAWF2 we proposed an approach to freshwater planning designed to make the "… best available information accessible as early as possible in the process, so that the facts are on the table as scenarios associated with different objectives … are being developed and as their impacts on-the-ground are being assessed."[15]

251. Socio-ecological systems are, of course, very complex and decisions will often need to be made on the basis of incomplete or uncertain information. A complex situation or a lack of information does not justify a lack of rigour. Where this is the case, our position is that any areas of uncertainty should be identified[16] and key assumptions should be made transparent so that they can be subject to independent scrutiny.[17]

252. Planning decisions need to be underpinned by the best available information on their economic, environmental, social and cultural implications. The process of identifying options and evaluating their benefits and costs needs to improve, and changes to both legislation and practice are likely required to achieve this.

[14] A 2009 Ministerial Technical Advisory Group report (undertaken as part of the "first phase" of the current government's RMA reforms) flagged concern that practice under Section 32 has not been meeting the intent of the section. This was followed by the establishment of a 12-member group tasked with evaluating section 32 which included representatives from regional councils, territorial authorities, central government agencies and major stakeholders.

[15] Page 29 of LAWF2

[16] Recommendation 10 of LAWF2

[17] Recommendation 29 of LAWF2

Recommendation 54

Freshwater-related regulations, policies, plans, and catchment-based limits and management methods (including provision for infrastructure) must be underpinned by a robust understanding of their economic, environmental, social and cultural implications. Central government agencies and regional councils should be required to ensure that:

a. social, economic, cultural and environmental evaluation is undertaken as a core part of all section 32 analyses
b. the detail of section 32 analyses correspond with the scale and/or significance of the plan or policy under consideration
c. section 32 analyses evaluate the effectiveness of a full range of policy options and a full suite of associated methods for achieving objectives and meeting limits
d. the results of analyses are fed back into the national and regional collaborative policy- and plan-making process before decisions are made and before draft provisions are agreed by stakeholders
e. suitable guidance and training is in place to build capacity in the discipline of benefit cost analysis – particular consideration should be given to the provision of standard templates and approved methodologies
f. suitable internal procedures are in place to guarantee the quality of benefit cost analyses.

Recommendation 55

Central government should consider:

a. implementing for regional councils a review system analogous to the Regulatory Impact Assessment (RIA) process followed by central government agencies
b. including an assessment of the quality of section 32 analyses in the RMA performance monitoring framework currently under development by the Ministry for the Environment.

Implementation, information and science

Implementation – the role of central government

253. Central government has a critical role to play in ensuring that changes to water management are done well. While regional councils are the main agents for the delivery of regional planning and related implementation, central government can set national direction and priorities, including through legislation and national instruments, and ensure consistency in approach by regional councils to reduce transaction and implementation costs (while still recognising catchment specificity). This report suggests that there are a number of ways in which central government can assist change – through direction, facilitation and audit.

254. Central government should provide guidance and direction for regional councils, or lead the identification and dissemination of regional council 'best practice' in a number of areas. These include:

a. ensuring that the knowledge about what works well and doesn't in collaborative catchment management is spread to all regional councils

b. that there should be some core standard elements of allocation regimes, including core elements of consents and moving existing authorisations to new consents

c. methods of accounting, including for very small takes, and for sources of contaminants

d. as a matter of urgency, that criteria for the mix of methods and tools to achieve freshwater quality objectives and limits should be developed

e. whether there are efficiencies and advantages in developing a single model accounting system, set of guidelines or a national standard for the establishment and support of market systems for water allocation and any possible trading systems for discharges.

255. Central government also has a facilitation role through strategically providing support for capacity building among councils, iwi and stakeholders. All of these groups will have a significant role change in water management, and central government has a role to assist these different groups to both understand and participate in the new water management regime.

256. This facilitation role also extends, in the case of regional councils, to central government's audit role. The government will need to enhance its auditing programme through which regional council performance is monitored and reported against. This also needs to focus on councils' service delivery and compliance roles.

257. Having measurable objectives and limits provides a greater level of transparency on councils, making audits more meaningful. Central government already has a range of tools available to it to intervene if regional council performance in water management is not adequate. The Forum's recommendations on governance in LAWF1 (appointments onto regional councils) are an additional influence the Government could exercise. No new options are needed.

Recommendation 56

Central government should, in collaboration with others, lead a process of identifying and disseminating best practice planning and implementation. This should include:

a. guidance material for collaborative catchment management planning
b. standards for managing allocation regimes
c. standardised core elements for consents relating to water
d. how to translate existing authorisations into new water consents
e. methods for accounting for very small takes
f. approved methods for establishing reasonable technical efficiency
g. methods for accounting for sources of contaminants
h. as a matter of urgency, criteria for determining the mix of methods and tools to achieve freshwater objectives and limits including whether to allocate contaminant allowances in different catchment circumstances.

Recommendation 57

Through the transition to the new framework, central government should strategically provide support for capacity building including for councils, iwi and stakeholders who will have significant changes in their roles across the entire water management regime.

Recommendation 58

Central government should enhance its auditing programme through which council performance is monitored and reported against.

Recommendation 59

Central government should consider the potential for efficiencies and the advantages of consistency of developing a single model, accounting system, set of guidelines or national standard for the establishment and support of market systems for water management.

Implementation and compliance

258. Putting in place a water management system that relies on limits to meet freshwater objectives, and ensures that rights are clear and unambiguous, places an obligation on regional councils to have in place clear monitoring and compliance systems. These systems play a number of important roles:

a. They give confidence to stakeholders and the community that the agreed freshwater objectives and limits are being met

b. They provide early feedback to councils and the community that the tools and methods in place are or are not working

c. They give certainty to, for example water consent holders, that their rights are being respected and enforced

d. They give a clear signal to land users about the way that the council will work with land users to help them comply and integrate with industry good practice or auditing schemes, and about how those that do not comply will be treated.

Recommendation 60

As a pre-condition of a successful freshwater management system, regional councils should:

a. adopt a transparent approach to developing monitoring, compliance, and implementation systems
b. take steps to ensure that effective and cost-efficient monitoring, compliance, and implementation capacity is in place at the time the regime is introduced
c. monitor and report on the implementation of the policy.

Capability and capacity

259. Capability, capacity and the use of information will be critical issues in implementing changes to water management, particularly in the period when objectives and limits, and the methods and tools to achieve them are being developed. In particular, capacity will be needed for the following:

a. the development of catchment objectives and limits, integrating science with community views

b. monitoring frameworks

c. the design of integrated management methods for ensuring that water quality objectives are met

d. the design of water allocation regimes

e. analysing options, costs and benefits

f. sector organisations' extension programmes to ensure continued and accelerated uptake of good management practice.

260. All parts of the water management framework have some degree of capacity at the moment, but often it is patchy or inconsistent, or not integrated with the efforts of others. Communication of existing knowledge, generation of new knowledge and the development of skills and capacity, all need to be tackled positively from the beginning. All sector organisations will need to examine their capacity to service their members to engage in the new era of water management, train staff and develop their outreach programmes. Central and local government will need to support this effort and effectively co-ordinate sources of information and research effort across the government sector and with independent organisations. Areas where there is incomplete knowledge will need to be identified and addressed. For example, central and local government should carry out more thorough and comprehensive studies of water-based recreation to fill gaps in the knowledge of this area. This should include both current and potential uses and an inventory of waterbodies suitable for a whole spectrum of water-based recreation.

Recommendation 61

All parties (including central and local government, iwi, stakeholders and sector organisations) should address a significant shortfall in knowledge (including about Mātauranga Māori and its transmission), skills and capacity for water management, through:

a. assessment of current knowledge and capability, needs and gaps
b. making provision to improve and strengthen research, information management, economic analysis, training, capacity, technology transfer and outreach services.

Science funding and co-ordination

261. Good water management requires good understanding and good understanding requires good science - related to and incorporating for example knowledge of land resources and land use, social science, Mātauranga Māori and adoption practices, and hydrological systems including estuaries. Science has in the past, and will in the future, provide information, advice, models, predictions, and solutions to water and land managers and other end-users including addressing extension and adoption issues. Freshwater science needs to be an integral part of a wider framework for freshwater and land use management, and recognise that management and knowledge is required at different levels.

262. Science (i.e. biophysical sciences, Mātauranga Māori and social sciences including economics) should assist in the setting of freshwater objectives and limits, but these involve value judgements to which science is only a contributor.

263. Good freshwater science needs to be underpinned by reliable data consistently collected, archived and disseminated. There needs to be a focus in freshwater science on an integrated approach that includes:

a. co-ordination of research across Crown Research Institutes, the tertiary education sector, regional councils and industry to ensure the greatest gains are made on total investment

b. ensuring that economic and social research, along with biophysical research, is pursued to help inform choices about objectives, limits, management approaches and monitoring

c. collation and communication of significant research results and ensuring potentially useful data generated through publically funded projects is widely accessible.

264. Central government needs to focus its capacity to provide strategic co-ordination of research, data and information for water management. This requires cross departmental co-ordination of

policy, programmes and funding for research and environmental monitoring, and that these programmes are linked to work being undertaken at regional level and the needs of regional and catchment-based management. It also involves development of national data and information standards, and providing means of drawing together and enabling ready access to research and monitoring information.

265. There is also a need to make sure that research focuses on areas of priority and where there are gaps. One example of a gap is knowledge of water-based recreation needs, including an inventory of waterbodies suitable for the spectrum of water-based recreation.

266. Freshwater and land resource science must be underpinned by a regularly updated *Water Research Strategy* and an associated *Land resources and use Research Strategy* that are formulated and agreed in consultation with science providers and stakeholders.

267. There is an urgent need for improved national capability in freshwater science and knowledge. A long-term approach to professional training and national capability development in water and land resource science and management at all levels should be identified, funded and acted upon.

Recommendation 62

The existing MfE/FRST Water Research and Development Strategy should be reviewed, in light of priorities arising from government water policy reform, and the resultant updated strategy subsequently implemented. The review should draw together relevant research undertaken by all parties and set out how it will be delivered in a co-ordinated and structured way.

Development of tools

268. The tools, including models, which are essential to the effective and efficient management of water, will require continued development and refinement. Investment must be focused on a limited set of models that together are able to provide a comprehensive foundation for future management under a limits regime. This co-ordination of investment and development should be guided by a national strategy that effectively pools the limited expertise available to focus on solving problems and customising platforms to meet the needs of management and planning.

269. However, models need to be used with care such that the assumptions and limitations are transparent and results used to inform and support the decision-making process. Clear guidance is required on how models, and model output data, are used in the development, implementation and enforcement of water policy.

Recommendation 63

All parties, central and local government, industry and science providers should continue investment in the development of models (including development and prioritisation of a limited number of interoperable models) and measurement-based monitoring systems for practical application to water quality management. Investment should be based around partnerships and guided by a national strategy that ensures co-ordination of available resources. This should include clear guidance and protocols on how models, monitoring systems and their output data, should be used in the development, implementation and enforcement of water quality policy.

Data and information

270. Significant data and information is collected by central and local government, by sector organisations, industry and by individual land owners. However, access to robust data is hindered by inconsistent data collection and storage standards and difficult access systems. There are issues of intellectual property and concerns around privacy issues particularly from

land owners. Data gathering, storage and dissemination is somewhat fragmented. Information and data protocols need to be standardised nationally to facilitate exchange of data between data bases and interoperability of models. Common management and access protocols should be established across the various science providers and local government databases. This should include clear guidance and protocols for the use of, and access to, data sourced from land owners and consent holders, while explicitly taking account of privacy and commercial sensitivity issues. Government can assist by negotiating access agreements where possible to enable the wider use of data held by private companies and sector organisations.

271. Mātauranga Māori and other information derived from tikanga should be shared through the network where considered appropriate by iwi.

Recommendation 64

Central government with local government and national sector organisations should continue the open source data initiative, and consider as a high priority access to publicly funded data related to the management of land and water. Common management and access protocols should be established across the various central and local government funded databases.

Recommendation 65

Central government should provide guidance and protocols for the use of, and access to, data sourced from land owners and consent holders, while explicitly taking into account privacy and commercial sensitivity issues.

Roles, responsibilities and accountabilities

272. Limits need to be set, monitored and enforced both transparently and effectively if they are to be an effective tool in meeting freshwater objectives. The roles, responsibilities and accountabilities of all those involved in setting and implementing limits need to be clear and, in many cases, will need to change, if the regime we have proposed is to deliver the improvements we expect. While the effects of extreme weather events can be discounted through the way the limit is set, there are some things, such as naturally fluctuating sources of background contamination, that will need to be accounted for but for which responsibilities and accountabilities cannot be assigned. In most instances, however, responsibilities can be assigned and accountabilities clarified for aspects of the framework that deal with:

a. reviewing the effectiveness of policies, plans and implementation methods

b. auditing of performance

c. compliance and enforcement

d. reporting and transparency.

Central government

273. Central government will have to take a more active role than it has until recently – our reports recommend a far greater level of central government guidance, direction and involvement in freshwater management. The central government role will not be limited to setting a policy and legislative direction. It will also involve:

a. working with iwi and councils to ensure that iwi are able to participate effectively in freshwater management

b. producing frameworks and methods to guide local limit-setting decisions and implementation

c. co-ordinating freshwater management reform through the provision of technical information and advice, and through the identification and dissemination of regional council best practice

d. participating in and organising collaborative processes at a national level

e. monitoring of both processes and outcomes.

274. We have recommended an enhanced role for central government in auditing regional council performance and in assuring the quality and rigour of analyses of policy options and their benefits and costs. Ministers will need to be prepared to take an active role in enforcing effective freshwater planning at the regional level through existing, but until recently seldom used provisions of the Local Government Act and the RMA. We also recommended in LAWF1 that there be government appointments to either regional council committees with responsibility for freshwater management or to the councils themselves. This would provide a further avenue for more active central government participation in freshwater management and is discussed further in the following section of this report.

Regional councils

275. Regional councils will continue to play a key role in water management, but expectations of that role will change. There will need to be a significant shift in the way some councils, communities and stakeholders have approached the planning process. The council will need to act as custodian of the planning process and focus more on drawing policy from its community and building a broad sense of ownership of resultant planning documents. A key role of the council will be to design and support planning processes that help iwi, communities and stakeholders to participate effectively in a new regional planning process underpinned by collaboration. Once limits are set, councils will face a significant challenge in ensuring they are met (particularly in relation to water quality limits). Councils will need to enhance their information gathering and compliance processes. They will also need to develop the capacity to react quickly to change, particularly where water permits are being transferred and where markets in permits have emerged. Councils' governance arrangements will also change, and this will affect the way that they operate, work with iwi and deal with their communities. Some of the key issues for regional councils to think about will be how to:

a. design processes that effectively encourage, resource and empower collaboration, particularly given that some organisations and individuals may have limited time and resources to commit

b. work with stakeholders to identify pragmatic and efficient ways to improve information and understanding, enhance monitoring and compliance and secure effective plan implementation

c. effectively feed Mātauranga Māori into policy- and plan-making processes

d. work with science providers to improve the communication of scientific information to lay audiences.

Industry and sector organisations, iwi, NGOs and communities

276. All parties with an interest in freshwater management will need to consider their current practices in light of the new frameworks they will be operating under. If the benefits of our recommendations are to be realised and if plans are to be implemented effectively, approaches will have to change, business models will need to adapt and new relationships will need to be

built. Two key challenges will be supporting the development and uptake of GMP, and building trust-based relationships between stakeholders, iwi, communities and councils.

Auditing of performance

277. Regional councils have specific statutory roles and responsibilities under the RMA and the Local Government Act that relate directly to freshwater management. The RMA establishes clear expectations and responsibilities for resource users and for regional councils with respect to the control of land uses, and water takes, diversion, damming, and discharges. Section 84 of the RMA requires regional councils to enforce their plans and policies, and section 35 of the RMA provides clear direction to regional councils regarding their role in auditing the effectiveness of their plans, policies and methods (see Appendix 4). For this framework to work effectively the various parties with auditing and implementation roles need to act in co-ordination. The Government has recently established the Environmental Protection Authority and clarified the monitoring and delivery roles of the Ministry for the Environment and Parliamentary Commissioner for the Environment in the overall resource management framework. Our recommendations regarding benefit cost analyses and council performance monitoring enhance this framework and clearly sheet home the accountability for setting and implementing limits to regional councils.

Potential impacts of the LAWF recommendations

278. The current report does not include an assessment of the potential impacts of its recommendations in terms of costs and benefits to land and water users or the environment.

279. The second and third reports are built on the foundation of the NPS-FM and its requirements on regional councils to set objectives and limits for all waterbodies. LAWF2 addressed the first part of how we might go about that. It suggested governance and process models for collaborative decision-making that should reduce costs of regional planning over the long term by avoiding litigation, and increase net benefits of management by better understanding the range of values and interests at stake.

280. Secondly, LAWF2 recommended that a National Objectives Framework (NOF) for water quality should be developed to represent national level values as bottom lines, and to define the parameters for implementation of Objective A2 of the NPS-FM: “The overall quality of fresh water within a region is maintained or improved…” This piece of work is critical to the nature of nationally imposed impacts at regional, catchment and enterprise level. This work is being carried out by the government, which will need to carry out an analysis under section 32 of the RMA as part of this work.

281. The third report contains recommendations on the implementation of limits through a range of tools. Many of these tools are already available: some are already being applied by sector groups and councils, although not in a consistent manner. The water allocation framework recommended will enable increased efficiency and productivity from the use of available water resources where these are constrained by the limits in place. The quality management recommendations should assist to make transition to life under limits easier for stakeholders to accept and participate in, and to minimise the costs of achieving mutually agreed objectives. All regional plans need to be promulgated after a section 32 analysis.

282. The discussion and agreement of objectives and limits under the NOF that will occur in collaborative stakeholder groups at local level, and that will subsequently be established in regional plans, along with the timeframe for any adjustments required, will determine the final impacts on the ground.

National strategy

283. For a number of reasons, New Zealand is entering a new era of freshwater management. Foremost amongst them is the growing awareness of constraints on water use, and our realisation that the failure to acknowledge them has led – and would continue to lead – to expensive disputes, lack of certainty, and sub-optimal outcomes for all. We increasingly see our land and water resources moreover as one of our key strategic assets which we need to protect and develop wisely. With climate change, the social and economic development of emerging countries and the growing emphasis in export markets on sustainability credentials, there are a range of new opportunities to be captured, as well as new risks and pressures to be managed. The changes our three reports propose are precisely about assisting decision-makers and all users and managers of water together into this new era, through a more active, dynamic and co-ordinated water management system.

284. We expect that the Government's water reforms will amount to a significant shift of the New Zealand water management system, as they unfold over time, involving a variety of players and a diversity of regulatory and non-regulatory tools. Most of the implementation will take place at local and regional level, through catchment processes (within a common national framework). We can see the need for a common 'umbrella' which will stand for the water reforms as a whole over time, help to maintain momentum, dialogue and direction, and provide clarity to stakeholders and New Zealanders at large about how it 'all fits together'.

285. Across the field of information, expertise and institutional capacity in water management, a national clearing house is required. This facility would provide a single co-ordinating hub for standards, information and expertise. The relatively small pool of expertise in this area in New Zealand means that effective networking is critical to ensuring advice is available, and to making informed decisions on complex issues at regional level. In addition, as implementation advances, lessons from early experiences need to be available to others as soon as possible so that successes might be replicated and mistakes are not repeated.

286. We have considered carefully whether the best way to address this need is to develop a specific Land and Water Strategy, as we had envisaged in our first report and as many countries around the world have done. We have concluded however that, given that much of the substance of a Strategy is already present in our three reports, embarking on a new, onerous process of Strategy-drafting would most probably add insufficient value. We think that what we need now is something that is more dynamic and interactive than just a 'top-down' public document. The benefits that a Strategy would bring can be achieved through other, lighter means.

287. We think in particular that the compilation and pooling of all relevant water reforms resources in an integrated, accessible way – for instance through the creation of a national online 'resource centre' – will be critical in order to:

    a. facilitate communication and community engagement about the proposed changes

    b. facilitate the sharing and dissemination of learnings and solutions

    c. keep momentum and maintain a sense of common purpose to the reforms.

288. This shared resource should target primarily users and managers of water in New Zealand, and also have material for the general public. It would serve the following purposes:

    a. *Communication and outreach*, by gathering all relevant communication tools and reference documents elaborated by Government and other parties (including the LAWF reports and materials).

b. *Monitoring of outcomes and achievements*, e.g. through information about successes and best practices, through links to regional councils' water quality monitoring information or other environmental reporting sources.

c. *Connecting stakeholder initiatives and local processes*, e.g. by linking to industry initiatives and programmes, conferences, regional and catchment processes and the strategies and documents they develop.

d. *Sharing of resources, expertise, and tools*, e.g. by providing information on central and regional government resources for water users and managers (including national guidance documents)[18], and by providing regularly updated information on progress with knowledge and information, tools, techniques and management solutions.

Recommendation 66

Central government should establish a centralised capacity to co-ordinate national expertise and information for water management. A key function would be to draw together and connect existing technical expertise and information resources to accelerate the implementation of a well-informed nationally consistent management system.

Recommendation 67

As a way to consolidate the reform package resulting from Government's response to the Land and Water Forum reports, key statements, documents and information sources should be collected and made available to the public and stakeholders in an accessible way, for instance through a water reforms 'handbook' and/or a water reform web portal. This resource should be regularly updated as new developments and information arise.

289. We anticipate that there will also be a role for further national collaborative engagements. In particular, in line with recommendation 15 of the LAWF2 report, there should be a presumption that a collaborative approach will be used for the development of water-related national instruments, which includes all forms of national direction and guidance envisaged in this report. The co-ordination of capacity-building efforts, addressed elsewhere in this report, will also require a collaborative approach.

290. Furthermore, just as we have systematically emphasised in our reports the importance of adaptive management, we anticipate that there will also be a need for some form of monitoring of the high-level outcomes sought through our recommendations, possibly resulting in adjustments. The Land and Water Forum members should be party to this exercise.

Decision

The Land and Water Forum has decided to meet again in July 2013 to assess the Government's response to our reports and to consider what future role if any it might seek to play in relation to land and water management, and how it might best constitute itself in order to do so.

[18] This would include the material referred to by recommendation 34 of LAWF2: "*The government should establish an openly accessible online library of practical experiences with collaborative processes to facilitate shared learning.*"

Charges and taxes for water use

291. The Land and Water Forum discussed the question of charges and taxes for water use at some length. This is a complex topic and one on which opinions are divided. We were not able to reach a resolution. We think it would however be useful to record some key elements in our discussion as a contribution to the continuing debate on this topic in New Zealand.

292. There is a clear distinction between charging to recover costs associated with water management, and charging or taxing for the use (or the right to use) fresh water. These are dealt with in turn.

293. Consideration of water charging and taxation must address the full range of costs and benefits associated with its use. It is important to ensure that any discussion addresses all costs and benefits.

Recovery of costs associated with the management of fresh water

294. Charging is commonly used by councils for recovery of management costs from consent holders. In catchments that require more management resources under the new regime, additional costs may well be incurred, implying greater levels of cost recovery. Councils will need to strive for efficiency in the delivery of services to minimise these costs, and ensure that there are sufficient benefits from the services to justify the costs.

295. The cost of building and maintaining water service-related infrastructure, including urban reticulation systems, is sometimes recouped from resource users through volumetric charges (often combined with a base water use entitlement). These costs are associated with the management of fresh water and, in the right situations, it may be appropriate for them to be recovered from users. At the same time, there must be a comparison of the costs associated with implementing any water charging system against the benefits in terms of improved efficiency of use.

296. As is currently the case, councils will make decisions on the appropriate attribution and funding of all costs in their budgets and incorporate the resulting policies and schedules of charges into their annual plans. These decisions often split charges between resource users and the general rate-payer on consideration of the public versus private benefits of the activities. Where costs and benefits of resource use are increasing, these decisions will require care to ensure that the beneficiaries bear the appropriate level of charges. These decisions need to be made in accordance with transparently articulated guidelines and in consultation with those affected.

Charging or taxing for the use of fresh water

297. Members have a range of strongly opposed views on charging or taxing for water use (or the right to use water). Some members strenuously oppose any concept of charging or taxing for the use of fresh water. They note that activities that depend on water use generate wealth and employment, both directly and indirectly through flow-on effects to the broader economy. Water-users pay taxes and both general and capital based rates (where investment related to water-use increases the capital value of land and in turn increases the proportion of rates paid) and in some circumstances contribute to the gathering of information and to river- and flood-protection activities.

298. Other members maintain that there are valid reasons for charging for the use of fresh water, in particular because the benefits of water use need to be shared with the community more broadly, and for efficiency reasons.

299. Within this context, a range of possible objectives for charging or taxing was discussed, including:

    a. promoting the efficient use of water

b. providing a return to the community

c. funding of specific activities including restoration of waterbodies

d. increasing taxation efficiency.

300. In our discussion we have canvassed these.

Efficiency incentives

301. There was some discussion of the extent to which charges or taxes might provide efficiency incentives. This will be dependent on the circumstance in each catchment.

302. In fully allocated catchments, there is likely to be unmet demand for the water resource. If a transfer system with low transaction costs is enabled and trading occurs, price signals should emerge to encourage efficiency in use and movement of water to its highest valued use. Charging would do little in this situation to further the efficiency objectives of management.

303. If however there was a fully allocated catchment but for some reason a transfer system is not operating in an effective manner then a charge on water use (or the right to use water) could improve the overall efficiency of water use in the catchment. This is because in some circumstances a charge might provide an incentive for those with rights to water to use that water efficiently, or to free it up for others to use.

304. Where water is not fully allocated, the amount of water used could be reduced if a charge was applied. A charge in this case can be argued to work against efficiency objectives. That said, when a catchment is approaching full allocation, charging could be useful to encourage technical efficiency in water use to maintain headroom for development.

305. Elsewhere in this report we note that, if a community sees an advantage in implementing charges or market-based tools on initial allocation of water to enable the highest valued use to be found, then it should have the flexibility to do so through its plan. It is also possible that, where catchments are over-allocated, charging may be useful for reducing water usage at least cost within a target timeframe.

Community return

306. Some of us think that that the issuing of resource consents for water involves a wealth transfer to the holder of the consent from the community at large, and contend that the community should share in the economic benefits of water use in the same way that the community receives some benefit from charges for access to other resources such as minerals and petroleum.

307. Others of us do not accept this argument, which would impose significant additional costs on the productive sectors without sound justification, given that the community benefits in many ways from current water users. These members consider that it would be inequitable for users to bear additional charges or taxes and, in any case, do not believe it is clear that this wealth exists before the permit is granted and before individuals and enterprises take on risk and make investments – sometimes significant – to develop that resource.

308. One consideration in this regard is that where the Crown currently charges royalties for extraction of minerals and petroleum, Crown ownership of those resources is legally explicit and long-standing. For water this is not the case. This does not mean that charges could not be levied on resource use, but it would not have the same underlying basis in ownership as mineral royalties.

Funding specific activities including restoration of waterbodies

309. The potential for charging or taxing current water users for targeted actions such as restoration of waterbodies or cross-catchment mitigation activities like riparian planting is not at its heart a

polluter-pays argument. That is because those who are using the water quantity resource may not be the parties responsible for the degradation of waterbodies (this is especially likely to be true for legacy issues).

310. It is argued by some however that those who benefit from the use of water should pay at least some of the costs of water-related clean-up activities.

Taxation efficiency

311. This issue more than any other is the matter on which there was the widest difference of opinion within the Forum. It is a topic that is not within the scope of our terms of reference, furthermore it is a matter on which we do not have requisite expertise or information. That said the majority of the members have serious reservations about: the rationale, asserted underlying assumptions and implications of such a tax.

312. A minority of members presented the view that resource taxes are more efficient than other forms of tax. They suggested that raising taxation revenue through traditional avenues such as income or company taxes is potentially less efficient than a resource tax, and emphasised that one of the principles associated with taxation is, or should be, to raise whatever revenues are required in a way that imposes as few costs on the economy as possible.

313. They think that the key to delivering on this objective is a fiscally neutral approach, under which the collection of resource rents for water would enable a corresponding reduction of income taxes. Proponents argue that a shift in the balance of revenues from income taxes toward resource rent taxes would improve the efficiency of the overall economy and release a growth dividend.

314. Others note that capital value increases due to the availability and use of water are already taxed through higher property rates. They note the economic benefits from the productive use of water (see paragraph 297 above) and suggest that there is a range of investments that have been made in water-related infrastructure in a variety of sectors that would be adversely affected by such a tax.

315. Arguments around taxation are complex and we are not resourced to assess them or tasked to design taxation measures which have to be nested within the taxation system as a whole. We have however recorded this element of the debate.

Design issues associated with charging

316. In considering whether to introduce a charge or tax, or not, it is important to differentiate between the reasons for introducing it (described above), and the specific design. For a charge or tax to be implemented, it should be both conceptually sound and designed in a way that will meet its objective while not over-burdening the parties involved with unnecessary cost. The design issues that must be considered include:

a. Who to charge?

b. On what basis?

c. (Critically), how much to charge?

d. With what transition path? Etc.

317. We note that any decision to implement a policy for charging or taxing fresh water will have both efficiency and equity impacts that should be very carefully considered, including:

a. impacts on future investment and productivity

b. impacts of the charge or tax on the full range of water users, including those that have made investments based on the current regime

c. effects on different types of use including abstractive and non-abstractive uses

d. inter and intra-regional cross subsidies (if any)

e. the extent of recognition of local factors in the charging regime

f. how charges or taxes interact with the other recommendations in our reports, including assessing where the overall balance of costs and benefits to each sector falls.

318. These matters are technically difficult – and measures which are poorly designed or badly implemented can have a negative overall effect even if their rationale is sound.

Concluding remarks

319. There was no resolution on the matter of charges or taxes on fresh water and we were neither resourced to assess the issues nor asked to make recommendations on matters that impact upon the broader taxation system.

Other matters

320. In completing this 3rd report, we are conscious of the need to 'tie-off' matters that were covered in earlier reports, and integrate them with the matters discussed in this report. This section covers:

    a. governance and the incentive to collaborate

    b. urban water management

    c. drainage and flooding.

Governance

321. Catchment-based regional council planning is fundamental role to our approach to water quantity and quality management.

322. At present, plans for notification are largely developed in-house by council staff following council-led consultation. The risk is that, regardless of the nature of consultation, stakeholders that dislike the proposals in the draft then fight the "council" plan and stakeholders that like it defend it. Parties focus on what they stand to **win or lose,** and sectors and interests are pitted against each other from the beginning.

323. Recent efforts to improve the quality of council consultation on policy and plans have not always been successful. Some members have described the difficulties caused by stakeholders keeping information to themselves during consultation in order to preserve their position going into submissions, appeals and mediation. Others have referred to councils' "decide-announce-defend" approach to plan-making and their reluctance to pay real attention to stakeholder positions until an appeal is lodged.

324. This approach does not incentivise creative, "win-win" solutions to freshwater management issues and leads in some cases to costly and time-consuming processes with sub-optimal and divisive outcomes.

325. The Forum is of the view that an improved policy and plan-making process:

    a. Should emphasise the importance of getting the plan right the first time. Issues, relevant information and options should be on the table as early as possible. Trade-offs should be identified, made transparent and resolved collaboratively wherever possible.

    b. Will be helped by a clearer and more directive national framework within which regional/local decisions are made.

    c. Needs safeguards to ensure that intellectual rigor is applied to the development of planning documents, and to guarantee their coherence, internal consistency and quality.

    d. Needs safeguards to ensure procedural justice and incentives to follow due process in a robust and efficient way. The legal profession has an important role to play in terms of ensuring due process is protected.

    e. Should be timely and cost-effective – but at the same time it needs to produce quality outcomes that are resilient, durable and foster community commitment.

326. Our recommendations on plan-making should be seen within the context of other changes recommended by the Forum:

a. Our first report recommended government appointments either to regional council committees designated with responsibility for freshwater management decisions, or to the councils themselves on matters relating to freshwater management – to strengthen the links between regional councils and central government agencies, fill in gaps in skills and perspectives, and strengthen the capacity of councils to provide leadership on the complex issues of intergenerational responsibility and legacy environmental remediation.

b. Our second report recommended the establishment of parameters and indicators against which waterbodies would be classified, and the development of a national framework that would guide the setting of freshwater state objectives at a catchment level.

Collaborative policy- and plan-making

327. Our experience in the Land and Water Forum has shown us the value of a collaborative approach to resolving freshwater issues and we all support greater use of collaboration in New Zealand's freshwater management regime. In LAWF1 we agreed that collaboration should be mandated for the development of any land and water strategy or regional water plan. In LAWF2 we noted that collaboration will work best when participants feel that their responsibility to reach consensus is real – when they are empowered to resolve trade-offs, and able to take a creative and open approach to finding solutions that benefit the interests of all parties. A proposed approach to collaborative policy- and plan-making was put forward in LAWF2 that was grounded in the generally accepted position that for collaboration to work it must have real influence over final decisions – it can't be confused with consultation and its outputs can't be easily discounted by decision-makers. It is also generally accepted that there is great value in early engagement with iwi, stakeholders and the community. The proposal in LAWF2 sought to shift the focus of public participation from "refining" a council's plan to contributing to the drafting of the plan itself. Nothing in the proposal affects the ability of parties to seek declarations from the Environment Court[19] and specific provision has been made to allow them to appeal the merit of the final decision in certain circumstances: where the decision can be shown to have a significant adverse effect on a matter of national significance, or if it contradicts the consensus position of the stakeholders in the collaborative group.

328. Good planning practice is moving in a more collaborative direction and, in effect, the proposal put forward in LAWF2 is a hybrid of those parts of the status quo that work well (independent mediation and independent hearings in particular) and a framework for ensuring a more collaborative and participatory "front-end" process of plan development.

329. Its central feature is its self-correcting design: if collaboration is successful then its outcomes are influential and its importance in the planning process grows. If collaboration is unsuccessful, its influence diminishes and the importance of the independent (Environment Court equivalent) hearing process grows. This proposition did not gain universal support.

The role of the Environment Court

330. LAWF2 recommended changes to current merit appeal provisions. As was indicated at the time, not all Forum members have the same view on this question, and it is one that we have continued to discuss during our work on this report. The proposal does not reflect an adverse view of the Environment Court, which has played and will continue to play a crucial role in safeguarding the quality of planning outcomes. But there is a view, held by many, that for collaboration to work the role of the Court will need to change – that maintaining unrestricted ability to appeal the merit of councils' decisions at the end of the plan-making process will encourage participants to preserve their negotiating position throughout and will discourage creative compromise. If merit appeal provisions are unchanged, they expect that the

[19] Under section 310 of the RMA.

collaborative phase of the process we have proposed will therefore be undermined and the benefits we expect from it will not occur.

331. Some members still have concerns regarding the effect of limiting access to the Environment Court on the ability of some parties to participate, the quality of outcomes and the equity of the planning process. These concerns are listed in Appendix 5.

Different views on what is required to incentivise good-faith collaboration

332. The proposition for collaborative policy- and plan-making explained in LAWF2, which establishes a presumption that catchment-based plans should be developed collaboratively, is a central feature of the LAWF package for improving freshwater management in New Zealand. Many consider it to be an essential element in the catchment-based approach to limit-setting required by the NPS-FM and are of the view that, in order to incentivise good faith participation in collaborative processes and to give them the best chance of success, access to the Environment Court for merit appeals should be circumscribed as LAWF2 suggests.

333. Not all of us agree, however, and there are three main viewpoints amongst the remainder of members who continue to have reservations on the issue of merit appeals:

a. Freshwater policy and plans should be developed collaboratively where possible. To be equitable, if any one party has the ability to challenge the merit of a council decision at the Environment Court, then all parties should be able to. This view was driven in part by a concern that providing a "safety valve" in relation to matters of national significance could affect the incentives to collaborate in some catchments.

b. Freshwater policy and plans should be developed collaboratively where possible, but the scope of recourse to merit appeals on the grounds of the national significance is too narrow – parties whose interests are regionally significant should also have the ability to challenge the merit of a council decision at the Environment Court.

c. Despite significant improvement in recent years, there are persistent concerns in New Zealand at the capacity and ability of regional councils to make technically robust and legally sound plan and policy decisions. The Environment Court has therefore come to play a critical role in ensuring the quality of plans. Collaboration will help the development of freshwater policy and plans but it is important for parties to be able to challenge the merit of council decisions at the Environment Court.

334. These members suggest that freshwater policy- and plan-making should be improved by either:

a. Endorsing the approach proposed in the second report up until step 5[20] (the draft decision), amending step 5 so that the independent hearing panel's decision is final, removing the council from the decision-making role and providing only for appeals to the High Court on the decisions of the independent hearing panel; or

b. Enhancing the status quo by providing greater direction to councils with the aim of improving consultation during plan development, imposing timeframes on first-instance council submission and hearing processes (two years), and implementing tighter case management and a two-year time limit on Environment Court mediation and hearings.

[20] Also including recommendations 21, 22 and 25 from LAWF2, which establish procedural checks to ensure that the collaborative stakeholder group is representative and appointed transparently, and that hearings are presided over by a body that is independent, of equivalent standing and that has equivalent capability to Boards of Inquiry and the Environment Court.

Urban water management

Consistent framework in rural and urban environments

335. Both of the Forum's reports to date make it clear that the setting of limits needs to take place across the entire country – they will apply to water quality and quantity in both urban and rural environments. Many of New Zealand's most polluted waterways are in urban catchments.

336. The Forum has recommended the development of a framework of national freshwater objectives to establish the parameters within which limits will be set at a catchment level. A significant number of New Zealand's urban centres are located in close proximity to the coast and estuaries. The effect of urban freshwater pollution on coastal and estuarine environments means that freshwater limits in urban environment will often be influenced by community objectives for those environments.

337. Limits will be set for particular contaminants. All sources of those contaminants (urban and rural, point source and diffuse) will be included in those limits and will require authorisation (e.g. by consent or rules in a plan). To be clear, urban drinking water, urban stormwater and urban wastewater discharges will need to be managed within a limit. Although the range of contaminants is different in rural and urban environments the concept of managing within limits is the same.[21] In this regard, under the proposal for managing water quantity set out elsewhere in this report:

    a. Limits will be set for water quantity in urban catchments and all takes will need to be accounted for, including community and metropolitan supply. New authorisations for access to water will not be able to be granted if the act of doing so undermines other users' rights – authorisations held by existing users will be protected from uncontrolled or unplanned urban growth.

    b. If community or metropolitan water suppliers need more water than they have access to within the confines of the limit; if they have met minimum efficiency and demand management requirements; and if they are unable to negotiate a solution with other holders of authorisations; the current proposal is that they will need to obtain access to water through compulsory transfer. This will follow a process similar to that set out in the Public Works Act and will involve compensation.

338. The Forum has recommended that GMP and ASM schemes should play a part in water management in both urban and rural contexts. While some urban sectors and industries have well-established GMP, further development, particularly in small industrial groups, is necessary.

[21] Pollutants in an urban environment can harm fish and wildlife populations, kill native vegetation, foul drinking water, and make recreational areas unsafe and unpleasant. The high volumes of stormwater that are commonplace in urban environments increase surface water flows and lead to channel modification – channel modification can significantly increase volumes of sediment and has a direct effect on freshwater habitats. These pollutants include:

- Sediment
- Oil, grease and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria and nutrients from pet waste, failing septic systems and/or stormwater infiltration of the wastewater system (which can caused by illegal connections or in some cases may be deliberate due to overflow policy)
- Road salts
- Heavy metals from roofing, motor vehicles and other sources
- Contaminants from manufacturing and industrial sources mixing with stormwater
- Thermal pollution from dark impervious surfaces such as streets and rooftops.

Implementation issues in urban environments

339. The experience of Forum members is that enforcement practices are not entirely consistent between councils and between contaminants. Although the industrial and commercial discharges of urban enterprises can face stringent regulation (particularly in the larger metropolitan centres) members have questioned whether territorial local authority wastewater and stormwater breaches are enforced as rigorously. There is a perception that:

    a. territorial local authorities regularly receive more lenient consent conditions for their wastewater and stormwater networks than commercial operators with a comparable risk profile

    b. despite the perceived lenience of these consent conditions, regional authorities regularly take a lenient approach to the enforcement of these consents

    c. once their consents have expired, territorial local authorities delay making the investment necessary to bring their wastewater and stormwater systems up to specification.

340. The recommendations made in this report to improve the transparency of compliance systems are important and seek to address this issue.

341. Options for addressing water pollution in urban and rural environments will often be very expensive, particularly when it comes to dealing with legacy issues. As a result, timeframes for adjustment may be long where significant infrastructure upgrades are necessary. In both urban and rural communities, decisions on the timeframe for implementing solutions should be made collaboratively through the plan making process. Where these costs fall on public entities, such as territorial authorities, they may be exacerbated by other community expectations with respect to infrastructure investment (e.g. water reticulation). Central government will need to consider the implications of this in any review of institutional arrangements for the public delivery of water services.

Institutional arrangements in urban environments

342. The Forum's mandate for the second phase of our work didn't allow us to consider the suitability of existing institutional arrangements for water management in urban environments. Because our recommendations apply to urban as well as rural catchments, however, we cannot leave out of account the recommendations made in LAWF1 on this topic. They are as follows:

    a. [Recommendation 50] The way water services infrastructure is managed and organised should be investigated to consider the potential benefits of rationalisation. This includes the possibility of a national regulator with oversight of pricing and performance issues.

    b. [Recommendation 51] Subsequently, the issue of volumetric metering and direct billing should be worked though collaboratively with stakeholders.

343. These are of course not the only options for change, but they point to issues which we think must be addressed.

Drainage and flooding

344. Drainage has played an important role in increasing the area of productive land and in managing flood risk across the country. It has, however, also reduced wetlands and has had an impact on biodiversity (including indigenous fisheries). The first report noted the Forum's concern that existing legislation creates incentives relating to drainage that are potentially inconsistent with other objective. It also noted that more co-ordinated land-use and water management planning at the catchment level alongside more effective central government direction could significantly improve the effectiveness of flood management in New Zealand.

345. The Forum's mandate for the second phase of our work didn't allows us to devote further time to specific analysis of drainage and flooding issues. In light of the recommendations in this report regarding integrated catchment management planning and central government direction, however, it is worth restating the drainage- and flooding-related recommendations from the Forum's first report:

    a. [Recommendation 52] The government should review legislation relating to drainage to ensure that it is consistent with the need to protect wetlands and biodiversity, and the recommendations contained in this report.

    b. [Recommendation 53] The government should investigate the role of greater national direction in flood management, and whether additional extension services are required.

List of recommendations

Forum statement on iwi rights and interests in fresh water

Our experience in preparing this report has given us confidence that New Zealanders can move forward together to create an effective and fair system of freshwater management – one which will create incentives for economic growth, strengthen our communities, enhance our environment and safeguard the ecological systems on which we all depend. Indeed, in many regions around the country they have already begun to do so.

For a system which articulates general rights and interests to be stable and durable, however, iwi rights and interests also need to be resolved. We can see significant win-wins in this process, including the development of under-utilised land and resources, and the ability of iwi to partner with others the growing of the water economy – including through the development of infrastructure.

Recommendations in our first and second reports relate to the involvement of iwi and of iwi values in developing national objectives and instruments and setting catchment objectives and limits. They go to the *mana* of waterways, *rangatiratanga* and *kaitiakitanga.* We believe that giving effect to these recommendations can play an important part in recognising and providing for iwi rights and interests in freshwater. They do not, however, address rights of iwi to access water for customary and commercial use.

In our first report, we also recommended that the transition to a new system of water allocation should proceed hand in hand with Crown-iwi discussions on iwi rights and interests in freshwater management.

In summary, the Forum has acknowledged that iwi have rights and interests in freshwater. The responsibility for resolving the nature of these rights and interests, including any options for providing for them, rests with iwi and the Crown.

We also recognise that others have established rights and interests in New Zealand's freshwater resource that must also be respected. Existing rights should not be compromised, and costs relating to Crown-Iwi resolutions should not be transferred on to other parties.

The Treaty Partners should seek solutions which provide win-win opportunities to develop New Zealand's freshwater resource and enhance all parties' interests in freshwater.

Recommendation 1

Central government and regional council[22] frameworks for allocating water and managing discharges of contaminants need to be accountable, efficient and fair. They should ensure that:

a. freshwater objectives are achieved and limits are met over the time period established by the regional planning process
b. water, land and related resource use is efficient, dynamic and maximises long-term economic welfare
c. social equity is considered in decision-making.

Recommendation 2

Regional councils should prioritise catchments for planning on the basis of the state of the waterbody relative to the National Objectives Framework[23], and the risks posed by areas of resource use pressure (quality and quantity).

Recommendation 3

Regional councils should conduct regional planning in an integrated way in catchments to:

a. set freshwater objectives and limits
b. manage water takes, land use, and discharges to achieve freshwater objectives and limits having identified key water quality issues and contaminants in the catchment[24]
c. manage the water to be allocated to users with long-term economic welfare as the primary driver
d. consider the role and opportunities for infrastructure to manage water issues including to provide environmental benefits and greater reliability and supply of water.

Recommendation 4

The process for setting freshwater objectives and limits should be undertaken together with the consideration of strategies, methods and timelines for achieving them. The process of assessment and deliberation should be repeated to evaluate different scenarios (objectives, limits, methods and timelines) to achieve a clear understanding of the options including their achievability, costs, benefits and consequences.

[22] In this and subsequent recommendations the term "regional council":

- includes unitary authorities
- refers to an entity comprising both elected and appointed members
- involves iwi, including co-governance arrangements
- recognises that some regions will have specific Treaty settlement obligations that will affect their water management policy and governance framework – for example, the arrangements for the Waikato River Authority.

Note that there is a presumption in LAWF2 that regional councils will employ a collaborative process, involving the community and stakeholders, for the development of freshwater policy and plans, but that this approach may not be chosen in all cases.

[23] Refer to Recommendations 4 & 5 in LAWF2.

[24] In this and subsequent recommendations the term "catchment" means the catchment-based spatial unit of management, and can mean sub-catchment.

Recommendation 5

Regional councils, in addition to setting freshwater objectives and limits, should:

a. create catchment strategies for achieving freshwater objectives and limits
b. agree plans for sharing responsibilities and costs among stakeholders
c. set policies and methods (including rules) in regional plans
d. guide related processes (e.g. Audited Self-Management schemes), operational plans and implementation activities.

Recommendation 6

Regional councils should on an on-going basis:

a. undertake monitoring of the state of the environment
b. review implementation plans and programmes
c. report to the community on progress towards meeting freshwater objectives and limits
d. monitor and review regional policy and plan effectiveness
e. ensure iwi and wider community values, objectives and data are included in monitoring and review processes.

Recommendation 7

Regional councils should specify and provide for the resource requirements of catchment management processes (regulatory and non-regulatory activities) in their financial plans.

Managing water quality

Recommendation 8

Regional councils should ensure freshwater objectives and limits are achieved through the following steps in the regional planning process:

<u>Account</u>

a. identify the contaminants of concern in the catchment
b. identify the total load of each contaminant of concern, and all sources by way of a catchment contaminant account
c. identify the respective contributions to the load from natural background and human-induced sources
d. consider temporal and spatial aspects of contaminant management
e. consider the inter-relationships between hydrology and water quality

<u>Assess and Evaluate</u>

f. assess and determine the mix of methods and tools that will achieve the freshwater objectives and limits at the least cost
g. encourage and support innovation
h. provide incentives for efficient resource use

<u>Implement</u>

i. assign roles, responsibilities and accountabilities for implementation
j. set out the way that sector schemes will operate within the framework and link with other methods and tools
k. define and plan for the staff and financial resources, knowledge, skills, and tools required

to achieve the freshwater objectives and limits

l. define a timetable for implementation

Monitor and Review

m. monitor, review and report on regional policy effectiveness, including the effectiveness of the package of interventions to meet limits and achieve freshwater objectives
n. review implementation plans and programmes
o. initiate regional plan changes in response to policy effectiveness monitoring and review.

Recommendation 9

To achieve freshwater objectives and limits, regional councils should (*in addition to recommendation 14 of LAWF2*) decide from the full range of management methods and tools available (good management practices, non-regulatory and regulatory approaches, catchment-scale mitigation and economic instruments) that will be implemented to manage the use of land and the discharge of contaminants.

Recommendation 10

The particular mix of methods and tools regional councils adopt should be appropriate for:

a. achieving the freshwater objectives
b. meeting the limits in the catchment and the timeframes for meeting them
c. the contaminants to be managed
d. enabling economic efficiency
e. the communities of interest
f. the physical characteristics of the catchment
g. the range of land uses in the catchment
h. the existing and anticipated resource use pressures
i. the level of knowledge and data available
j. cultural landscapes and iwi tikanga
k. managing the likely effects of climate change.

Recommendation 11

Existing legislation (Section 15 in conjunction with Section 9 of the RMA) is sufficient to manage and control discharges. All discharges (both point source and non-point source) should be able to be managed within the RMA framework. Regulatory tools should be implemented in a way that is most efficient and effective in addressing water quality issues and fits within the agreed catchment management regime.

Recommendation 12

A threshold (a proportion of the contaminant limit) should be specified in the regional plan to indicate when a waterbody is coming under resource use pressure, and indicate when a change in the management regime should occur.

Recommendation 13

Once the threshold has been reached, all new discharges, and activities that increase the total discharge, should be explicitly managed to maintain the limit and protect existing rights to discharge from derogation.

Recommendation 14

National direction should be given to regional councils to ensure consistency in the process of developing thresholds for each catchment. The threshold-setting process should recognise spatial

variation and the interactions between contaminants and should take into account the:

a. size of the resource
b. proportion of the limit that is being used
c. current and expected rate of uptake of the remaining portion of the limit
d. likely scale and extent of unmet demand
e. historic inputs
f. persistence of contaminants in the environment
g. lag times.

Recommendation 15

Good Management Practices (GMPs) should be defined and adopted in all catchments. In order to maximise the contribution from GMPs, and ensure their effectiveness as essential methods in achieving limits and freshwater objectives:

a. regional plans need to incorporate and incentivise GMP
b. GMP should utilise sector guidelines and practices
c. management plans (also known as environmental plans, farm plans, effluent management plans, etc.) should be used as a tool
d. GMP should incentivise continuous improvement
e. GMP should recognise and integrate good business practice with the treatment of all contaminants
f. management plans should be reviewed and changed in response to site and catchment responses
g. sector organisations should enhance their capacity to develop GMP, and provide extension, training and support
h. GMP should have wide stakeholder involvement in its design and review.

Recommendation 16

GMP can be further incentivised through the regulatory framework where the outputs of GMP can be linked to a range of quantified discharges. Wherever this is possible, activity thresholds (for permitted or controlled or discretionary activity) should be set in regional plans.

Recommendation 17

Regional councils should determine whether allocating discharge allowances (to individuals or groups (legal entities)) is an option for managing to a limit for a particular contaminant in individual catchments. The following criteria should apply in making this decision:

a. the manageable sources of the contaminant (i.e. excluding natural background sources) can be identified
b. the contribution from individual sources is able to be directly measured or estimated by an appropriate repeatable method such as a robust model, and therefore is able to be attributed to individuals or groups
c. a transparent compliance and enforcement regime can be established
d. the allocation status of the catchment.

Recommendation 18

Where allocation is proposed, the provisions, including the initial allocation process, any transition to another allocation method, and any mechanisms for transfer, should be specified in the regional plan.

Recommendation 19

Central government should develop national guidance for regional councils on appropriate methods of allocating contaminants for managing water quality in order to inform regional plans.

Recommendation 20

In over-allocated catchments (where the existing load exceeds the desired limit) regional councils should set both interim limits and targets (a limit to be met at a defined time in the future). Timeframes should:

a. be well defined
b. not cause unnecessary economic and social dislocation
c. not be unnecessarily extended.

Recommendation 21

In addition to setting the time frame for adjustment, regional councils should set out the adjustment policy and methods (to be used to manage to a target) in the regional plan at the time the target (as defined in the NPS-FM) is set. This should describe responsibilities for meeting the target and how the policy will affect land users and others discharging contaminants, including how rules and resource consents will be adjusted.

Recommendation 22

Relevant sector and stakeholder organisations, iwi and regional councils should work together to ensure the integrity of the auditing system, and to ensure consistent practice in recognising and implementing relevant Audited Self-Management (ASM) schemes across the country.

Recommendation 23

Interim regimes should be considered where:

a. the requirements of national instruments are at risk, and
b. the catchment has not already been prioritised for early collaborative limit-setting processes, and
c. the current suite of industry, community and council programmes is assessed as insufficient to manage the risk of significant impacts, and
d. existing regional plan provisions are not adequate, and
e. the resource is under pressure from existing or anticipated use.

Recommendation 24

Any interim measures:

a. should be established with the involvement of catchment stakeholders and iwi
b. will be time bound
c. may use interim limits implemented through a regional plan, national instrument, regulation or moratorium
d. may take an adaptive management approach
e. should ensure basic environmental monitoring and information collection is maintained or improved
f. should manage potential perverse incentives
g. need to guard against imposing unnecessary constraints on economic development
h. should build capacity across the region and within the catchment to engage in future planning and management processes.

Allocating water

Recommendation 25

Water within the allocable quantum needs to be easily transferable between users, to allow it to move to its highest valued use (i.e. to enable society as a whole to obtain the greatest collective value from water resources across the full range of values). The design of the allocation system should remove administrative barriers to enable transfer and trading.

Recommendation 26

All water takes (excluding fire fighting) should be accounted for within the allocable quantum. This includes those currently permitted by a regional plan, or authorised through section 14(3)(b) of the RMA, and non-consented takes that may not comply with the provisions of section 14(3) or the rules in a plan.

Recommendation 27

The new water allocation regime should be underpinned by a transparent accounting and registry system that:

a. is consistent across regions
b. publicly identifies location of takes and any transfer of takes from place to place or person to person
c. includes data management protocols that provide suitable protection for intellectual property and proprietary information.

Recommendation 28

There should be a one-time process at the time of transition to the new allocation regime during which unauthorised takes (non-consented takes that may not comply with the provisions of section 14(3) or the rules in a plan) can be dealt with. Decisions on the treatment of unauthorised takes will need to be made through the planning process and should follow a principle that those who have been relying on unauthorised takes will be treated fairly and pragmatically during the transition to the new allocation regime but cannot necessarily expect to be treated on the same basis as authorised takes.

Recommendation 29

Catchment-based limits should be set as plan rules that define the quantity and reliability of water that is available for allocation (the allocable quantum) and that take into account any flow and water level fluctuations caused by seasonal or other climate variations.

Recommendation 30

Activities other than water takes that nevertheless affect catchment flows and recharge rates may also need to be:

a. considered during the planning process
b. taken into account in the way that limits are set and the allocable quantum is specified.

Recommendation 31

Changes to the allocable quantum in response to unforeseen circumstances or new information should be made through the regional planning process or national instruments.

Recommendation 32

The regional plan should specify how and when authorisations are to change in response to changes to the allocable quantum. A statutory review process already exists to change consent conditions. Changes to consent conditions should be made as soon as practicable.

Recommendation 33

A threshold should be specified in the regional plan to indicate when a waterbody is coming under use and/or demand pressure, and to signal pending scarcity in the available allocable quantum.

Recommendation 34

National direction should be given to regional councils to ensure consistency in the development of scarcity thresholds for each catchment. The threshold-setting process should recognise spatial variation and should take into account the:

a. size of the resource
b. proportion of the allocable quantum that is being used
c. current and expected rate of uptake of the remaining portion of the allocable quantum
d. likely scale and extent of unmet demand.

Recommendation 35

In catchments that have low demand pressure (are under the scarcity threshold) there is no need to change the way water is allocated.

Recommendation 36

Once a scarcity threshold has been reached, all new water takes will need to be explicitly managed to maintain the limit and protect existing authorisations from derogation. This includes the cumulative effect of small takes and activities that would dam or divert water to a degree that impacts flow and recharge rates. Regional councils should measure or estimate these takes.

Recommendation 37

Once a scarcity threshold has been reached (or at the time of transition to the new allocation regime if the catchment is already fully or over-allocated):

a. all existing water takes currently permitted by a plan or through section 14(3)(b) of the RMA should be given a consent[25], and
b. the provision for any additional takes under section 14(3)(b) should then cease for that catchment (except where provided for in recommendation 36). Any further applications to take water should be made in accordance with regional plan provisions.[26]

[25] The water consent in this context is a take consent for a specific amount of water, and would be separated from the consents that provide for site-specific aspects of water takes and use of the water.
[26] The consequences of drought conditions on consents are set out in recommendation 39.

Recommendation 38

When translating existing water authorisations into new water consents in a catchment, those takes currently provided for as permitted activities or through section 14(3)(b) of the RMA should be able to continue without consent if they don't cumulatively add up to a material proportion of the allocable quantum.

Recommendation 39

Regional councils should include in regional plans policy for managing all water takes in times of drought and severe water shortage, including providing for human health and animal welfare.

Recommendation 40

Once a scarcity threshold has been reached (or at the time of transition to the new allocation regime if the catchment is already fully or over-allocated), all existing water authorised takes should be translated into a new consent format that preserves their value. The process of translating an authorised take into a new format should evaluate the take against relevant and agreed measures of reasonable technical efficiency, and, if necessary, adjust it accordingly to address unused paper allocation and clear cases of inefficient use.[27]

Recommendation 41

Under the new water allocation regime, consents should be:

a. clear so that people can easily tell what they are entitled to now and into the reasonably foreseeable future
b. non-derogable so that no new consents should be granted if the act of doing so would undermine the rights of existing holders of authorisations
c. easily divisible so that transfer of portions of consents are well understood and enabled.

This implies that:

d. consents will need to have their site-specific aspects separated from the allocated quantity
e. the reliability of access to water conferred by consents will need to be clearly defined and easily understood
f. consents will need to be exclusive
g. parties will need to have frequent access to high quality monitoring information.

Recommendation 42

Consents should have standard core elements that are designed to enable transfer with minimal transaction costs and regulator involvement. All consents granted by regional councils should conform to requirements specified in a national instrument.

Recommendation 43

Except where short lengths are required for temporary purposes, regional councils should grant water allocation consents for 20 to 35 years once the new water management regime is in place.

[27] This recommendation needs to be seen in light of Recommendation 51 on managing over-allocation. Recommendation 56 recommends that national guidance is provided on reasonable technical efficiency.

Recommendation 44a

Within three years of implementing the changes we have recommended to the freshwater management regime, there should be a review by Government – conducted in a manner that is consistent with the Forum's statement on iwi rights and interests in freshwater – to implement:

a. extension beyond 35 years of the permissible consent duration for large-scale projects that have been provided for through collaborative planning processes
b. establishment of an expectation that consents will be re-issued on expiry provided that incumbents are able to demonstrate compliance with consent conditions.

Or

Recommendation 44b

Within three years of implementing the changes we have recommended to the freshwater management regime, there should be a review – undertaken collaboratively by the Forum or a similar national representative stakeholder/iwi group and conducted in a manner that is consistent with the Forum's statement on iwi rights and interests in freshwater of:

a. the effectiveness of the new national water quality and quantity objectives framework in setting consistent and effective limits in regional plans and whether new consents are being issued subject to the ability to immediate review consent conditions in accordance with limits and policies set through collaborative processes in regional plans
b. the case for extending beyond 35 years the permissible consent duration for large scale projects that have been provided for through collaborative planning processes
c. the case for providing suitable security of tenure by establishing an expectation that consents will be re-issued on expiry provided that incumbents are able to demonstrate compliance with consent conditions.

Recommendation 45

The method for allocating the portion of the allocable quantum between the threshold and the limit (full allocation) should be set through the regional planning process. National guidance should be given to regional councils on the range of methods available, and guidance provided on the circumstances in which particular methods might be more or less suitable.

Recommendation 46

When using administrative methods to allocate water between the scarcity threshold and the limit, the regional council should ensure that new applicants receive no more water than is necessary to allow them to undertake the activities to which the consent relates.

Recommendation 47

In all situations, except in relation to recommendation 48, transfer and trading of water consents will be on a voluntary basis and supported by the nationally consistent accounting system and the standard core consent elements.

Recommendation 48

Once a catchment is fully allocated, if more water is required to provide for urban growth, urban water suppliers will either need to increase efficiency, implement demand management activities or obtain more water in a way that does not derogate the rights of other parties or affect limits. If more water is required after these steps have been taken, and the urban water supplier is unable to obtain

access to that water through voluntary transfer, there should be a mechanism that allows the urban water supplier to prompt "compulsory transfer" in order to gain access to the necessary water. This would be akin to the "compulsory acquisition" process under the Public Works Act – it would require the urban water supplier to demonstrate that it had:

a. implemented suitable technical efficiency and demand management activities and explored all reasonable alternative options for obtaining water
b. undertaken a transparent and participatory process with appropriate checks and balances of "compulsory transfer," which would be accompanied by compensation for affected parties.

Recommendation 49

National guidance should be given to regional councils on the suite of methods for managing over-allocation and central government should provide guidance on the circumstances in which particular methods might be more or less suited.

Recommendation 50

Catchment-level policies and rules for managing over-allocation should ensure that the allocable quantum meets the interim limits as they come into effect.

Recommendation 51

There should be a principle - expressed in a national instrument - that makes it clear that the objective of changing the water allocation approach where a catchment is over-allocated is to establish a resilient and credible water allocation regime that ensures users operate within the limit. In a context of over-allocation, incumbent users should expect reductions in the amount they can take.

Recommendation 52

There should be principles – expressed in a national instrument – that make it clear that catchment level policies and rules for managing over-allocation:

a. should not automatically exempt particular sectors or users
b. should take effect over a timeframe that is appropriate to the situation
c. take into account the potential for transfer and infrastructure solutions to address over-allocation.

Recommendation 53

The approach to transition, including timeframes and methods, will be set in the regional plan.

Enabling change

Recommendation 54

Freshwater-related regulations, policies, plans, and catchment-based limits and management methods (including provision for infrastructure) must be underpinned by a robust understanding of their economic, environmental, social and cultural implications. Central government agencies and regional councils should be required to ensure that:

a. social, economic, cultural and environmental evaluation is undertaken as a core part of all section 32 analyses
b. the detail of section 32 analyses correspond with the scale and/or significance of the plan or policy under consideration
c. section 32 analyses evaluate the effectiveness of a full range of policy options and a full suite of associated methods for achieving objectives and meeting limits
d. the results of analyses are fed back into the national and regional collaborative policy- and plan-making process before decisions are made and before draft provisions are agreed by stakeholders
e. suitable guidance and training is in place to build capacity in the discipline of benefit cost analysis – particular consideration should be given to the provision of standard templates and approved methodologies
f. suitable internal procedures are in place to guarantee the quality of benefit cost analyses.

Recommendation 55

Central government should consider:

a. implementing for regional councils a review system analogous to the Regulatory Impact Assessment (RIA) process followed by central government agencies
b. including an assessment of the quality of section 32 analyses in the RMA performance monitoring framework, currently under development by the Ministry for the Environment.

Recommendation 56

Central government should, in collaboration with others, lead a process of identifying and disseminating best practice planning and implementation. This should include:

a. guidance material for collaborative catchment management planning
b. standards for managing allocation regimes
c. standardised core elements for consents relating to water
d. how to translate existing authorisations into new water consents
e. methods for accounting for very small takes
f. approved methods for establishing reasonable technical efficiency
g. methods for accounting for sources of contaminants
h. as a matter of urgency, criteria for determining the mix of methods and tools to achieve freshwater objectives and limits including whether to allocate contaminant allowances in different catchment circumstances.

Recommendation 57

Through the transition to the new framework, central government should strategically provide support for capacity building including for councils, iwi and stakeholders who will have significant changes in their roles across the entire water management regime.

Recommendation 58

Central government should enhance its auditing programme through which council performance is monitored and reported against.

Recommendation 59

Central government should consider the potential for efficiencies and the advantages of consistency of developing a single model, accounting system, set of guidelines or national standard for the

establishment and support of market systems for water management.

Recommendation 60

As a pre-condition of a successful freshwater management system, regional councils should:

a. adopt a transparent approach to developing monitoring, compliance, and implementation systems
b. take steps to ensure that effective and cost-efficient monitoring, compliance, and implementation capacity is in place at the time the regime is introduced
c. monitor and report on the implementation of the policy.

Recommendation 61

All parties (including central and local government, iwi, stakeholders and sector organisations) should address a significant shortfall in knowledge (including about Mātauranga Māori and its transmission), skills and capacity for water management, through:

a. assessment of current knowledge and capability, needs and gaps
b. making provision to improve and strengthen research, information management, economic analysis, training, capacity, technology transfer and outreach services.

Recommendation 62

The existing MfE/FRST Water Research and Development Strategy should be reviewed, in light of priorities arising from government water policy reform, and the resultant updated strategy subsequently implemented. The review should draw together relevant research undertaken by all parties and set out how it will be delivered in a co-ordinated and structured way.

Recommendation 63

All parties, central and local government, industry and science providers should continue investment in the development of models (including development and prioritisation of a limited number of interoperable models) and measurement-based monitoring systems for practical application to water quality management. Investment should be based around partnerships and guided by a national strategy that ensures co-ordination of available resources. This should include clear guidance and protocols on how models, monitoring systems and their output data, should be used in the development, implementation and enforcement of water quality policy.

Recommendation 64

Central government with local government and national sector organisations should continue the open source data initiative, and consider as a high priority access to publicly funded data related to the management of land and water. Common management and access protocols should be established across the various central and local government funded databases.

Recommendation 65

Central government should provide guidance and protocols for the use of, and access to, data sourced from land owners and consent holders, while explicitly taking into account privacy and commercial sensitivity issues.

National strategy

Recommendation 66

Central government should establish a centralised capacity to co-ordinate national expertise and information for water management. A key function would be to draw together and connect existing technical expertise and information resources to accelerate the implementation of a well-informed nationally consistent management system.

Recommendation 67

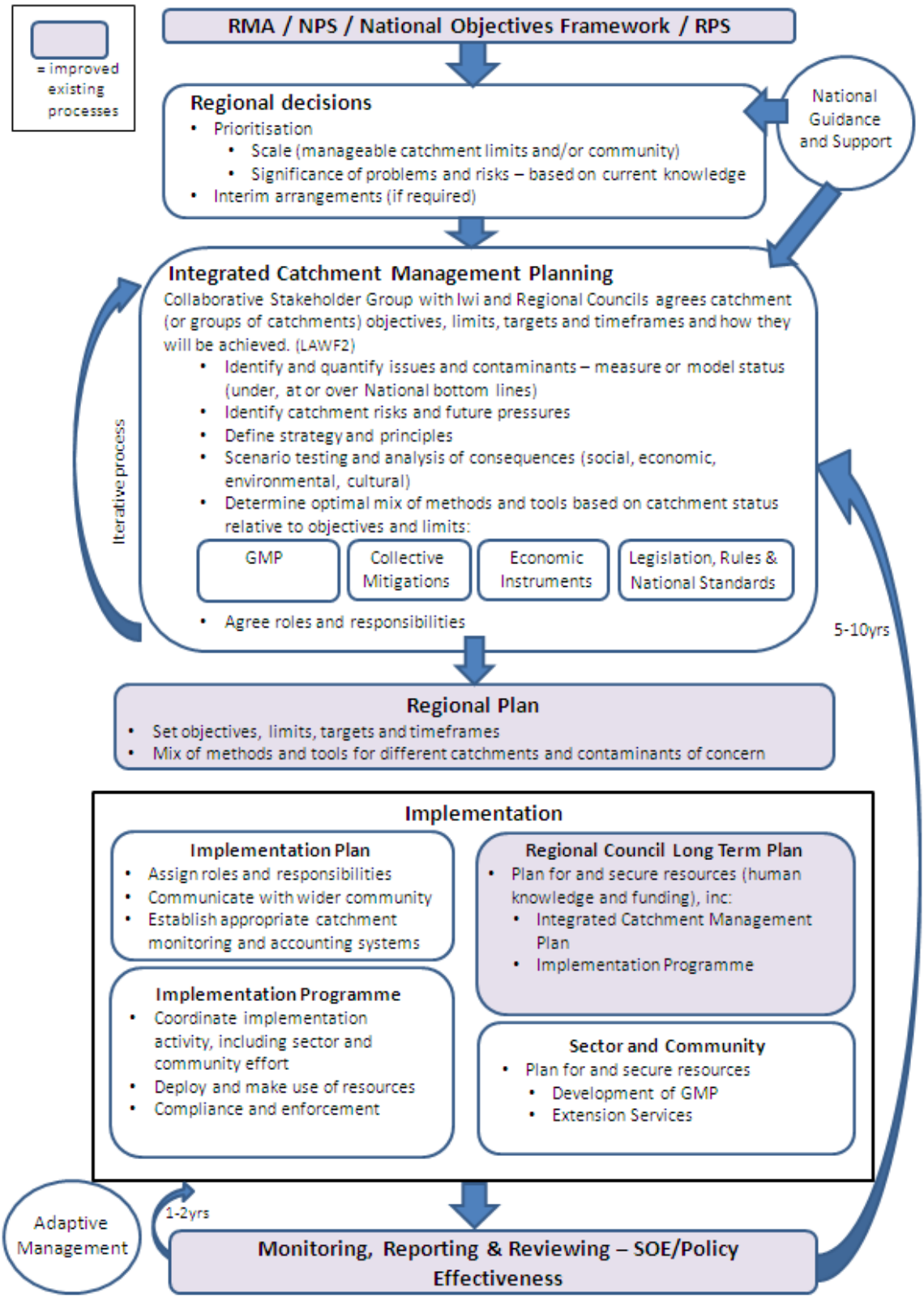
As a way to consolidate the reform package resulting from Government's response to the Land and Water Forum reports, key statements, documents and information sources should be collected and made available to the public and stakeholders in an accessible way, for instance through a water reforms 'handbook' and/or a water reform web portal. This resource should be regularly updated as new developments and information arise.

Decision

The Land and Water Forum has decided to meet again in July 2013 to assess the Government's response to our reports and to consider what future role if any it might seek to play in relation to land and water management, and how it might best constitute itself in order to do so.

Appendices

Appendix 1: Water Quality Management Framework



Appendix 2: Key principles of Audited Self-Management schemes

Key Operating Principles	Explanation
Clearly defined and expressed community objectives	These provide a framework within which the ASM can successfully operate. It is expressly noted that it is not the role of ASM to set the objectives, however it will respond to and inform them over time.
Credibility and trust	The ASM scheme needs to be credible to all stakeholders (individual land users, industry, regulators, consumers and the wider community). Credibility, openness, and consistent performance lead to trust.
Stakeholder engagement	Engagement of relevant stakeholders in the development (and review) of the ASM scheme is important to ensure the scheme incorporates community aspirations, and responds to community concerns over time.
Transparency	Transparency is vital to all stakeholders. Whilst protecting intellectual property and commercial sensitivities, there must be sufficient disclosure to demonstrate authenticity.
Appropriate scope	The extent and scope of the ASM scheme will be determined by the complexity of the issues under consideration.
Governance	Appropriate governance is considered essential for the development of a successful ASM scheme although it requires a reasonable level of formality to provide a solid foundation. Clear leadership is regarded as important because the influence of diverse stakeholders can deflect the purpose of a scheme. ASM schemes require some form of governance entity that works on behalf of the collective. This ensures good governance and manages issues such as accountability.
Milestones and continual improvement	Milestones allow the planned achievement of goals in a systematic way, and break large tasks into manageable pieces. The use of adaptive management processes builds flexibility in the scheme to ensure that it responds to changes and new information as they occur.
Management and reporting	Management provides the day-to-day checking that scheme requirements are being carried out and functioning well. Most often this will either involve the individuals within the ASM scheme, or agents of the collective. Reporting is carried out at times specified in the scheme and is the formal transfer of information between parties.
Monitoring	Monitoring may be a scheme requirement. Where it is used, monitoring can contribute to assessing whether environmental requirements are being met, or to assess progress towards meeting scheme objectives. Monitoring may also be used to demonstrate progress towards meeting community objectives.
Auditing	Audit provides the check that self-management, monitoring, and self-reporting are accurate, sufficient and of appropriate quality. There are various levels of audit: (1) ***First party audit*** - carried out by an individual land user within the scheme. (2) ***Second party audit*** **-** carried out by the ASM collective, sector or scheme or an agent thereof. (3) ***Third party audit*** - carried out by a party independent of the ASM collective, sector or scheme. The third party auditor may be contracted directly by the ASM scheme although often is employed by the regulator to ensure their perceived independence from the ASM scheme. The third party audit may also be undertaken directly by the regulator although this should not be confused with compliance monitoring. Note: An appropriate level of audit is necessary depending on the complexity of the scheme and issues being managed. There will always be a first and third party audit and in more complex systems, there may also be a second party audit.
Compliance monitoring	Compliance monitoring is undertaken by the regulator to assess compliance with legislative requirements. The activities may be permitted, or require consents subject to conditions. In the event that the regulator identifies non-compliance, then enforcement

	action may be undertaken and the regulator has a range of options at their disposal.
State of the environment monitoring	State of the environment monitoring is not part of an ASM scheme as such but is an essential activity undertaken by the regulator. Whilst the results are not generally able to be applied at the individual or ASM scheme collective level, they nevertheless provide essential information on progress towards meeting the objectives and limits for the catchment. Monitoring may contribute valuable information on an annual basis. However, monitoring results are typically analysed at 5 yearly intervals and the trends then used to inform both the policy development and operational planning processes.

Summarised and adapted from the Ministry of Agriculture and Forestry, and The Primary Sector Water Partnership workshop on 'Building Knowledge and Understanding of Audited Self-Management' in August 2011.

Appendix 3: Initial allocation methods

INTRODUCTION

1. The water allocation model and draft recommendations propose that once a scarcity threshold has been reached the method of allocating the remaining available water needs to change to reflect growing scarcity. The model proposes that the choice of methods is made during planning to meet specific needs of the catchment and that this is done using national guidance on the different methods.
2. Initial allocation will be important in some under-allocated catchments, and where new water is created. However, it is likely that many catchments will be fully- or over-allocated once all use is accounted for within the allocable quantum. The goal of achieving efficiency in the allocation regime in this case will focus on the ability for the water to move between uses over time.

LAWF1 conclusions on Water Allocation

3. The LAWF1 report considered water allocation. The conclusions and recommendations to successfully reform water allocation policy in New Zealand were based on the understanding that:
    a. We need more efficient and effective means of allocating water to manage demand, reduce contamination and maximise the value of water for the economy;
    b. We need allocation methods that can deal better with scarcity and competition between users of water, and promote efficient use of resources;
    c. The need for more efficient allocation is proportional to the scarcity of available water in a catchment; and
    d. Choices of allocation methods need to be practical responses to circumstances, and optimal methods may vary for different catchments.
4. The LAWF water management framework, which the allocation regime is contingent on, includes the following features:
    a. Limits being established and complied with
    b. Water allocation consents are clearly defined and consistent to facilitate movement of water between users.
    c. Water allocation consents are flexible enough to deal with changing limits.

INITIAL ALLOCATION METHODS

5. International allocation regimes commonly use a mix of administration and market-based methods recognising that where water becomes scarce there is a need to reflect the value of scarcity in the way it is distributed and how this is done relies on the ability for the water to move between uses over time. The outcomes sought by regulators also influence the choice of regime and what methods are appropriate.
6. There are two types of initial allocation methods - administrative (where the regional council makes the decision on who is allocated water consents) and market-based (where the user decides who is allocated water consents based on how much money they are willing to pay).
7. Generally administrative methods fall into two categories, noting that there is a range of variations within each type and mixes of different approaches are possible. There is also the

potential for regulators to include charging (fixed or variable) into these methods to manage demand.

- formulaic (first-in, first-served and balloting)
- merit-based (assessment on specified criteria)

8. There are two basic types of market-based methods for initial allocation - tenders and auctions, which can also be set up in a variety of ways.
9. In choosing an initial allocation method, communities will need to consider the over-riding objectives for allocation as well as the demand for the water and the potential for that water to move between uses over time.
10. Where there is the potential for transfer readily among uses, there will be less need to ensure the initial allocation method achieves the most efficient outcome, however, the regime will need to enable water to maximise highest valued use over time.
11. In making decisions, regions will need to reflect on the over-riding objective and the local situations. While finding local solutions, some efficiency can be gained by having central guidance on what methods suit what scenarios. In considering the methods, the assessment criteria set out in Table 4 reflect the elements that would need to be considered.

Table 4 - Assessment Criteria

Achievability	• Simplicity of approach and ease of implementation and enforcement • Broadly acceptable to water users and the wider public • Implementation is supported by relevant capability and capacity • The regime is suited to the size and nature of the hydrological system over which it is operating
Certainty	• Users have sufficient certainty of entitlement (and how it is enforced) to support a productive investment environment, including consideration of existing investment
Consistency	• The approach to allocation should be consistent within and across regions • The incentives faced by water users are consistent with, and do not undermine, quantity and quality limits
Cost Effectiveness	• The costs associated with implementation faced by users, government and wider society are outweighed by the benefits • Costs are recovered
Effectiveness	• The regime will ensure water is managed within the limits set
Efficiency	• Allocable water is able to move to the best value use overtime • The allocation method incentivises technical, allocative and dynamic efficiency[28]
Fairness	• Methods are perceived as fair by water users and society • All relevant parties are able to participate sufficiently well in the process so that at a minimum their views can be taken into account • The system provides for intergenerational equity, in that it allows for equitable outcomes for future generations, legacy issues and historical grievances
Flexibility – this criteria relates to the water management regime as a whole	• Ongoing sustainable management of water resources is facilitated • There is sufficient adaptability to deal with a dynamic system and technological changes

[28] See glossary to describe these efficiency terms

	• Changing values, limits and climatic conditions can be accommodated
Maori and iwi interest	• Maori and iwi interests and values are recognised and woven into any allocation framework
Transparency	• Decision-making processes are robust, transparent and participatory • Accountabilities and risks are clearly defined and responsibility for their management is attributed to those best able to manage them • All relevant information is available to all participants throughout the process including decision-making and monitoring
Resilience – this criteria relates to the water management regime as a whole	• The regime has the ability to absorb disturbances and learn from change while maintaining the integrity of the system • The regime is able to withstand political cycles and external shocks

ADMINISTRATIVE METHODS

12. Administrative methods for initial allocation fall into the following types:
    - First-in, first-served
    - Balloting
    - Merit-based assessment including cost-benefit assessment
    - Land-based
2. Generally FIFS and balloting tend to be achievable, consistent and transparent methods, providing efficiency through the allocation process. But given the use and the willingness to pay are not factors in these allocation methods, they rely on the regime incentivising transfer to allow for highest-valued use of the water to be achieved. Technical efficiency methods would need to be included in the allocation process to link allocations to intended use.
3. Merit-based decisions add a further dimension to allocation. They either constrain the ability for further movement of permits by basing access to water on specific criteria, or cease to have relevance in circumstances where transfer or trading occurs. Merit-based decisions also have the potential to be politically influenced, as they are potentially less transparent. Many of the values decisions that merit-based processes rely on may have been dealt with through collaborative planning processes that establish the limits and the policies and roles for the allocation regime.

MARKET-BASED METHODS

4. Market based methods for initial allocation of the available water rely on a willingness-to-pay and therefore the users determine who will be allocated the water.
5. There are two basic types of market-based methods for initial allocation, tenders and auctions, which can be set up in a variety of ways.
6. Market-based methods are dependent on the scarcity of the resource to give it value and therefore are more suited to allocation of a resource under high-demand.
7. Tenders and auctions can be designed to ensure that a limit is not breached and they promote efficiency and gain revenue, which has both positive and negative implications for equity, depending on one's viewpoint.
8. Although market-based methods ensure the water is initially allocated to the highest valued use and therefore reduces the system cost of moving the water in the short term they do require accurate information that is publicly available.

SUMMARY

13. Where there is no pressure on the allocable quantum and therefore on the limits, changing the initial allocation method will not add value to the allocation regime.
14. Where there is demand pressure (a scarcity threshold is reached), initial allocation methods need to reflect the local environment and support a regime that maximises economic welfare from the available water. This means that the method for allocating the remaining available water once a scarcity threshold is reached needs to be determined in the plan as part of establishing the allocation regime.
15. Once a catchment is under demand pressure, the allocation regime will depend on the ability to transfer water over time to achieve efficiency and equity objectives.
16. The formulaic administrative methods (FIFS and Balloting) are often simple and cheaper options for allocating water, though they do not incentivise efficiency or water to be allocated to its highest valued use.
17. Market methods are more suited to areas where water is scarce as they provide for initial allocation to be determined through what users are willing to pay.
18. The success of all initial allocation methods is conditional on how they are set up and within what allocation framework.
19. National guidance on the effectiveness of different methods in different situations would support local decision making.

Appendix 4: Framework for ensuring accountability in the setting and implementation of limits

Regional councils are required by section 30 of the RMA to control land uses for the purpose of maintaining and enhancing water quality, and to control the taking, damming, diversion and discharge of contaminants into water. The NPS-FM sets the over-riding policy framework within which most regional councils are required to operate (noting that individual Treaty settlements may extend this framework as is the case in the Waikato). Policies in the NPS-FW require councils to set quality limits and to establish associated methods and place conditions on water permits to avoid over allocation. Council plans must give effect to the NPS, section 84 of the RMA requires councils to enforce their plans and section 35 of the RMA requires them to monitor the effectiveness of policies, rules and methods, and to take appropriate actions when they are shown to be necessary.

The Ministry for the Environment conducts bi-annual monitoring of council performance; the Office of the Auditor General has a general oversight role and the Parliamentary Commissioner for the Environment has a more specific oversight role with respect to resource management; individuals have the ability to seek judicial review of council decisions under the NPS-FM and to seek declarations from the Environment Court regarding whether council actions (or omissions) or proposed actions (or omissions) contravene or are likely to contravene the limit or plan provisions. A judgement that a council is failing to meet its obligations under the RMA can lead to enforcement action. We have also recommended "beefing up" the role of central government in overseeing and auditing section 32 evaluations (LAWF2 recommendations 54 and 55) and general council performance (LAWF2 recommendation 58).

In response to the outcomes of these "audits", the Minister for the Environment has powers under sections 25, 25A and 25B to appoint someone to perform the functions of the council and/or to require the preparation of a plan if the council is not performing its functions appropriately. Regional councils also have the ability to prompt a plan change, as do individuals (via private plan changes), and regional councillors are democratically accountable for the performance of the council in meeting community expectations.

In order for this framework to work as an effective mechanism for "sheeting home" accountabilities, the roles of the various parties involved need to be coherent, comprehensive, and well-implemented.

Until recently, successive governments have been reluctant to step in to correct instances where councils have, for one reason or another, been unable to establish and/or implement an effective freshwater management framework – the Minister's powers under section 25 have been seldom used and there is no effective mechanism for ensuring that the reports of the PCE have an impact on council performance. Our proposal for improving freshwater management suggests that participants should play a more "active" role. With respect to the role of central government in the freshwater management regime, the need to play an active role applies both generally to government agencies and specifically to the Minister for the Environment as the party who has particular statutory powers to intervene. In recommendation 43 of LAWF1 we recommended that there should be central government appointments to regional council committees or to councils themselves. This would serve to strengthen links between central and regional government and provide an avenue for more active central government participation in freshwater planning and decision-making.

In order to “close the loop” of accountability in the freshwater management framework, we need to ensure that auditing roles are effectively tied with intervention powers - the responsibilities of the various parties with “auditing” roles need to be clear and clearly allocated to individual parties and the criteria and thresholds for corrective action also need to be clarified. The Government has recently established the Environmental Protection Authority and clarified the monitoring and delivery roles of the Ministry for the Environment and Parliamentary Commissioner for the Environment in the overall resource management framework. This gives us a reasonable degree of comfort that the roles of the “auditors” under the current framework are sufficiently clear. The effective implementation of the system will, however, depend on the decisions of those parties and their willingness to act where necessary and, at present, the criteria and thresholds for action on behalf of the various “auditors” are not particularly clear. Given the contextual variation within which limits will be set an implemented, a degree of flexibility is probably appropriate – it would be difficult to craft criteria that are universally appropriate. But the performance of the system will need to be monitored and, if it is not working as expected, consideration will need to be given to developing explicit criteria and thresholds for triggering intervention on behalf of councils, government agencies and the Minister.

Appendix 5: Reservations of some members with the collaborative policy- and plan-making process

The Forum noted in May 2012 that it had not yet reached consensus on the proposed collaborative approach to policy and plan making and that it intended to discuss this matter further during its last phase of work. Throughout these discussions it became apparent that there was no one viewpoint shared by members who felt unable to support the proposal in its entirety – some felt it didn't go far enough to incentivise good faith collaboration, some considered it went too far. It is possible, however, to group the reservations expressed by individual members[29] into three general categories:

Concerns regarding participation

- There is concern that the proposal reduces the influence of parties who are unable or unwilling to collaborate and thereby puts undue pressure on stakeholders to participate collaboratively in policy- and plan-making processes.
- The less formal council hearings of the status quo provide an important avenue for lay-members of the public to participate in planning processes – there is concern that Environment Court hearings can be too formal and can discourage the general public from participating in plan making processes.
- The ability to appeal the merit of council decisions provides a critical avenue for the public to participate in planning processes.
- The proposal to limit access to merit appeals heightens the importance of the process for agreeing the membership of the collaborative stakeholder group.
- There is concern at the degree of influence that stakeholders are given over the initial stages of plan development – that role should be left to neutral council officers who do not represent any particular interest.

Concerns regarding equity

- Freshwater policy and plans should be developed collaboratively where possible, but all parties should be treated equally throughout – if any one party has the ability to challenge the merit of a council decision at the Environment Court, then all parties should. In particular, providing a "safety valve" in relation to matters of national significance means that collaboration is significantly less likely to work in some catchments.
- Freshwater policy and plans should be developed collaboratively where possible, but the scope of recourse to merit appeals on the grounds of the national significance is too narrow – parties whose interests are regionally significant should also have the ability to challenge the merit of a council decision at the Environment Court.

Concerns regarding the quality of outcomes

- Councils can and do make poor decisions that need correction – unconstrained access to merit appeals at the end of the planning process incentivises rigour.

[29] Note that some of the reservations included here were expressed by a single member while others were shared by two or more members. If read as a whole, therefore, this list may not appear internally consistent – it is important to keep in mind that it captures a range of reservations expressed by several members, not all of whom hold the same view.

- Access to the Environment Court allows parties to test and correct poor decisions, provides an opportunity to refine poorly drafted plans and allows individuals whose rights are affected by planning decisions to defend those rights in front of an independent arbiter. The Environment Court is the only body with the necessary expertise and experience to perform this role.
- A two-step hearing process is useful for flushing out issues, focusing attention on key points of contention and refining arguments.
- The proposed changes to appeal provisions could encourage decision-makers to fall into line with the consensus position of the collaborative group in order to reduce the risk of appeals on merit.
- There is no valid reason for the council to have a decision-making role after submissions have been considered by the independent panel. The Environment Court is a proficient and independent body while council decisions are open to local political influence – parties are happy to live with the decisions they receive from the Court.
- Collaborative processes are relatively new to New Zealand and it is not clear that the capacity is in place to make them work – unconstrained access to merit appeals should be retained until such time as the new process set out in the second report of the Forum is proven (i.e. trials have shown that a collaborative approach reduces the need for and scope of appeals to the Environment Court).

Appendix 6: Summary of Terms of Reference

Background

The Land and Water Forum was established in the belief that the stakeholders in water management needed to engage directly with each other if a sustainable way forward was to be found for better water management in New Zealand. The Forum draws together a unique partnership, including key players from the pastoral industry, iwi, forestry, horticulture, power generation, tourism, the recreational and environmental sectors and urban water interests to take an overall view of New Zealand's water issues and experience and build consensus for a way forward.

Scope

The scope of the work to be carried out by the Forum in this project is to contribute to the forward work programme of the government's Fresh Start for Fresh Water by considering the specific areas of freshwater reform that still need reconciling between key stakeholders in four key areas – the setting of limits, decision-making structures for limit-setting, managing to limits (including land use) and allocation – as follows:

- What is needed to effectively implement the limit-setting approach to water management (currently reflected in the NPS), including consideration of what central government needs to do versus what local government needs to do, the role and responsibilities of water users, and nature and scope of limit-setting tools.
- What efficient and improved decision-making structures for limit-setting might look like, including provision for stakeholder involvement, specific provisions for iwi participation in limit-setting processes and decisions at catchment, regional and national levels and how those limit-setting processes interact with broader resource management processes.
- Methods and strategies of achieving limits and targets through managing the effects of land use on water.
- How to manage within limits by developing more effective methods and strategies for allocating water, trading and/or transfer systems.

The Forum will also provide advice to Ministers on a possible National Land and Water Strategy, including:

- Why such a strategy is important.
- The key elements and considerations of such a strategy.

Proposals contained in the Forum's reports should be efficient, transparent, fair, practical and flexible. They should be achieved through a continued collaborative process, represent a measured approach to complex issues and:

- enable decision-makers to make timely, informed and value-for-money judgements on the choices
- build on the momentum of the work to date

- be grounded in the practical realities of New Zealand's catchments, economy, culture and experience while being informed by theory and evidence
- not be inconsistent with policy decisions already made by government.

Glossary

Adaptive management	A structured, iterative process of decision-making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring.
Allocable quantum	The total quantity of water available for allocating to users as determined by the limit based on the following parameters: a) The total flow that can be extracted (surface) or the total volume that can be extracted (groundwater) b) Any temporal constraints (such as seasonal variability) based on the differences of flow (primarily for surface flows) c) Any flow restriction or condition (e.g. minimum flow) for surface water being a flow at which no further abstraction is allowed The allocable quantum will reflect reliability of the available water based on these parameters.
Allocation	A process whereby a total amount of water that may be extracted, or an amount of contaminants that may be discharged, is divided and distributed to individuals, or groups of individuals for their use. The individual amounts of a resource so allocated are often referred to as **allocations**, and the total can be said to be the total allocation.
Aquifer	An underground deposit of water-bearing sand, gravel or rock capable of yielding supplies of water. This excludes geothermal aquifers.
Audited Self-Management (ASM)	A management programme (individual, industry, or land user collective) which allows for the credible and transparent demonstration (audit) that agreed actions have been implemented (in this instance for water quality).
Authorisation	Resource use that is provided for (or authorised in a legal sense) by: a) National Environmental Standard b) Section 14(3) of the RMA c) permitted activities set out in a regional plan d) water or discharge permits (consents) In the new water allocation framework, in catchments under demand pressure all authorisations will be equivalent to a water permit but the structure is standardised based on a nationally prescribed template and referred to in the report as a **water consent**. There will be limited exceptions to this relating to fire fighting and permitted activities with a low total water take, which will require constraints to be explicit in the plan.
Bottom line	A nationally defined minimum (described either numerically or narratively) above which regional councils must set numeric fresh water state objectives.
Catchment	The total area of land draining into a river, reservoir, or other body of water.

Collaboration/ collaborative approach/collaborative process	Working with a wide range of interested parties in each aspect of a decision-making process, including the development of alternatives and the preferred solution(s). Collaboration provides a greater level of input on the design of the approach and the options and solutions identified than consultation and many other forms of public and sector engagement.
Contaminant	Biological (e.g. bacterial and viral pathogens) or chemical (e.g. toxicants) introductions capable of producing an adverse effect in a waterbody.
Cumulative	Resulting from successive additions at different times or in different ways.
Derogation	Literally, to detract. In a water management context it means the actions of one party that adversely affect the rights of another party.
Diffuse discharges	Pollutants sourced from widespread or dispersed sources (e.g. from pasture runoff of animal wastes, fertiliser and sediments, as well as runoff of pollutants from paved surfaces in urban areas). Also called non-point source discharges.
Dynamic efficiency	(See Efficiency.)
Efficient use of water / efficiency	Generally considered to have 3 concepts: • **Technical efficiency –** The amount (say, %) of water beneficially used in relation to that taken. It relates to the performance of a water use system, including avoiding water wastage. • **Allocative efficiency/Economic efficiency** – Relates to water uses resulting in the optimum outcome for both the environment and community. Water is allocated to the use which has the highest value to society. • **Dynamic efficiency** – Relates to the use of water adjusting over time, in order to maintain or achieve allocative efficiency.
Fresh water	Naturally occurring water on the Earth's surface in bogs, wetlands, ponds, lakes, rivers and streams, and underground as **groundwater** in aquifers. This excludes geothermal water.
Good management practice (GMP)	GMP refers to the evolving suite of tools or practical measures that could be put in place at a land user, sector and industry level to assist in achieving community agreed outcomes (in this case for water quality).
Groundwater	Water located underground in rock crevices and in the pores of geologic material. It supplies springs and wells. (See 'aquifer'.) This excludes geothermal water.
Highest valued use	That use, of all the potential uses of a resource, that is most highly valued by the actual or potential user.
Hydrology/hydrological	The science dealing with the occurrence, circulation, distribution and properties of water.

In-stream flow	Relates to the intrinsic environment of the river, lake or aquifer (e.g. ecology, recreation, cultural, aesthetic, natural character). The flow regime required to be maintained in a river to support environmental, social and cultural values associated with the water resource.
Initial allocation	The allocation by regional councils of water or assimilative capacity available within the limit – that is a previously un-allocated resource being made available for use subject to specified rights and responsibilities.
Integrated catchment management	A process through which people can develop a vision, agree shared values and behaviours, make informed decisions and act together to manage the natural resources of their catchment. Decisions are made at the catchment level by considering the effects on all of the resources and people within the catchment, by integrating science and governance.
Iwi	Tribe.
Kaitiakitanga	The exercise of guardianship.
Limit	The maximum amount of resource use available, which allows a freshwater objective to be met (definition from NPS).
Mātauranga Māori	Māori knowledge originating from Māori practices, observations, science and ancestors, including the Māori world view and perspectives, creativity and cultural practices.
National Environmental Standard (NES)	Regulations to protect the environment and human health developed under the Resource Management Act 1991. These are binding on local authorities.
National instrument	Includes legislation, national policy statement or regulations.
National Policy Statement for Freshwater Management 2011	The NPS prepared under the Resource Management Act that came into effect on 1 July 2011.
Nutrient	Minerals needed by plants and animals for growth.
Nutrient trading	A contaminant transfer method comprising a system of credits that can be bought and sold. The number of credits is based on how much of that contaminant is permitted to be discharged into the environment.
Objective (freshwater objective, environmental state objective)	Describes the intended environmental outcome(s) (definition from NPS). Freshwater objectives are sometimes referred to as **freshwater state objectives**. It describes the desired state of the waterbody, having taken into account all values.
Over-allocation	The situation where the resource: a) has been allocated to users beyond a limit or b) is being used to a point where a freshwater objective is no longer being met. This applies to both water quantity and quality (definition from NPS).

Point source discharge	Discharge of contaminants into a waterbody from a single fixed point, such as a pipe or drain (e.g. from the likes of sewerage, factory and dairy shed outfalls). (See Diffuse discharge.)
Riparian planting	Planting along the banks of rivers and streams to reduce erosion and pollutant run-off to the waterway.
RMA	Resource Management Act 1991.
Rule	A rule in a regional plan, as prescribed under the RMA (e.g. sections 68, 69 and 70).
Rural water infrastructure	Includes dams, bores and irrigation schemes.
Scarcity threshold	A scarcity threshold is a denominated level within the allocable quantum that marks when the remaining water available to be allocated is becoming scarce. This is distinct from a period of dry weather (drought or pro-longed dry spell), where existing allocations are restricted. Once a scarcity threshold is reached the catchment is considered to be under demand pressure and all allocation processes need to align with the regime identified in the regional plan.
Sediment/sedimentation	Unconsolidated mineral and organic particulate material in the waterbody.
Spatial	Of, relating to, involving or having the nature of space. For example, areas which are able to be mapped.
Spatial variation	Occurs when a quantity that is measured at different spatial locations exhibits values that differ across the locations.
Standard	An established norm or requirement. It is usually in a formal document that establishes uniform technical criteria, methods, processes and practices. A standard has regulatory force if defined in a regulatory instrument.
Stormwater	Surface water run off arising from rain storm events. Often refers to run off from impervious surfaces.
Taonga	Treasured possessions, both tangible and intangible.
Target	A limit which must be met at a defined time in the future. This meaning only applies in the context of over-allocation (definition from NPS).
Technical efficiency	(See Efficiency.)
Transfer	The reassignment of an allocation from one person to another. Usually used in the context of the transfer of a resource consent (or part thereof) from one person to another.
Values	Values of waterbodies include uses by people (e.g. drinking water, irrigation, hydro-generation, recreation) and intrinsic values (e.g. ecology, cultural, aesthetic, natural character).
Wastewater	Water that has been adversely affected in quality by direct use in an anthropogenic process that is then returned to the environment. E.g. liquid waste discharged by domestic residences, commercial properties, industry and agriculture.
Waterbody	Excludes geothermal water.

Small Group members

Beef + Lamb New Zealand (Kirsten Bryant), Contact Energy (John Woods), DairyNZ (Simon Tucker) Ecologic (Guy Salmon), Environmental Defence Society (Gary Taylor), Federated Farmers (Ian Mackenzie), Fish and Game New Zealand (Bryce Johnson, Neil Deans), Fonterra (Bruce Donnison, John Hutchings), Forest and Bird (Kevin Hackwell), Horticulture New Zealand (Chris Keenan), Irrigation New Zealand (Andrew Curtis), Meridian Energy (Hamish Cuthbert), Mighty River Power (Bruce Waters), National Institute of Water and Atmospheric Research (Dr Clive Howard-Williams), New Zealand Forest Owners Association (Peter Weir), Te Arawa Lakes Trust (Roku Mihinui), Te Rūnanga o Ngāi Tahu (David Perenara-O'Connell), Tuwharetoa Māori Trust Board (Tamarapa Lloyd, Topia Rameka), Waikato-Tainui (Donna Flavell), Water New Zealand (Peter Whitehouse), Whanganui River Māori Trust Board (Nancy Tuaine, Hannah Rainforth), Whitewater New Zealand (Hugh Canard).

Active Observers to the Small Group - Auckland Council (Chris Hatton), Environment Canterbury (Bill Bayfield and Ken Taylor), Hawkes Bay Regional Council (Andrew Newman), Horizons Regional Council (Michael McCartney), Ministry for the Environment (Guy Beatson), Ministry for Primary Industries (Paul Stocks and Mike Jebson), Tasman District Council (Richard Kempthorne), Waikato Regional Council (Dr Tony Petch).

Plenary members

Aqualinc Research Ltd, Ballance Agri-Nutrients, Beef + Lamb New Zealand Limited, Business NZ, Carter Holt Harvey Ltd, Contact Energy, DairyNZ, ECO, Ecologic, Environmental Defence Society, Federated Farmers, Federated Mountain Clubs of New Zealand, Fert Research, Fish and Game New Zealand, Fonterra, Forest and Bird, Foundation for Arable Research, Genesis Energy, Horticulture New Zealand, Ihutai Trust, Ingenium, Institution of Professional Engineers New Zealand, Irrigation New Zealand, Lincoln University, Massey University, Meridian Energy, Mighty River Power, MWH, National Institute of Water and Atmospheric Research, New Zealand Farm Forestry Association, New Zealand Forest Owners Association, New Zealand Institute of Forestry, NZ Landcare Trust, New Zealand Winegrowers, Opus International Consultants Ltd, Rural Women New Zealand, Spiire, Straterra Inc, Te Arawa Lakes Trust, Te Rūnanga o Ngāi Tahu, Tourism Industry Association, TrustPower, Tuwharetoa Māori Trust Board, Waikato River Authority, Waikato-Tainui, Water New Zealand, Watercare Services Ltd, Whanganui River Māori Trust Board, Whitewater New Zealand, Wood Processors Association of New Zealand, Zespri.

Active Observers to the Plenary - Auckland Council, Environment Canterbury, Department of Conservation, Department of Internal Affairs, Hawkes Bay Regional Council, Horizons Regional Council, Ministry for the Environment, Ministry for Primary Industries, Ministry of Science and Innovation, Tasman District Council, Treasury, Waikato Regional Council.

Chair, Land and Water Forum - Alastair Bisley.

Participants supporting the report

Aqualinc Research Ltd, Ballance Agri-Nutrients, Beef + Lamb New Zealand Limited, Business NZ, Carter Holt Harvey Ltd, Contact Energy, DairyNZ, ECO, Ecologic, Environmental Defence Society, Federated Farmers, Federated Mountain Clubs of New Zealand, Fert Research, Fish and Game New Zealand, Fonterra, Forest and Bird, Foundation for Arable Research, Genesis Energy, Horticulture New Zealand, Ihutai Trust, Ingenium, Institution of Professional Engineers New Zealand, Irrigation New Zealand, Lincoln University, Massey University, Meridian Energy, Mighty River Power, MWH, National Institute of Water and Atmospheric Research, New Zealand Farm Forestry Association, New Zealand Forest Owners Association, NZ Landcare Trust, New Zealand Winegrowers, Opus International Consultants Ltd, Rural Women New Zealand, Spiire, Straterra Inc, Te Arawa Lakes Trust, Te Rūnanga o Ngāi Tahu, Tourism Industry Association, Tuwharetoa Māori Trust Board, Waikato River Authority, Waikato-Tainui, Water New Zealand, Whanganui River Māori Trust Board, Whitewater New Zealand, Zespri.

Land and Water Trust and Secretariat

Trustees of the Land and Water Trust - Alastair Bisley (Chair Land and Water Forum), Simon Tucker (DairyNZ), Kevin Hackwell (Forest and Bird) and David Perenara-O'Connell (Te Rūnanga o Ngāi Tahu).

Secretariat - Alastair Patrick (Project Manager), Natalie Crane (Project Administrator), Alastair Smaill (Senior Analyst), Andrew Schollum (Senior Analyst), Caroline Read (Senior Analyst), Olivier Petitjean (Senior Analyst), Paul Metcalf (Senior Analyst), Robin Connor (Senior Analyst), Tim Bamford (Intern) and Tim Bennetts (Senior Analyst).

Working Group members

Governance and Limits

Simon Tucker (Chair) (DairyNZ)
Bruce Waters (Mighty River Power)
Diana Shand (ECO)
Hugh Ritchie (Primary Sector Water Partnership)
Kerry Watson (TrustPower)
Natasha Garvan (Environmental Defence Society)
Dr Nick Edgar (NZ Landcare Trust)
Nigel Corry (Greater Wellington Regional Council)
Paul Le Miere (Federated Farmers)
Richard Kempthorne (Tasman District Council)
Roku Mihinui (Te Arawa Lakes Trust)
Suzanne Doig (Ministry for the Environment)

Managing within Limits - Allocation

Hamish Cuthbert (Chair) (Meridian Energy)
Andrew Curtis (Irrigation NZ)
Chris Keenan (Horticulture New Zealand)
Dawn Leung-Wai (Ministry for the Environment)
Dennis Bush-King (Tasman District Council)
Donna Flavell (Waikato-Tainui)
Garry Maskill (Watercare Services Ltd)
Greg Milner-White (Environmental Defence Society)
Ian Mackenzie (Federated Farmers)
Jeremy Stevenson-Wright (Genesis Energy)
John Bright (Aqualinc Research Ltd)
John Pask (Business NZ)
John Woods (Contact Energy)
Neil Deans (Fish and Game)
Ross Parry (Genesis Energy)
Ross Philipson (Ecologic)
Sean Newland (Fonterra)

Managing within Limits – Water Quality

Kevin Hackwell (Chair) (Forest and Bird)
Alistair Mowat (Zespri)
Andrew Curtis (Irrigation NZ)
Brian Ellwood (Meridian Energy)
Corina Jordan (Fish and Game)
David Johns (DairyNZ)
Glen Mackie (NZ Forest Owners Association)
Irene Parminter (Ministry for Primary Industries)
Jodi Leckie (North Otago Irrigation Company Ltd)
Julian Williams (Waikato-Tainui)

Kirsten Bryant (Beef + Lamb New Zealand Limited)
Liz McGruddy (Federated Farmers)
Peter Weir (NZ Forest Owners Association)
Philip Mladenov (FertResearch)
Tony Petch (Waikato Regional Council)
Tony Phipps (Northland Regional Council)

National Strategy

Nancy Tuaine (Chair) (Whanganui River Maori Trust Board)
Chris O'Hara (TrustPower)
Guy Beatson (Ministry for the Environment)
Hugh Canard (Whitewater New Zealand)
John Hutchings (Fonterra)
Mary-Anne Macleod (Bay of Plenty Regional Council)
Peter Silcock (Horticulture New Zealand)
Peter Whitehouse (Water New Zealand)
Tahu Potiki (Te Rūnanga o Ngāi Tahu)

Setting Limits

Ken Taylor (Chair) (Environment Canterbury)
Dr Clive Howard-Williams (NIWA)
David Perenara-O'Connell (Te Rūnanga o Ngāi Tahu)
Guy Salmon (Ecologic)
John Hutchings (Fonterra)
Kathy Mason (Straterra)
Liz McGruddy (Federated Farmers)
Mike Scarsbrook (DairyNZ)
Murray Parrish (Wood Processors Association)
Neil Deans (Fish and Game NZ)
Nick Pyke (Foundation for Arable Research)
Phil Parkes (Ministry for Primary Industries)
Rosemary Dixon (Contact Energy)
Stephen Colson (Mighty River Power)
Dr Tony Petch (Environment Waikato)

Thanks

Thanks to Water New Zealand for the provision of accounting and payroll services, and to Meridian Energy, Business New Zealand, Contact Energy, DairyNZ, Federated Farmers, Fert Research, Fonterra, Greater Wellington Regional Council, Horticulture NZ, Kensington Swan, Ministry for the Environment, Ministry for Primary Industries, NIWA, Russell McVeagh and Waikato-Tainui for providing the use of meeting rooms and video conference facilities.

Thanks to Glen Lauder for his assistance and guidance.

Thanks to John Scott, Billy Brough and Riki Ellison for their contributions to the Forum and its working groups.

Thanks also to the range of people and knowledge organisations that gave freely of their time and resources to assist the Forum and its working groups:

Adrian Macey (Victoria University of Wellington)
Bill Vant, Blair Keenan and Ed Brown (Waikato Regional Council)
Charlotte Cudby and Chris Arbuckle (Ministry for Primary Industries)
Clive Howard-Williams, Kit Rutherford, Ned Norton and Scott Larned (NIWA)
David Hamilton (University of Waikato)
David Skilling (Landfall Strategy)
David Wheeler, Liz Wedderburn, Mark Shepherd, Melissa Robson, Richard McDowell, Roger Williams, Stewart Ledgard and Val Snow (AgResearch)
Deborah Lind (Watercare Services)
Gavin McEwen (Farmax Limited)
Graham Sevicke-Jones (Greater Wellington Regional Council)
Hamish Brown (Plant and Food Research)
Matt Ross (Waitaki Irrigators Collective)
Mike Hedley (Massey University)
Mike Young (University of Adelaide)
Rob van Voorthuysen
Suzi Kerr (Motu Economic and Public Policy)
Suzie Greenhalgh (Landcare Research)