

SO MUCH HAPPENING WITH LEGISLATION AND REFORMS IN OUR WATER SECTOR: WILL IT ACHIEVE EXCELLENCE?

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ABSTRACT

With so much happening in the water industry at Central and Local Government level it is timely to undertake a stocktake on recent initiatives and consider how they could impact our water and associated environmental sectors. In line with the conference theme of “Pathways to Excellence”, the stocktake will provide a high level assessment of whether the output of the many initiatives will provide our industry with “Pathways to Excellence”.

The paper briefly addresses ten separate, yet in many cases related initiatives. The discussion focuses on key matters of relevance to our water and associated environmental sectors.

This paper and the conference presentation will focus on key outputs from the selected initiatives that will drive new and different ways of planning and operating in the water sector and attempt to assess whether they will achieve excellence in the performance of the sector.

KEYWORDS

Water legislation, Local Government, Three Waters, Water Infrastructure, Water Quality, Conservation

1 INTRODUCTION

The initiatives to be assessed includes the Resource Legislation Amendment Bill 2015, New Zealand Productivity Commission’s Better Urban Planning project, the Next Steps for Freshwater, the 30 Year NZ Infrastructure Plan, climate change and the PCE’s Report on Rising Seas, the Royal Society’s Climate Change Report, Local Government reform, the future work programme of the Controller and Auditor General Environment Aotearoa, New Zealand Government’s Science and Conservation Roadmap and Local Government New Zealand’s Three Water Project.

2 DISCUSSION

The following provides a high level summary of the key matters addressed by the initiatives listed in section 1 above. The author stresses that with so many initiatives currently taking place, not all of them are covered in this paper. It is not also not possible to cover the initiatives in any depth in a single paper and in the presentation time allocated. The matters covered are not focused on any specific area of our water sector, they have simply been selected to give an overview that reflects the wide ranging nature of the initiatives. The order of the topics discussed below follow the publication dates of the initiatives.

The question as to whether the initiatives will provide a “Pathway to Excellence” is addressed in an all-encompassing manner in the conclusion section of the paper. This high level assessment identifies that not all the initiatives necessarily come together in a common timeframe to form an integrated, forward thinking and overall sustainable approach for the water sector. However, the initiatives do highlight that considerable progress is being made with issues of significance being given priority.

The initiatives are summarised as follows:

2.1 THE NEW ZEALAND PRODUCTIVITY COMMISSION – “BETTER URBAN PLANNING”

The Commission is an independent Crown entity and was set up by central Government under its own Act of Parliament. Its key purposes is to complete in-depth inquiry reports on topics selected by the Government. The Commission was requested by the Government to undertake an inquiry into the System of Urban Panning in New Zealand. In December 2015 the Commission release its issues paper titled “Better Urban Planning” for discussion. This Paper raised 39 big picture questions. As the water sector is an integral part of the urban planning system, some of the 39 questions are very relevant for example Question 6 and 7:

Q6

How does the allocation of responsibilities to local government influence land use regulation and urban planning? Thinking beyond the current planning system, what allocation of responsibilities to different levels of government would support better urban planning

Q7

How can an urban planning system better integrate land use regulation and infrastructure planning?

To provide some context for these questions, Figure 1 below (shown as Figure 5 in the report) helps to highlight the complexity of the inter relationships of the three statutes responsible for managing land use and infrastructure planning in New Zealand.

In the view of the author these questions are seriously challenging the status quo and make us ask ourselves “is there a better way”, and “has our current planning system reached it’s used by date”?

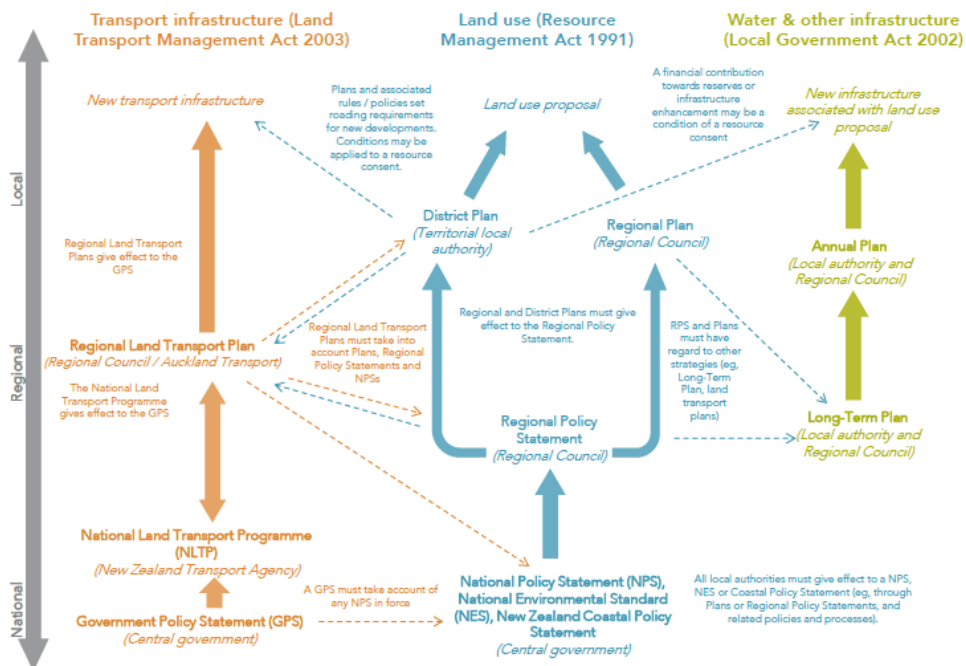


Figure 1 - Stylised presentation of the planning and development system

Other key questions of relevance to the water sector include:

Q23 Would there be benefit in tradable development rights, tradeable permits and environmental offsets playing a stronger role in a future urban planning system? In what circumstances?

Q28 Should provisions relating to infrastructure planning and funding be integrated in a planning statute? What are the advantages and disadvantages?

Q34 Thinking beyond the existing planning system, how should a new model manage the risk of natural hazards? Who should bear the risk of building in areas where natural hazards may occur?

Q35 Where will technological change put most pressure on the planning system? How could the system be designed to be flexible enough to respond to technological change?

The Commission will issue a draft Report in September 2016 and finally report to Government on 30 November 2016. How Government responds to the outcomes of the report has the potential to significantly affect the future planning, management and pricing/funding of water and water infrastructure.

2.2 RESOURCE LEGISLATION AMENDMENT BILL

Submissions on the Resource Legislation Amendment Bill 2015 closed on 14 March 2015. The overarching purpose of the Bill is to create a resource management system that achieves the sustainable management of natural and physical resources in an efficient and equitable way. The Bill comprises around 40 individual proposals aimed at delivering substantive, system-wide improvements to the resource management system.

A key proposed amendment of particular significance to the water sector is the proposed inclusion in section 6 (matters of national importance) of Part 2 of the RMA of “*the management of significant risks from natural hazards*”. This will require our sectors water planners, scientists, engineers, asset and operations managers to give even greater consideration to natural hazard planning and to providing more resilient engineering solutions. The amendments to section 6 are a result of recommendations from the Canterbury Earthquake Royal Commission.

2.3 THE LAND AND WATER FORUM’S BY REPORTS

The Land and Water Forum (the Forum) was set up by, and makes recommendations to Central Government on land and fresh water management policy. The Forum comprises 54 non-governmental organisation including iwi, primary industry groups, infrastructure operators and environmental NGOs. It also has active observers from central and local government. The Forum has adopted a multi-party collaborative approach and strives to reach consensus across commercial, environmental and cultural interests when making recommendations to Government. From 2010 to 2015 the Forum has provided four reports that include a suite of recommendations, ranging from strategy to through to detailed implementation.

The First Report “A Fresh Start for Freshwater” - September 2010 covered the following topics:

- Present way water is managed
- Iwi and water
- Problems
- Setting limits and scarcity
- Transitions, governance, science knowledge
- Management, drainage and flooding

The Second Report “Setting Limits for Water Quality and Quantity” Freshwater Policy and Plan Making through Collaboration - April 2012 covered the following topics:

- Call for national bottom lines
- Communities collaborate to decide

The Third Report “Managing Water Quality and Allocating Water - October 2012 covered:

- More active and dynamic water management
- Iwi rights and interests
- Catchment planning
- Managing water quality
- Allocating water
- Enabling change
- Duration and expiry of consents

The Fourth Report – November 2015 covered:

- Maximising the economic benefit of water
- Recognising and providing for iwi rights and interests in fresh water
- Integrated catchment management
- Water quality and quantity
- Stock exclusion
- Over allocation
- Enabling change and the future

The Fourth Report targeted a wide range of matters and included 60 recommendations. If these are acted on by Government significant changes will be required to the way we plan and manage water and water infrastructure including both urban waters and productive waters such as irrigation and hydro-electric power generation.

Some key recommendations that are likely to be of importance to water infrastructure providers and Water NZ members are set out below. These are recorded in an abbreviated manner. The report should be referred to for the full recommendations and associated discussions.

- R1** Government should complete remaining recommendations from the first three reports
- R19** Prioritise the alignment of ... “three waters” infrastructure to meet water quality objectives
- R20** “Water sensitive Urban Design” must be adopted in the buildings, upgrading roading and stormwater and residential development
- R21** Report on stormwater and wastewater overflows and progress to phase out
- R22** Revise Trade Waste Bylaws – cleaner technologies
- R42** Water takes must be designed to be consistent with plan objectives and limits
 - reliability of access to water
 - variation circumstances
- R42** RMA lapse provisions for standard 10 year lapse – flexible approach
- R51** Water suppliers should meter municipal supplies at scales that are appropriate for asset management purposes
- R52** Volumetric metering in municipal supply where population growth – expected growth
- R53** Water suppliers must monitor and report on levels of leakage and have actions
- R55** Catchment level policies to include (amongst other things)
 - recognise prior investment in measures that lead to greater water use efficiency and water quality mitigation

The Government's Next Steps for Freshwater consultation document has already supported a number of the Forum's recommendations from its four reports. Other recommendations are expected to be as part of the next edition of the National Policy Statement on Freshwater Management (NPSFM) that as discussed below is currently being prepared by the Ministry for the Environment and Ministry for Primary Industries.

2.4 THE NEXT STEPS FOR FRESHWATER MANAGEMENT CONSULTATION DOCUMENT AND THE NATIONAL POLICY STATEMENT ON FRESHWATER MANAGEMENT 2014

This consultation document is part of the Government's reforms to improve the way we manage freshwater. These reforms seek to recognise that local communities, through their councils are in the best position to make decisions about managing the freshwater in their region.

The feedback on this document and the associated scientific, economic and other investigations will inform the updating of the NPSFM.

The NPSFM contains a number of provisions that have been subject to interpretation and debate including water quality objective A2 relating to the "overall quality of freshwater in a region" and the meaning of "maintain and improve". These and a wide range of other matters have been addressed in submissions on the consultation document which closed on 22 April 2015.

Below is a brief summary of some of the major submissions. They have been selected to give "a flavour" of key submission points. If these submissions are accepted there will be significant changes to the new NPSFM.

Environmental Defence Society Submission

Amend key objective A2

- *"the overall quality of freshwater within a region is maintained or improved while ..."*
 - delete "region" change to "Freshwater Management Unit (FMU)
 - delete "overall"
- "Maintain" be redefined to "keep at same level" not let it degrade to lower end of an attribute level range
- "Improved" should be defined
- Tidy up infrastructure breaches and define "existing infrastructure"
- Supports stock exclusion but better defined
- Support technical efficiency and Good Management Practice in principle

Parliamentary Commission of the Environment Submission

This detailed submission is generally supportive of:

- Stock exclusion from water bodies
- Exceptions to bottom lines
- Increased engagement with iwi
- Measuring ecosystem health
- Other work underway but concern over lack of:
 - Measuring sediment

- Measuring quality of water in wetlands

The submission seeks that the following matters be addressed:

- The ‘maintain or improve’ objective for water quality with clearer definitions
- The debate about ‘swimmability’
- The continued omission of estuaries
- A strategic approach to setting objectives and limits
- The Freshwater Improvement Fund
- Economic use of fresh water

Local Government New Zealand Submission

The submission seeks the following:

- Supports Freshwater Management Unit (FMU) rather than referring to “a region” in objective A2
- Provide clarity when water quality is to be “maintained” or “improved”
- Supports use of Macroinvertebrate Community Index (MCI) but requires the purpose is more clearly stated
- Amend to include local government involvement in “significant infrastructure” exceptions
- Supports stock exclusion from water ways
- Supports development of technical efficiency standards for water allocation and good management practices
- Supports iwi and hapu engagement in respect to relationship and values and rohe (region or catchment) based agreements
- Supports establishment of the “Freshwater Improvement Fund”

The Ministry for the Environment and its science, planning and economic advisors are currently considering the submissions and preparing the updated NPSFM. This is a key part of the Ministry’s current work programme.

At the time of the preparing this paper it is not known when the new NPSFM will be released, but it is expected to be the first half of 2017.

2.5 LOCAL GOVERNMENT NEW ZEALAND’S THREE WATERS PROJECT

In September 2015 Local Government released a position paper titled “Improving New Zealand’s Water, Wastewater and Stormwater Sector”. The Forward to the paper by President Lawrence Yule states that “*as owners of water assets and the primary provider of three (urban) water services local government has taken the challenge of improving the information base and water industry service delivery*”.

This Project was initiated to gain a better understanding of the challenges facing the sector. A key part of the Project is the identification of possible approaches to delivering a strong water, wastewater and stormwater Sector. These approaches are:

- 1) A multilateral contract or deed with a commitment to enforceable provisions
- 2) A co-regulatory approach modelled on the successful co-regulatory approach used in the gas industry, and
- 3) Utilisation of the possible Local Government Risk Agency

There has been some further refinement of the approaches. Local Government New Zealand has recently made it clear that it prefers approach number 2 – the co-regulatory approach. At the time of preparing this paper Central Government has not determined the preferred approach.

The position paper contains the following graphic that demonstrates the six key components of an efficient and sustainable three waters sector.



Figure 2 - Expectations of an efficient and sustainable three waters sector

The further output from this critically important Project includes the following five projects which will run over the next three years:

- 1) National information
- 2) Best practice framework and best practice toolbox
- 3) Service and sector design
- 4) Drinking water quality and
- 5) Stormwater

2.6 LOCAL GOVERNMENT REFORM – LOCAL GOVERNMENT AMENDMENT BILL

A number of the statutory responsibilities and activities of local government are under review. The following slide from a speech by the Minister of Local Government, Hon Peseta Sam Lotu-Iga in March 2016 makes reference to water provision and cost-efficient services and infrastructure. Changes are obviously a foot in the local authority water sector.

Ideally there should be strong alignment between Central Government’s reforms and Local Government New Zealand’s Three Waters Project and related initiatives.

Local Government - Delivering Better Local Services

Local government reform is needed to produce better outcomes for ratepayers, communities and regional growth

<p>Why reform?</p> <p>Ratepayers expect good quality services and infrastructure</p> <p>Cost to ratepayers for services is increasing beyond a range of cost indices</p> <p>Some services are provided to ratepayers sub-optimally due to lack of scale. There are opportunities to better deliver:</p> <ul style="list-style-type: none"> • Urban transport • Water provision • Planning and economic development <p>Current legislation is not delivering on ratepayers' expectations</p> <p>Existing legislation is aimed at large-scale amalgamation, which some communities reject due to wishes to preserve local identity and voice</p> <p>Process is divisive, costly, and takes a long time</p> <p>Too much focus on number of councils, not enough focus on cost-effective services for residents and businesses</p>	<p>The Better Local Services package introduces new options for improving local government</p> <p>What will councils be able to do?</p> <p>Lead and run a reorganisation process, as an alternative to the Local Government Commission (LGC)</p> <ul style="list-style-type: none"> • Councils can engage with and make decisions on behalf of their communities • Perform any kind of reorganisation if there is agreement of all councils <p>Councils will have to follow the same processes and criteria as the LGC (i.e. to ensure that options will improve services and infrastructure)</p> <p>What will the LGC be able to do?</p> <p>Engage pro-actively with councils to support change</p> <p>Set its own priorities for investigations, including the flexibility to right-size each investigation</p> <p>Having regard to the views of the public, the LGC will be able to:</p> <ul style="list-style-type: none"> • Establish shared CCOs (e.g. water, transport) or joint governance over common areas of interest (e.g. a combined RMA plan) without a poll • Propose major transfers of water, transport and RMA functions to regional councils (these are likely to go to a poll) • Propose amalgamation of councils (mandatory poll) 	<p>What will the reforms deliver?</p> <p>Increased value for ratepayers and residents through more cost-effective services and infrastructure, e.g.</p> <p>Councils enabled to jointly deliver water and transport services, which could achieve benefits from scale, integration and specialist expertise</p> <p>Retention of local identity and effective voice</p> <p>A more efficient and effective local government reorganisation process, that facilitates solutions that are tailored to local circumstances and change more quickly</p> <p>Infrastructure needed to support economic growth and the supply of housing will be provided in a more coordinated and cost-effective way</p> <p>Councils and communities more clearly see the need to lift performance and change, and feel incentivised, encouraged and supported to do so</p> <p>What checks and balances will there be?</p> <p>Statutory guidance (about how process is initiated, undertaken, and implemented) will be provided for reorganisation proposals</p> <p>Public will get to vote on all LGC-led amalgamation proposals (polls of electors will be made a requirement)</p> <p>Major transfers of functions will require the agreement of all affected councils or will be subject to a poll</p> <p>Stronger Ministerial and Government oversight of LGC (e.g. Order in Council for reorganisation will have to be recommended by Minister of Local Government)</p>
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This Bill which amends the Local Government Act 2002 provides for a broader range of functions to be transferred between local authorities and joint governance arrangements for areas of common or shared interest, and the greater use of joint council-controlled organisations (CCOs) (including water services CCOs and transport CCOs).

Submissions on the Bill on closed 28 July 2016. Water New Zealand was particularly active in making recommendations on a number of matters including:

- There be no specified term for contract or joint arrangement for the provision of water services
- In terms of pricing of water services, suggesting additional clause in terms of development of policy and pricing of water sectors; and
- The existing Water New Zealand National Performance Review be investigated as a potential mechanisms to fulfil the intent of Clause 41

2.7 NEW ZEALAND GOVERNMENT THIRTY YEAR INFRASTRUCTURE PLAN - 2015

The Plan has been prepared the National Infrastructure Unit of Treasury. Its vision is that *“By 2045 New Zealand’s infrastructure is resilient and coordinated and contributes to strong economy and high living standards”*.

The purpose of the Plan is to:

- 1) Set a market for New Zealand’s long-term infrastructure journey and the progress achieved
- 2) Advance the debate on long-term provision of infrastructure
- 3) Deliver a step change in our approach to infrastructure planning and management
- 4) Provide confidence to businesses and people to invest in capital, develop skills and take risk

The two key outcomes sought from the Plan are better use of existing infrastructure and better allocation of new investment.

Key challenges are identified as:

- Ageing assets and infrastructure networks
- Affordability constraints
- Population ageing
- Regional growth and decline
- Productivity gaps
- Technology change and cyber security risk
- Infrastructure pinch points, especially in Auckland
- Shift in economic gravity to Asia and the opportunities this provides
- Climate change and limits on natural resources

The Plan also includes a number of live ongoing Action Plan Projects. These cover both Three Waters and Productive Waters sectors. The Three Water Action Plan Projects initially identified are:

	Action By
Cross Boundary Study HCC, Waipa DC, Waikato DC Sub-region Study	HCC, WDC WDC
New Planning & Reporting Requirements in LTP’s 2015	All LA’s
Analyse Councils 2015 LTP’s plus 30 year Infrastructure Strategies to assess investment plans	DIA
LGNZ Three Waters Project	LGNZ
Develop “level of service” performance measures for seismic Resilience	U of Can, EQ Centre, Water NZ
Review disaster funding arrangements	Treasury, MCDEM, DIA

	Action By
Establish wide ranging programme of activities across stakeholders	WIU, Sector bodies, Local Government

The Plan’s response summaries highlight that we need to make a step-change in our approach to infrastructure planning and management and that simply building things to address our problems is no longer sustainable.

To achieve the better use of existing infrastructure and better allocation of new investment the following three response approaches are proposed:

- 1) We need a better understanding of the levels of service we want to deliver
- 2) More mature asset management practices and use of data
- 3) More effective decision-making that considers non-asset solutions

In terms of the three waters sector, the Plan includes the following interesting and forward thinking list of technologies and approaches relating to how current trends might play out by 2041.

- Proliferation of micro-treatment plants to service small communities, suburbs and individual houses
- Purification and recycling of water is standard practice
- Alternative energy will fuel larger plants
- Range of intelligent robotics undertaking underground inspections and work
- Granular and detailed user charges accurately reflecting composition and volume of use
- Consumers have an appreciation for water conservation and environmental protection
- Large-scale water operators service multiple catchments and regions beyond traditional local authority boundaries
- Effective allocation models ensuring water is allocated to its highest value use
- Long-term programme being implemented to ensure resilience against inundation and more intense rainfall patterns

In providing the Plan’s vision and the associated objectives are achieved then integrated decision making, local entities working together, mature asset management practices, shared infrastructure data standards, appropriate funding options, advanced procurement tools and overall resilient water infrastructure initiatives should all be in place within the 30 years, that is by 2045.

2.8 CLIMATE CHANGE AND RISING SEA LEVEL

The Parliamentary Commissioner for the Environment’s (PCE) report titled “Preparing New Zealand for Rising Seas Certainty and Uncertainty” November 2015 is a major piece of work that addresses sea level rise in terms of “certainty and uncertainty”. That is “certainly” it will happen and “uncertainly” as to how much and how fast. The report is about how the rising level of the sea will affect New Zealand. It describes the main impacts of sea level rise and examines current efforts by central and local government to prepare. The main finding of the report is that the Government must do more to help councils and communities deal with sea level rise.

In the report, the PCE makes eight recommendations to the Government. Seven aim to improve the direction and guidance given by the Government to councils. The last recommendation is focused on the fiscal impacts of sea level rise.

The PCE has concluded that a National Policy Statement (NPS) is needed to help us prepare for sea level rise. This could be a standalone NPS or be part of an NPS on natural hazards. Such an NPS would need to work alongside the New Zealand Coastal Policy Statement.

The Ministry for the Environment is expected to release national guidance of climate change matters before the end of 2016.

The report follows the PCE's 2014 report, *Changing climate and rising seas: Understanding the science*. Other climate change initiatives of note are:

- 1) The Royal Society of New Zealand's comprehensive report titled "Climate Change Implications of New Zealand" April 2016
- 2) Water New Zealand's pending rainfall and runoff project that will, it is expected, include predicted changed rainfall patterns in different areas of New Zealand

2.9 COMMENTARY BY THE PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT ON ENVIRONMENT AOTEAROA 2015

Under the Environmental Reporting Act 2015, the Secretary for the Environment and the Government Statistician must produce a state of the environment report every three years. The latest report is titled *Aotearoa 2015*. It was published in October 2015 and is based on data up to 2013.

Under the same legislation the Parliamentary Commission for the Environment (PCE) may choose to prepare an independent commentary. This occurred in June 2016. The PCE's commentary begins with a review of that report. It then presents the PCE's view on the state of New Zealand's environment and identifies priority issues that stand out for particular attention.

The PCE gives the state of our environment a mixed report card. She found that climate change is by far the most serious environmental issue. Already temperatures are increasing, the ocean is acidifying, and the sea is rising. On other issues, she found that:

- While water quality is good in forested areas, it is poor in many lowland places
- Our native plants and animals are losing the war against pests
- We still have huge areas of eroding hill country
- Our oceans are under pressure from run-off and fishing, although the greatest pressure in the long-term is acidification and warming from climate change
- In contrast, the outlook for air quality is good – it looks set to continue improving

The commentary gives some clear direction for those in the water environmental sector on reporting and giving clear conclusions. In this respect the PCE stated that "*Environment Aotearoa 2015 does not provide a diagnosis of the health of our environment – it does not give perspective on the seriousness of different environmental issues. A state of the environment report cannot do this without including forward thinking*".

The PCE sets out the following recommendations to improve environmental reporting. The author of this paper considers these recommendations are very sound and provide a useful checklist for those involved in reporting on environmental and related water sector matters.

- 1) Clear conclusions on the state of the environmental domain are essential
- 2) The development of national indicators should be treated as a 'work-in progress', and the indicators chosen not given undue weight. All relevant information should be considered when drawing final conclusions

- 3) Location matters. It is important to make it clear where an environmental issue is significant and where it is not
- 4) Indicating the degree of uncertainty in major results is important. This should include statistical testing of observed differences
- 5) Modelled results should always be ‘ground-truthed’ wherever possible
- 6) The limitations of models should be explained
- 7) Future air domain reports would benefit from more analysis of natural sources of air pollution

2.10 CONSERVATION AND ENVIRONMENT SCIENCE ROADMAP: DISCUSSION PAPER

This discussion paper released jointly by the Ministry for the Environment and the Department of Conservation in July 2016 takes a 20 year perspective on the research needed by government to support decision-making for conservation and environmental policy and management to achieve the most desirable future for New Zealand..

The paper includes input from earlier engagement with a wide range of stakeholder groups and identifies some of the significant issues and possible research directions New Zealand could take over the next 20 years. The Government is now seeking public input for the development of its proposed conservation and environment science roadmap so that the practices can be further established, research budgets confirmed and actions undertaken.

From the first round of submissions, the following 12 thematic areas have been identified:

- | | |
|--|---|
| 1. Climate change | 7. Populations and species |
| 2. Integrated ecosystems and processes | 8. Biosecurity |
| 3. Freshwater ecosystems and processes | 9. Mātauranga māori |
| 4. Land ecosystems and processes | 10. Social and economic dimensions |
| 5. Coastal and marine ecosystems and processes | 11. Informatics, modelling and monitoring |
| 6. Urban ecosystems and processes | 12. New and emerging technologies |

The progressive output from the research proposed in this roadmap can be expected to also have significant input into how New Zealand plans and manage our three waters, natural water and productive water.

2.11 CONTROLLER AND AUDITOR GENERALS PROPOSED PROGRAMME

The Auditor-General’s responsibilities include auditing local authorities in terms of accountability to the public for how they use the resources they collect from rates and other sources.

Each year Auditor-General’s work includes theme work topics. The 2016/17 information theme reflects the increasing importance of information regarding current and future effective and efficient delivery of public services.

This is to be carried on in 2017/18 by a water theme. The following table sets out the topics already identified for the water theme. This work will no doubt consider many of the new initiatives relating to the local authority and water sectors and examine how change is progressing and the results being achieved.

Table 1 – Identified topics for the water theme 2017/18

Water
Reflections report on Information theme
Freshwater quality -review effectiveness of RMA measures in improving freshwater quality
Drinking water – management of water supply assets by local authorities
Decision-making for water allocation/irrigation investment - including economic, cultural, and environmental considerations, and effectiveness of delivery models.
Evidence-based planning and decision-making in the environment/natural resources sectors (<i>e.g. Water, Exclusive Economic Zone, climate change</i>)
Use of market-based approach to improve water quality (Lake Taupo)
<i>Effectiveness of new governance models for managing water quality (building on 2014/15 governance models project)</i>
Effectiveness of clean-up projects for contaminated water bodies (e.g. Rotorua lakes)
Managing New Zealand’s marine environment
Aquaculture - what are the critical factors underpinning the development and growth of aquaculture in New Zealand?
Inland Revenue Department: Progress of the Business Transformation programme
Auckland Council – Review of service performance (Watercare)

3 BRINGING IT ALL TOGETHER - CONCLUSIONS

The initiatives reviewed in this paper highlight that there are a wide range of matters effecting the water sector under review and that this will result in changes and new approaches for the sector. These in the author’s opinion will by and large enhance the efficiency and effectiveness of our water sectors service while maintaining and enhancing the natural water environment.

Of particular importance to the enhancement of the efficiency and effectiveness of our water sector will be:

- 1) Natural hazard planning, risk management and resilient engineering.
- 2) Common and overlapping themes relating to tangata whenua matters.
- 3) Better integration of land use and water management planning with infrastructure planning and ensuring development capacity is adequately served with infrastructure.
- 4) Increasing climate change awareness and adaptation planning, but with greater national direction.
- 5) General agreement with planks of The Thirty Year NZ Infrastructure Plan 2015 particularly in terms of:
 - better understanding levels of service
 - more mature asset management
 - more effective decision making
 - promotion of water efficiency
 - best practice framework

- 6) Population change drivers including geographic differences and aging populations.
- 7) Review of the National Policy on Freshwater Management (NPSFM).
- 8) Matching “three waters” and “productive waters” infrastructure to meet water quality and water quantity objectives.
- 9) Need for more focus on estuaries and oceans.
- 10) Ageing infrastructure asset demands.
- 11) Stock exclusion from waterways and riparian planting.
- 12) Better collection and use of data including the output of the current Treasury Metadata project.

This review of the various initiatives by the author has highlighted a number of consistent themes relating to tangata whenua matters that are of relevance to the water sector. These include:

- Recognition and protection of Māori interests (NZ Productivity Council)
- Increased and early Māori participation (Resource Legislation Amendment Bill)
- Iwi and water (Land and Water Forum recommendations)
- Need to respect the cultural value of water and water bodies to iwi and hapu (Local Government New Zealand Three Waters Project)
- Improve management to provide for iwi and hapu rights and interest including rohe based agreements (Next Steps for Freshwater)
- The need for infrastructure to support the growing role of the Māori economy and iwi engagement (The Thirty Year Infrastructure Plan)
- Climate change and the need for further understanding of how Mataranga Māori informs flood management and catchment planning

The author has also identified a number of areas of uncertainty for which approaches and future initiatives are still evolving. These include:

- Local governments approach to water services governance and management and whether it will be local government lead or central government lead
- Asset focus to customer focus in provision of three water services
- Greater use of economic tools
- Valuing water
- Technology change and cyber security
- Managing risk of natural hazards

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