Keynote Address

Strategy for New Zealand water management with particular reference to national policy and interventions

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Summary

With greater competition for water and an increasing awareness of its value for a range of purposes, New Zealand is experiencing a need for more numerous and sophisticated water and related land management interventions. Our responses need to address more complexity, greater risks and more difficult tradeoffs. More than ever, the efficiency and effectiveness of management responses need to be very carefully considered and demonstrated. To be as successful as possible in our water management activities, New Zealand needs a more strategic approach at all levels.

The National Policy Statement for Freshwater Management is not a strategy, nor was it the product of a coherent and comprehensive national freshwater strategy.

We need to understand the role of strategy and develop a New Zealand freshwater management strategy. Critical to our ability to have an effective national freshwater management strategy are needs to reform our related science and research, and similarly our national state of environment monitoring and reporting. If we do not shape and inform the questions and monitor the responses with greater accuracy, specificity, and awareness of context, our national responses will carry unconsidered and unnecessary risks of failure and disappointment.

Background – the changing scene in freshwater management

All of us are well familiar with the maxim that the only constant is change. Our approach to the management of freshwater in New Zealand is in a time of very substantial change.[1] With greater competition for water and an increasing awareness

[1] Questions such as the ability of our regulatory instruments and processes to take account of cumulative effects, or for them to give full and appropriate recognition of the need to integrate land use with water management, or for them to be adaptable and sufficiently agile to accommodate to rapidly changing land uses, are all now thoroughly on the table.

Further questions relating for example, to the adequacy of water allocation mechanisms such as first in/first served, the ability to transfer water permits, or whether regional plans can be lawfully used to prioritise between different water uses, the adequacy of our science, the adequacy of our approach to planning and providing water infrastructure with particular reference to public vs. private sector roles, and the adequacy of our compliance and enforcement are presently much debated, in an often incomplete way. We seem to even have difficulty with the fundamental question of who owns water and who should be able to own water, with its ever increasing value, or indeed whether it's in our best interests to allow the question of ownership to just stay on the table.

of its value for a range of purposes, New Zealand is experiencing a need for more numerous and sophisticated water and related land management interventions. Our responses are dealing with more complexity, greater risks and more difficult tradeoffs. More than ever, the efficiency and effectiveness of management responses need to be very carefully considered and demonstrated.

The development of new approaches and especially new generation regional planning instruments is a very busy scene at present.[2]

The TRC has long had a rigorous monitoring and enforcement system associated with consent and plan compliance.[3]As with shovelling a load of coal, there is much to be said for rolling up your sleeves and getting stuck in to what's right in front of you. I am personally of the view, that water quality and water allocation in New Zealand would be much less significant public issues, if rules and consents were more rigorously monitored and enforced, and so I welcome signs of greater emphasis on this.[4]

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[2] At the regional level there have been significant ground breaking Environment Court deliberations in the Waikato, where land use rules to control water quality, the viability of nutrient markets and the water quality of an iconic lake and river system have all been debated (the Taupo variations to Environment Waikato's regional plan). Nutrient cap and trade regimes also form part of a suite of management tools being considered for the Rotorua lakes by Environment Bay of Plenty and its community.

Our neighbours to the south have promoted conceptually similar, but significantly different approaches for the Manawatu and there are a variety of initiatives being considered in other regions. Earnest efforts are being made to take the Canterbury water strategy forward with the benefit of the ECan 'make-it-happen' legislation. Southland and others are proposing to dramatically up their resourcing of compliance monitoring of agricultural consents.

[3] Last year, for example, this involved the undertaking of 226 tailored monitoring programmes for large consents, which combined required 1150 inspections, 1674 water or soil samples, 169 air samples and 110 freshwater or marine bio surveys. In addition all 1916 dairy farms were inspected at least once as were 15 piggeries and 46 poultry farms, and 883 inspections were completed of minor industrial systems – all of which adds up to a serious commitment. Until quite recently, the TRC annually issued more abatement notices, infringement notices and prosecutions than pretty near the rest of New Zealand put together. This was not a source of pride. Enforcement is actually demanding and stressful work. But the Council believes very firmly in two principles about rules and compliance approaches. The first is to have as few rules as are necessary. The second is to monitor and enforce compliance when you do impose rules. This seems self evident to us, but equally evident is that New Zealand seems littered with rules from regulatory agencies that in many cases are probably unnecessary or seemingly ineffective, but frankly, who would know or be really able to judge, because compliance is also poorly monitored and enforced. Sadly, we also seemingly need disasters to expose complacency.

Most OECD countries appear to share this issue. By way of example, I was relatively recently in England where I met with a number of officials involved in a range of water management and regulatory activities. If you knew where to look and scratch the paint, strong compliance and enforcement programmes were often absent. For example, much of England's agricultural land is now designated to be controlled as nitrate vulnerable zones in line with EU directives. However, resourcing of compliance is such that there is only a 3% chance of a farmer being compliance inspected in any year. Little wonder that there seemed to be a serious disconnect between some very powerful looking 'best laid plans' and the plainly observable condition of most rivers.

[4] In respect of enforcement, I note that the recent Auditor General's report was critical of regional council politicians being involved in prosecution decisions. This resulted in unfortunate and in Taranaki's case, totally unwarranted press criticism of councillors' integrity. I acknowledge the rationale of the OAG view but also that the OAG's report presented no specific evidence of any problems, as one would normally expect as a precursor to making such a recommendation. Certainly for Taranaki they couldn't have found any evidence of inappropriate 'political interference', because there is no evidence. The Auditor General's preference is for the central government practice of delegation to officials, but key differences exist between the sectors. Local government officials are employed directly by councils and councillors, not the State Services Commission or equivalent. This gives rise to a profoundly different relationship between officials and politicians that requires a more careful consideration. I for one, favour the 'whole' organisation from governance to 'hired-help' being collectively responsible for and accountable on such questions. Under this approach any councillor who wishes to promote a certain position in respect of an enforcement proposal, has to do so in the debating forum of the boardroom in the presence of all colleagues and relevant officials. While the public are excluded for obvious reasons, it is none-the-less a very transparent environment conducted and recorded in compliance with the standing orders of local government.

Further to this, I have been a close observer of many central government compliance and enforcement systems and approaches for many years. These range from fisheries to marine oil pollution, to HAZNO, animal welfare and others. I am clear in my mind, that the TRC at least, is much more comprehensive, resourced and diligent in compliance monitoring, and assertive in respect of taking prosecutions, than in general occurs in central government. For example, the Department of Labour reported a 3% HAZNO inspection rate of premises under their jurisdiction last year. I cannot reconcile that level of inspection with effective compliance monitoring.

In addition to changes happening in the regulatory space, other significant initiatives are being promoted by the private sector and public agencies, and many present will be engaged in these programmes.

At the national level there is also a lot of activity, as the Government rolls out a variety of initiatives. These have included the recent National Policy Statement for Freshwater, which I shall comment on later.

In my view, the changes to how we manage freshwater, are as significant as for example, the introduction of the water rights regime with the enactment of the Water and Soil Conservation Act in 1967, or the introduction of a sustainable management purpose and principles into environmental decision making with the Resource Management Act in 1991.

At the heart of several of these changes is a shift from essentially non-regulatory approaches for controlling the impacts of land uses on water, to limit setting regulatory methods. Common in Europe, they are relatively new to us here.

Not new to us, however, are the concepts of integrated land and water management and integrated catchment management. New Zealand has also previously put in place regulatory mechanisms to integrate land use and land use impacts with water management issues, but mostly just for highly erosion prone lands.[5]

The difference now is that land use rules for the purposes of water quality management are being proposed for our more intensively used agricultural land, including quite large areas of dairy, or potential dairy farming country. As well as potential environmental gains, this has major potential economic consequences as those proposing the rules are well aware.

The concept of 'licence to operate' or 'license to farm' is rapidly moving from being considered an absurdity a generation ago, to now increasingly becoming a mandated requirement.

So from an overview, a significant game change is afoot. The business of water and related land management is changing rapidly and new more sophisticated tools and approaches are being developed to deal with challenges involving more **complexity, greater risks and more difficult tradeoffs.**

This in turn means, that at all levels, we need to be as clear and precise as we can be to:

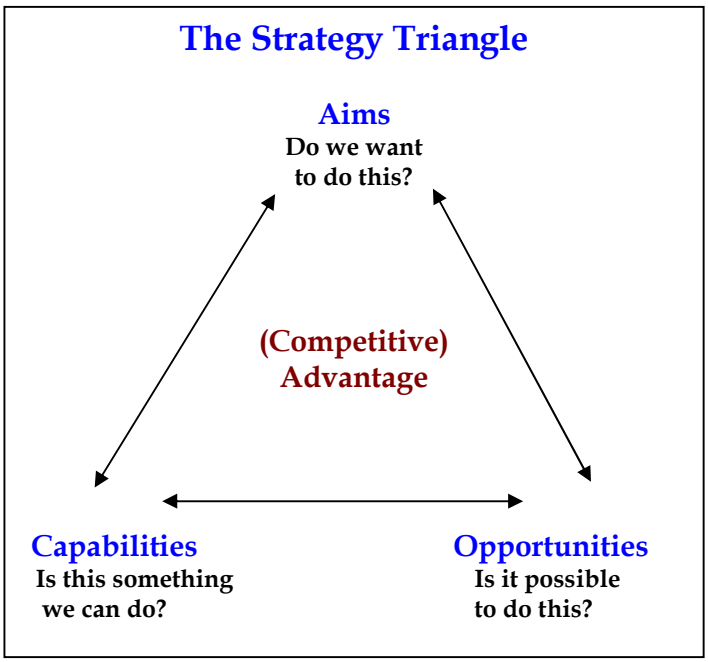
1. identify what our aims or purposes are;
2. carefully analyse, select and progress preferred options, or opportunities that exist now, or that emerge in the future, to further these aims; and
3. understand resource requirements and constraints, and develop our capability to deliver our chosen options.

[5] 'Notices of Safeguards against Erosion and Flooding' were land use regulatory instruments introduced in an amendment to the Soil Conservation and Rivers Control Act in 1959. However, for a range of reasons, (compensation provisions being one) they were sparingly applied and lightly enforced. They also applied to a comparatively small number of land owners and placed only relatively small economic encumbrances on the properties concerned - suffice to say they were all pretty low scale land use regulation compared to what is being progressed now.

This is the role of strategy. As professionals, it is essential that we think and act strategically.

What is Strategy and why is it important

So what is strategy, what is being strategic? Textbooks have been written on this subject, but here is a cut-down, bullet point summary[6].



- Strategy is something you **do** – it's **action**, but always thoughtful, purposeful action.
- Strategy is **not planning** – I am always concerned when I hear of people looking for regional water plans prepared under the RMA to be water management strategies. Similarly for the National Policy Statement for Freshwater. It is not a strategy. These are regulatory instruments that may or form important components or subsets of a strategy, or strategic approach to managing water, but they should never be considered strategies.
- Strategy is **a framework for decision making** based on generalised underlying principles – hence the importance of your organisation's corporate statements (vision, mission, aims, goals, values etc) as these are your ever present touchstones to assist you to test opportunities and make the right choices, whatever opportunities and challenges may arise, many of which will be unpredicted.
- Strategy is the **art of the general** – it's about how to take things forward - how to gain advantage. It's about making choices and doing the right things to shift the odds in your favour.

[6] The Strategy Triangle and many of the following points are modified from the teachings of Dr Stephen Bungay, Director, Ashridge Strategic Management Centre, UK.

- A good strategy is **realistic and coherent** – it is about testing **opportunities** (is **it possible** to do this?) with **capabilities** (is this something **we can** do?), against **aims** (do **we want** to do this?) to **provide advantage.**
- Strategy is about **doing the right things** and **making good choices.** It is different to **operations** which are about **doing things right** and **solving problems.**

So that's strategy, but to be successful you need to match good strategy with good operations. Effective business strategies essentially require the coalescence of three fundamental components:

1. Clear **purpose,** or good ideas – knowing what it is that you '**should do**'. You need to be clear about your vision, aims, mission and core values.
2. **Capacity** to deliver – knowing that you '**can do it**', that you have the people, resources, systems and processes to be efficient and effective.
3. **Support** from the range of stakeholders that are necessary to make you successful- knowing that '**others want'**, or will support you. This is sometimes termed your '**authorising environment'** and ranges from legal authority, governance support, key stakeholders, and staff buy-in, through to the 'clients' who you want to 'buy' your product or to do things. I am constantly amazed by people whose actions suggest that they don't understand the need to win hearts and minds to achieve sustainable success. Even draconian rules based approaches will eventually fail without broad support and reasonable acceptance. It is naïve and arrogant to think otherwise. To me, your conference theme with its reference to 'Our Community' implies a good message of acceptance of the strategic importance of enlisting **support**.

All three components of this 'should do/can do/others want' success formula are required, if failure is to be avoided. In addition, the more you can maximise each of these strategy components and their overlap, the more effective you will be.

This last strategy model in particular, which is a modified Harvard framework[7], is one that we have consistently used to drive the business at the Taranaki Regional Council. You can take by way of example, the very successful Taranaki riparian management programme, which is transforming the Taranaki landscape. It is a very large voluntary unsubsidised programme, a flagship for New Zealand, which is considerably more successful in its uptake than most comparable heavily subsidised programmes in the OECD. You can see how the development of this programme has benefited from continual visitation to the '**should do/can do/ others want'** success formula. You will hear more about this programme during the conference from others closer to the details than me, but from my oversight role:

1. We were clear about our objectives from the outset, that promoting riparian fencing and planting by the methods we have chosen was the right action – the thing that we '**should do'**. We have continued to analyse, study and refine our purpose and programme with local, national and international research, monitoring and effectiveness testing. This has firmed our resolve that for Taranaki, the riparian programme is without question the most cost effective action to take to protect and enhance our already generally good water quality. We have also added innovations like the bulk purchase and supply at wholesale cost good plants, not because we like running a plant brokerage, but because strategically, it was a good move – it was an opportunity to gain advantage and be more effective in achieving our aims.

2. We have worked hard on our capacity to deliver – our **can do**. There is no use having a good 'product' if you can't deliver it in a timely way. Investments in staff, training and technology have played a key role here. By way of example, our rate of productivity at the commencement of the programme meant it was going to take close to 20 years to have plans with 'all' dairy farmers – too long. In the final three big years of plan preparation we were pumping out over 300 per year, an order of magnitude increase achieved in significant part, from a built for purpose, international award winning GIS based software development.

3. Of course, the 'should do/can do' is all a waste of time, if the people and in this case the key people are farmers, don't want or **support** the programme. Relationship development has been critical and addressed by management just as carefully and deliberatively as the other two components. There is a lot of work and long term investment required here. Famers needed to accept that we are credible, serious in our intent, (which they knew from our compliance and enforcement activities), and critically that we are not the enemy. We have consistently made it clear that we want to see our farmers as prosperous and successful as possible, but **sustainably** successful – their sons and daughters and their sons and daughters. "Common goal – different roles' has been a strap-line often used.

Several other Council programmes have progressed successfully from consistently and continually applying the same strategic approach. Taranaki's biodiversity

[7] See for example, Harvard Professor Mark Moore's publications 'Creating Public Value', or 'Strategic Management in Government'.

programme, the sustainable hill country programme, regional gardens projects, and the self help possum control programme are good examples.

Suffice to say that I believe in strategy, in organisations that understand the role of strategy and that think and act strategically in all that they do. Strategy is required to substantially increase the chances of successfully addressing issues, especially complex multi-faceted issues like water management.

A New Zealand Freshwater Management Strategy and the National Policy Statement for Freshwater Management

New Zealand needs a more strategic approach to water management at the national level. Over the last decade we have seen many worthy gatherings, work streams, reports, regulatory instrument developments and think pieces. Some of the latest of these have included the Land and Water Forum's hard grafted effort, the National Policy Statement for Freshwater Management, the irrigation investment fund and the pollution clean-up fund. We have also seen more locally targeted national interventions as for Taupo and the Rotorua lakes. Without being specifically critical of any of these national interventions, it is difficult to see or accept that they have been conceived and advanced within a coherent broadly based, national strategic framework for water management developed via robust process.

An old Japanese proverb suggests that '*a good question is better than a good answer'.* The genesis of the NPS for Freshwater Management occurred during the time of the previous Government. While recognising people's good intentions, it was clear to me that the drive for and eventual decision to generate a national policy statement was not fundamentally based on a careful analysis of the issues and common understanding of the potential role of the instrument and its value proposition. Rather, there existed an atmosphere of a need for more national 'leadership' on water issues and for tangible action from Government. The NPS emerged as seemingly the big shiny tool, the apparent solution, to provide and drive many of the changes considered necessary. But frankly, in my view, across New Zealand, there was poor problem identification, basically too little specificity, and a highly varied and confused understanding of the constraints and opportunities provided by a NPS as an intervention 'solution' mechanism.

Let's be clear, the NPS is nothing more or less than a RMA regulatory mechanism. This defines and tightly constrains what it is and what it can achieve, and conversely what it is not and what it cannot do. Despite the wishes of some, NPSs are not the place for 'big hairy audacious goals' that haven't been value tested, or considered thoroughly and/or that may be nice to stretch for, but are actually unachievable. As with all legal instructions, the NPS needed to be constructed with precision and care and hopefully to add value by enabling flexible, adaptive and responsive solutions to be progressed in the future within a clear overarching direction.

The NPS as a statutory instrument is also subject to Part 2 of the RMA. The scope and content of its directions cannot be outside of, or contrary to those of the parent Act. It can provide policies and objectives and some of these can be quite directive, but it cannot contain rules or methods. Because of where NPSs sit within the hierarchy of the Act, they are extremely powerful, but please also note, that their practical implementation occurs through lower order instruments, being for example,

district and regional plans and policies, standards, consent processes and so on – thus there will be a roll-out period for its impact to fully bite.

Time will judge the effectiveness of the NPS. What is clear to me is that the Board of Inquiry's recommended statement would have been a disaster for the New Zealand economy. How the Board convinced itself that the appropriate economic use and development of water was not to be declared as a matter of national significance, remains beyond my comprehension. It is also contrary to my overarching concept of resource management and the RMA being about recognising and working with the incommensurable tensions of using, developing and protecting natural and physical resources. If it was solely about environmental protection and the RMA was strictly a 'no effects' directive, then decision making would be easy, albeit unrealistic and untenable, as, in my view, was the Board's proposal.

It is to the credit of the current Government, noting they inherited this proposed instrument, that they made substantial changes for the final adopted statement. Even with those changes, however, the section 32 cost-benefit analysis for the NPS was heavily qualified and unconvincing in respect of the value proposition. For the Taranaki Regional Council, however, we have taken the view that the NPS is now in force and as with many things, it will be useful if we are determined to constructively make it useful. We are and will do so.[8]

To reiterate, in my view, the NPS is clearly not a New Zealand freshwater management strategy and further I do not believe that it was conceived and developed as an outcome of a coherent strategic analysis or framework, as I have outlined earlier.

We have an important gap to fill for a nation where water is so critical to advancing our economic, social, cultural and environmental aspirations. We need to develop a national freshwater management strategy. We need to do this to improve our ability to make sound and coherent water management decisions at the national level, to reduce the risks of making seriously damaging national interventions, and to maximise our national competitive water advantage across all of water's many uses.

One of the sound recommendations of the Land and Water Forum is for a National Land and Water Strategy to be developed, although there was little detail provided.[9]

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[8] Appropriately in my view, the NPS charges regional councils with setting their own freshwater quality limits and environmental flows for all bodies of freshwater within their region, to give effect to the objectives of the NPS. This acknowledges that regions, and indeed catchments or sub catchments/communities within regions, each have specific water management issues that need to be addressed individually and that one size does not fit all. The requirements of the NPS are being factored into work programmes for the review of our Fresh Water and Soil plans which will commence this financial year. This will require additional work and resourcing but we believe that pragmatic and cost-effective approaches can be devised to give effect to the NPS. For example, aggregate limits for water bodies of a particular type or classification could be used to set limits and such approaches are provided for in documents supporting the NPS.

In many cases the objectives and policies of the NPS align well with the strategic objectives of my Council to drive improvements so as to maintain and enhance water quality. The so-called transitional policies of the NPS (Policies A4 and B7) which apply in the period before limits and flows are set, already raise the bar for certain types of resource consent applications and these policies have been incorporated into our Fresh Water Plan for implementation.

I note, however, that Objective A2 of the NPS is to maintain or improve the 'overall quality of fresh water within a region' and in my view this is appropriate as it allows for an 'unders and overs' approach so necessary when making resource management decisions in respect of use, development and protection of resources. I believe the same approach should have been applied to water quantity, especially relevant for a region like Taranaki.

[9] It appears however, that it would address the range of non-statutory means of implementing water policy with a NPS on freshwater setting national objectives and policies for water for implementation through the RMA. Report of the Land and Water Forum: A Fresh Start for Freshwater, 2010.

Start Points for an Effective National Water Strategy

Time precludes an extensive presentation on what a national water strategy might comprise. I have previously briefly discussed in general terms, what strategy is and the role of strategy. When thinking about a national strategy for freshwater management, however, I would start with a number of foundation positions:

1. Role and purpose of the strategy.

We need to define the role and purpose of the strategy, being essentially to provide a framework to describe **what** the national interest is, **when** a process or situation triggers a national interest action, and a basis for determining the type of engagement that might occur, that is **how** to engage and **why**. The strategy would aim to promote 'smart' engagements, profitable investments and **thoughtful, purposeful activities,** to make a positive difference for New Zealand. It would reduce the risk of harmful perverse outcomes.

Our national interventions need to be the equivalent of 'smart' laser guided bombs, as opposed to Bomber Harris WW 2 saturation 'carpet' bombing, which caused huge collateral damage, harm to reputation and often missed the specific military targets.[10]

There is a tendency at times for policy makers to reach out for simple solutions as in setting national environmental standards. They do this for all the right reasons because they think they will resolve issues, deliver better outcomes and that everyone can, albeit with some effort, comply with a uniform and simple requirement. For water management, the reality is almost always a great deal more complex, with consequent disappointment. [11]

My view is that the most effective national interventions will in the future be normally found to be specific site or project interventions where there is a clear national interest being compromised or in need of promotion, or perhaps a legacy

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[11] Many historians have suggested that in fact Harris' bombing strategy was cynically focussed on civilian casualties and property damage in a drive to undermine German morale and support for the war, rather than the publicised focus on military targets, seen as being much more within the rules of 'cricket'. But our clear wish for water management is surely to avoid collateral damage.

[11] In most cases national resource management regulations imposed as 'one-size-fits-all' over all of New Zealand will cause extensive unnecessary and perverse economic impacts. With rare exception they tend to be very clumsy interventions. The seemingly simple elegance of one size fits all, regulatory responses is generally a mirage! This is the real and quite legitimate reason why we have seen so few of them – not due to a lack of 'national leadership' or MFE incompetence as some have suggested – in fact quite the reverse. The NES on water metering is possibly an exception, as too a proposal for a NES on processes for setting instream/environmental flows, although the detail on the latter remains to be very carefully worked through. Both however, are also process/method based propositions, rather than quantitative, standard based water metrics.

In most freshwater resource management situations, apart from instruments that provide useful standards for processes and methods to be deployed (or, to a limited extent, broad narrative objectives), rules with specific metric limits and targets can only be effectively deployed at the catchment, aquifer or water resource scale, or sub-unit thereof.

For Taranaki we believe that we may be able to upscale some water quality metric targets and limits to a subregional level, for example Taranaki Ring Plain upper catchments, but we note that great care will be needed if we take these metrics beyond a 'guideline' use, because of the natural variability that compounds with increasing scale and also the increasing number of affecting variables that come into play. For efficient water quality management, there will always continue to be a primary focus on site and project specific, case by case analysis and determination with similar specifically focused compliance monitoring and review. We believe New Zealand, leads international best practice in this area, despite our capacity and need to continuously improve.

issue to be addressed. This will normally result in national financial assistance, often in partnership with others, the most recent example perhaps being the Lake Ellesmere/Te Waihora restoration project in Canterbury. Like the NZRU bailing out financially strapped provincial rugby unions there is a need to be careful to not 'reward poor performance'. However, there is also often a pragmatic reality to advance a change that clearly needs to happen.

National regulatory methods may also be useful but we need to think more about specific targeting of issues. There is no reason why a NES for example, cannot be applied at a sub-national or even sub-regional scale, if that was useful. I have little doubt that as problematic as they inevitably will be, land use rules to protect water quality will form an appropriate role in specific circumstances in some parts of New Zealand. However, we need to be really careful and discerning about where and when they have a good probability of adding value as a total investment.

Many of you here are land management officers, the new generation of soil conservators. The long standing approach that you have taken to your advisory role is to be specific; to be discerning and discriminating when providing advice on how land is to be sustainably managed. The LUC system sits at the heart of this, providing management information to be applied at a very local sub-farm scale, enabling economic and environmental ambitions to be maximised. This same paradigm needs to be central to our approach to water management. Obviously critical to improving our ability to be smart, discerning and specific in our national water engagements, is getting our environmental research and monitoring more efficient and effective – matters that I will later expand on.

2. National purpose of freshwater management– being accurate and specific to provide clarity of purpose

We need to recognise that the use, development and protection of freshwater are of profound national interest. The need is to be as accurate and clear as possible about our national aims and objectives for water and to do this to a level of specificity that is useful in providing direction for decisions. Critical to this, are the needs to reshape our relevant science and research, and state of environment monitoring and reporting, as critical first steps.

3. **National intervention is supplementary and complementary to the 'normal'**.

We need to accept that most water management decisions are normally made locally or regionally because that is where they are most often effectively and efficiently made.[12][13] Occasionally and exceptionally, circumstances present which

[12] The subsidiarity principle essentially promotes decision making to occur at the lowest effective level. This does not mean that all decisions occur at one level or that the 'biggest' most significant decisions are taken at the most commonly used level. For water management though, I am clear that most decisions are best and most effectively made regionally or locally. Critical also to this position is a need to also understand and accept the nature and characteristics of decision making in managing and allocating 'the Commons'. Resource management law is at its core, a values-based jurisprudence. Resource management decisions are about reconciling and balancing different, often conflicting values. There are no axiomatically right or wrong answers. Rather, decisions gain integrity because they move through a process of public participation and are subject to the checks and balances of our pluralist, democratic processes and systems. Elected people with electoral mandate to be deciders and to represent those communities most impacted by decisions, sit at the core of the integrity and durability of resource management decisions. In most cases these communities and representatives will be of local/regional scale.

[13] For the past decade local government has promoted changes to the Resource Management Act designed to speed up planning and consent processes (see, for example, LGNZ publications ' Enhancing New Zealand's Resource Management

involve specific matters of national interest, where carefully designed and targeted Government engagement is warranted to promote national interest outcomes. These situations can be very wide ranging and variable, from assisting a significant water infrastructure investment, or a situation where consistency is clearly useful and cost effective (for example, the water metering NES), an important consent application, or a 'whole of Government' input into a local process, or a major risk associated with a nationally significant water resource, to a specific Treaty settlement matter, or a significant 'system failure'.

National interventions may be very influential and impacting, but they should always be aimed at integrating with, supplementing and complementing 'the normal', more common regional activities.

4. Breadth of scope

We need to accept that the strategy needs to have broad scope across all national community outcomes – economy, environment, social and cultural. It needs to be future looking. There is a relevant saying from emergency management at the moment, to '*not focus on planning for the last disaster'*. We will also need to carefully consider and define its scope to recognise that water management is inextricably linked to land management with interconnections to other natural and physical resources.[14]

The scope of interventions will also need to include the full 'tool box', regulatory and non-regulatory; not just non-regulatory as suggested by the Land and Water Forum. Their restrictive suggestion is not consistent with having a comprehensive

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Performance 2004' and 'Rationalising Interventions under the RMA 2011') The escalating need for planning processes to be able to conclude in a timely manner, reflective of the need to adapt and respond to rapidly changing circumstances has been described as the need for **plan agility**.
A key acceleration change promoted by local government has been, in brief, to restrict the role of the Judiciary to 'points of law', as opposed to also hearing appeals on the substance of matters, or at least that there be a statutory presumption in the RMA against Courts making determinations on matters of policy. This is consistent with the doctrine of separating law and the Court's role of declaring the law, from policy, being the role of politicians. The recent ECan legislation is an interesting precedent, albeit for an unusual situation and so care should be taken if considering extrapolation.
Councils regularly make major decisions involving significant public funds and assets without people having recourse to a judicial body to litigate the policy decision. This is also essentially as it should be for resource management decisions.
Some argue that if the role of the Environment Court is to be reduced, then consent or planning hearings would need to be of a higher standard than presently occurs. Cross examination, for example, would have to be competently provided for to ensure that a rigorous examination of the issues was possible. I agree with this need. However, to extend this argument to the point where some have suggested that this would require that some, a majority, or all of the elected councillors presiding at hearings, be mandatorily replaced with unelected 'experts' (lawyers, retired judges, hearing commissioners etc) is, in my view, wrong in principle. A requirement to use commissioners rather than elected decision makers, fundamentally erodes the system of environmental justice in the RMA (see R J Somerville QC, 'Implications for Local Government of Proposed Changes to RMA' (1999)3 *BRMB* 13.). Decision making in RMA matters, where incommensurable values have to be weighed and balanced, is for those elected to represent the people who will be affected by a decision as earlier noted. The RMA also has procedures which provide for administrative justice by giving full access to these elected decision makers.
The more correct approach is to ensure that councillors are aided and supported with appropriate professional expertise, including, for example, designated counsel. Expert tradesmen may be engaged to ensure my house is painted correctly and proficiently, but the colour scheme will be my decision. If a council decides to engage experts or commissioners to assist councillors in the conduct of a hearing, or to chair a hearing, even to the point of delegating decision making powers (as, for example, should always occur when conflicts of interest exist), then I have no issue with that. It may even be good practice for large complex issues, but the decision should be that of the council. Policy decisions are for elected politicians. Elected members of our select committees and of our Parliament debate and decide matters of national interest with similar values based policy challenges. This sets the appropriate precedent in our democracy. Our efforts to provide plan agility need to be centered on supporting, not supplanting our democratic processes and elected representatives.

[14] Water quality and hydrological attributes as modified from the natural state are almost inevitably related to land use activities. Integrated land and water management and catchment management has long been an accepted basic first principles approach in New Zealand (for example as manifest in the titles of our 1967 'water and soil' and earlier 1941 'soil conservation and rivers control' legislation), long before many other countries. Our institutional arrangements have also long reflected a sound comprehension of these concepts.

and cohesive strategic approach. Access to all of Government's skill and capability may be required and indeed from beyond Government. This will involve a substantial operational challenge across all of Government, requiring significant paradigm shifts deep within and between its silos, building on directions of recent times.

Science and research

I earlier noted the need to reshape our relevant science and research and state of environment monitoring and reporting, to serve strategic requirements and specifically to inform our national purpose and aims for freshwater. So, what does this mean for science? Some obvious things I would think in respect of heightened needs for **quality, relevant, comprehensive, timely and usable science.** [15] How well organised are our science efforts are to address these needs. Almost 20 years ago, I chaired a Ministerial Advisory Group looking at this same question. Our task was to develop a broad strategic framework and overall goals for science and research to contribute to the achievement of sustainable land (broadened to include water) management. We were then to give advice on how to progress that agenda - all this within a reasonably constraining terms of reference.

The Group produced a comprehensive report titled: ***Science for sustainable land management: Towards a new agenda and partnership.*** Time doesn't permit me to present this report in detail here, but I commend it to your reading because many of its findings still seem remarkably relevant today[16].

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[15]Before exploring whether we are well organised to meet this challenge, a couple of matters are worthy of mention. The first of these is that it seems important at the outset, to be clear and accept the **place** of science and scientific information in resource management decision making.

The processes by which we make environmental management decisions in New Zealand are complex, challenging and often adversarial. When resource allocation decisions are on the table and the stakes are high, we must expect to be presented with some very partial views of what's right and wrong, what can and can't be done, and what should and shouldn't happen – all of course claiming the 'God is on my side', public interest high ground. That noted, experience cynically informs us that one outcome is generally certain and that is, there will be winners and losers. No one should be surprised if the losers look to criticise the winners, the processes (the RMA), or the referees (Judiciary, councils, Government), or all three.

At its core though, as earlier noted, we must acknowledge and accept that resource management decisions involve weighing different values. Disciplines such as science and economics do not provide complete answers as some might imply or wish. Rather they **inform** decision makers and decisions. I strongly endorse the views of those who promote the need for resource management decisions to be science based, but with the important qualifier that there are other considerations that are also extremely valid inputs**.**

A second underlying question I have about the role of science is that I wonder if we appreciate how increasingly important it is to describe not only how much we know, **but how much we don't know** about these very complex soil/water chemical and biological systems? It is an old cliché that we don't know what we don't know.

The often acerbic internationally renowned (now deceased) Harvard economist, JK Galbraith once observed that: ***'Economists make predictions not because they know, but because they are asked'.*** Although no doubt unfair if applied to earnest land and water scientists, it is my view that in general, water quality criteria and indices used as guides to policy and actions are fine and often useful, but their use in standards in regulatory instruments with force of law, should be approached with great care and caution because the levels of knowledge, certainty and confidence required, with consequent failure risks are much greater.

The key point to me in thinking about the "what we know vs. don't know" issue is that as we move to a more regulatory environment and as noted earlier where the stakes and risks are increasing and the trade-offs becoming more complex, it will be really important for the science community to connect clearly and well with policy makers to describe what we know and what we don't know in the clearest way possible. Big decisions with big consequences are on the table and policy makers need to be as informed as possible about the **risks** associated with their decisions based on the **confidence** they can have with the numbers.

[16] In summarising the situation of the time, the Group found that:

'In the face of the challenge of sustainable land and water management:

- There is widespread evidence of unsustainable land and water use practices

In summarising the situation of the time, some of the Group's findings were that:

- There is no clear overall national research leadership or focus for sustainable land and water management, and no effective overall co-ordination of research efforts
- The current science funding system and organisation does not promote complex interdisciplinary research on a large spatial scale and over long time horizons
- Long term monitoring and assessment of environmental trends are seriously inadequate.
- Due to lack of co-ordination or ineffective data management, insufficient use is being made of the vast amounts of data related to land management generated by science providers, local and central government.

The Group presented a goal: 'To embrace a **new agenda'** that aimed to provide for important changes including:

- A **long-term perspective;** and
- An **integrated, multi-disciplinary and systems-based approach** that provides for flexible and adaptable outcomes and considers environmental, economic and social objectives in decision-making.[17]

Objectives were presented in support of the goal[18] and the bulk of the report that followed provided discussion and methodologies and a large number of

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- In future, consumer demands in the marketplace for 'environmentally friendly' products, as much as the requirements of the Resource Management Act, will hasten the need to move towards sustainable land and water management practices
- There is no clear overall national research leadership or focus for sustainable land and water management, and no effective overall co-ordination of research efforts
- The current science funding system and organisation does not promote complex interdisciplinary research on a large spatial scale and over long time horizons
- The links between science, policy and land and water management are weak. There is currently no well organised and co-ordinated system for the transfer of the findings of land management research to land users and policy makers
- Long term monitoring and assessment of environmental trends are seriously inadequate. There is a poor understanding of many of our land and water resources and how human activities affect them
- No focal point exists for the comprehensive assessment and integrated understanding of land and water management impacts, or the modelling of those trends necessary to help set priorities for research and action
- Due to lack of co-ordination or ineffective data management, insufficient use is being made of the vast amounts of data related to land management generated by science providers, local and central government

[17] In expanded short form, the goal included:
'To embrace a **new agenda** that provides for:

- A **long-term perspective**;
- An **integrated, multi-disciplinary and systems-based approach** that provides for flexible and adaptable outcomes and considers environmental, economic and social objectives in decision-making;
- The incorporation of **land users' traditional values, knowledge, and practices**;
- A **precautionary approach**; and
- **Consultation, participation and partnership** among policy makers, land users, owners, scientists and educators at all stages of the science process.

[18] Objectives in support of the goal were as follows (abbreviated):

- **Comprehensive knowledge**: To instigate a comprehensive approach to identifying, characterising and monitoring our land and water resources and improving our fundamental knowledge of processes and systems.

recommendations to a number of players to take the "New Agenda" forward. The report was adopted by the Government with Research, Science and Technology Minister Simon Upton's strong endorsement in 1995.

Well frankly, it's been quite some time since I have been really close to this whole area, but my distant observations would be that we have made some reasonable forward progress on most of the objectives. For example, I am aware that many research agreements now place more emphasis on end user relationships and that more contracts are being let for projects involving longer timeframes than previously. I also sense a sharper focus on the questions of the day.

The recent Peter Gluckman promoted reforms are also, in most ways, positive and helpful. Collaborative arrangements between multiple providers and other parties are also being promoted and are more common. Regional councils' land and water database is an example of this. The Land and Water Forum, in recently progressing into their next phase of work, has identified the problems of multiple providers of science advice coming from different paradigms. It has usefully moved to drive the collaboration of different science providers to inform their work, by setting up a group under the rather impressive title of the 'Knowledge Community'.

But we need more than this. The split of our public science agencies into policy, a number of funders and a number of commercial competitive providers has long concerned me.[19] The upsides of providing competition into the provision of services are obvious and they have no doubt been substantially realised.

But I seriously wonder for an activity where long term focus, pan discipline collaboration etc, etc, are all such fundamentally required behaviours, whether we have got our structures right. The often unstated, but absolute prime objective of competitive, commercial companies is to grow business and revenue normally at someone else's cost. Competitive behaviours generally clash with the behaviours

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- **Addressing needs:** To ensure provision of timely, relevant information on priority issues, recognising spatial and temporal perspectives, strategic importance and risk, and the potential to achieve the necessary changes.
- **Organising and transferring knowledge**: To enhance the use by land and water users and other decision-makers of science by improving the communication of, and access to, relevant scientific knowledge.
- **Adequate resources:** To ensure the provision of adequate funds, people and other assets to meet the needs of a cost-effective science strategy for sustainable land and water management.

[19]For example, there have continued to be significant frustrations from regional councils in having their issues fully incorporated into the system, this despite some reasonably helpful initiatives like 'Envirolink' in recent times. I know there are considerable concerns from segments of the science community on the loss of seemingly critical skill sets and programmes without good rational .What's happened to the idea of a national environmental indicator and monitoring programme and ecosystem benchmark sites or a national spatial information infrastructure? Has work focused on the priorities identified by the diligent work of the 3 sub-national and 1 national science strategy committees? The more one examines, the more disappointing is the look of the report card – this despite the very dedicated and skilled efforts of the scientists at the workface.

No doubt some things have not happened or fallen away because they were not, in the event, terribly good ideas, or the world changed in some affecting way, but I am left wondering whether one of the 'big elephants in the room', one which was outside of our terms of reference to address, is at the heart of a good deal of the reasons for the lack of progress on some parts of the "New Agenda' that should have happened by now. Forget the polished mission statements of our research providers; we need to change the all powerful commercial drivers of behaviour to focus on the sustainable development/resource management agenda. We need to merge the 'green' with the 'brown' commercial drivers to lead the changes New Zealand needs.

required to support the vision, goal and objectives we indentified in the report I have referred to.

If any country in the world needs a commercially uncomplicated and strategic research focus on the sustainable development of our natural resources, it is New Zealand. Collaborative engagements between production oriented and protection focused providers, which are still essentially compromised by competitive commercial drivers, will not take us where we need to be as effectively as possible. The science task of informing resource management decisions addressing use, development and protection of our natural resources, or sustainable development if you prefer, needs to be deeply embedded within the culture of our research providers, not left to the hopeful outcomes of collaborative joint ventures.

More than just collaborations are required to generate core cultures focused on delivering the new agenda for sustainable land management research as presented over a decade ago. An effective freshwater management strategy for New Zealand will be handicapped unless change occurs.

State of environment monitoring and reporting

I also strongly endorse the need to dramatically improve our national state of environment monitoring and reporting. We need to see a huge improvement in the quality of the conversation we have been having as a nation about freshwater and its management. We need to have a much better understanding and discussion that recognises the national and international context of our issues.[20]

It is always disappointing, but now sadly never surprising to see plainly wrong and sensationalized media reporting such as the Manawatu River being the one of the World's 'worst polluted rivers'. What nonsense, but this seems increasingly to be the way for the media, with tabloid replacing competent journalism. It also seems to be something we are simply going to have to live with, albeit with some regret and frustration.

More concerning is the poor quality, accuracy and lack of context in the occasional reporting and associated communications from people and organizations who should perform better.[21]The key way to improve the quality of our national conversations is to substantially improve our state of environment monitoring and the communication

[20] Dr Kevin Parris from the OECD's Trade and Agricultural Directorate recently reminded us at a Palmerston North conference, that "while NZ's nitrogen surplus has been rising, it is still considerably below the OECD average, and that overall water quality in NZ is good compared to other OECD countries". The reality is that New Zealand is in relatively good shape and if we look at key ecological state indicators like macro-invertebrates, our trends are not alarming. Many of our state indicators are showing positive trends especially those related to activities like contact recreation. We also have challenges and issues, some of which are complex and challenging as is the case in most OECD countries, like diffuse pollution from farmed land. But we need to address these challenges within their appropriate spatial and temporal contexts.

[21] One notable example being the recent Ministry for the Environment fresh water 'league tables', using data from the NRWQMN, which ranked sites according to mean nutrient concentrations but without regard for baseline/undisturbed quality in the catchments, degree of degradation from baseline, site-specific influences, regional variability, trends, investment in enhancement, appropriateness of choice of parameters for a freshwater 'story', or the value of the network's sites for a national water quality 'story' given that they were in fact chosen as hydrological flow monitoring sites originally. This was, as noted by NIWA, ourselves, and several others a misrepresentation of data.

of that information. I have been very pleased to see the recent reports and government actions endorsing this need and responding.

That noted, there are two comments I wish to make. The first is for there to be a clear understanding that getting this right is no small task. It will require a significant and sustained investment – but such investment must be made. Not so much from a regional perspective, as generally confirmed in the recent OAG review, but from a national perspective we have serious gaps in what we are measuring, where we are measuring and how we are measuring.[22] If they are to be bridged, these gaps need to be nationally resourced[23].

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[22]By way of significant example, New Zealand water quality monitoring is heavily weighted towards physico-chemical as opposed to biological monitoring. We have deficiencies in our national physicochemical monitoring, but much more-so in respect of our biological monitoring and the lack of emphasis placed on it as a prime state indicator. I note the recent understating commentary by the Office of the Auditor General that '*the analysis carried out by NIWA as part of our audit of the four regional councils showed that the consistency of monitoring of biological variables (for example invertebrates and periphyton) could be improved. These types of variables provide potentially useful information for determining whether the regional plan objectives are being achieved'* (para 3.14). The OAG report noted that NIWA did not use the results of existing biological monitoring programmes across the four councils because it is not to the same standard as the physicochemical monitoring. The fact is that much of the world is now making biological monitoring the touchstone for water quality/ecological health state measurements. It is the best practice! We should be at the forefront of using it, not a laggard.

The primary indicator used by the **Environmental Protection Agency of the USA** to assess the state of its small streams and rivers, is to take account of the condition of the benthic macroinvertebrates (aquatic insects, crustaceans, worms and molluscs) at each location[22] . The USEPA notes that '*the WSA* (Wadeable Streams Assessment*) uses benthic macroinvertebrates as the biological indicator of ecological condition....**biological condition is the most comprehensive indicator of waterbody health**.....data on biological condition are invaluable for managing our aquatic resources and ecosystems. We can use it to set protection and restoration goals, **to decide what to monitor and how to interpret what is found, to identify stresses to the waterbody and decide how they should be controlled, and to assess and report on the effectiveness of management actions.**....macroinvertebrates are key organisms that reflect the quality of their environment and respond to human disturbance in fairly predictable ways...given the wide geographical distribution of macroinvertebrates, as well as their abundance and link to fish and other aquatic vertebrates, these organisms serve as excellent indicators of the quality of flowing waters and the human stressors that affect these systems...*'. The EPA uses a 'Macroinvertebrate Index' that is very similar in concept to the Macroinvertebrate Community Index used by the Taranaki Regional Council for more than 25 years. This approach incorporates factors such as the taxonomic richness (different types of organism groups), composition (relative abundances of different taxa), diversity, groups displaying differing habitat requirements, and tolerance to pollution, to provide an Index value for the aquatic community at each site.

Similar methods are used throughout the **European Community** and in other environmental jurisdictions throughout the world. The **EPA of Victoria, Australia**, notes *'Traditional water quality monitoring involves measuring physical and chemical aspects of water. Common measurements include pH, salinity, turbidity, nutrient levels and the amount of dissolved oxygen in the water. These measures are used because they provide a 'snapshot' of environmental conditions at the moment the samples were taken.*

***EPA has moved towards a more holistic approach to environmental assessment in rivers and streams, which incorporates biological indicators of ecosystem health**. The great value in directly monitoring the biological community is that it responds to all types of disturbances and toxicants, which can be assessed from relatively infrequent sampling of the community (for example twice a year). The nature of the biological community reflects the net effect of all environmental factors, including cumulative impacts over a period of weeks, months or years'.*[22]

Further, the cautionary note sounded by the **UK Technical Advisory Group on the Water Framework Directive** (*UK Environmental Standards and Conditions [phase 1] Final report April 2008*) should be carefully considered: '*We have noted above that this process for setting* [physicochemical*] standards gives only a statistical association between biology and chemistry. To use the standards we need good supporting evidence of cause and effect. For **phosphorus** there is a balance of evidence and the strong view of most experts that phosphorus is instrumental in the eutrophication in freshwaters. It is this understanding that underpins the standards proposed in this report. It remains a possibility, however, that the story may be more complex. For this reason**, **the use of standards to take important decisions about the control of eutrophication has in the past required an indication of actual or potential biological impact, in addition to the failure of a nutrient threshold. This is the approach for the Directives on Urban Waste Water Treatment and Nitrate, and for the methods devised for the Oslo and Paris Convention. We propose that a similar approach is used for the Water Framework Directive.***

*Although **nitrogen** may have a role in the eutrophication in some types of freshwaters, we consider the general understanding of this to be **insufficient at present for it to be used as a basis for setting standards or conditions**. The possibility is too strong that the statistical associations produced by these methods would represent correlation between nitrogen and phosphorus (and other factors), and not the standards for nitrogen that are truly needed to protect the biology. **For these reasons no standards for nitrogen are proposed** in this report.'* (pp30-31)

[23] I note and generally agree with the recent comment by the Office of the Auditor General, recording that '*each of the four regional councils we audited had adequate systems for collecting data on, and a good understanding of, freshwater quality in*

Secondly, how and by whom it is done, and who is assigned responsibility are very important decisions and decisions that will either constrain, or enable success and further opportunity – remember the successful strategy formula previously outlined.

The recent Government discussion document seeking public feedback on the proposals for a new Environment Reporting Act recommends making the Parliamentary Commissioner for the Environment responsible for independently reporting on the state of the environment. In my view this would be a mistake. State of environment monitoring and reporting should be the responsibility of the MFE and the PCE should stick to monitoring the efficacy of systems and institutional arrangements.[24]

Looking to the future, we should recognize and support a growing expectation and demand for evidence-based policy development and implementation and review. Any proposal, at a national level, to separate the evidence (environmental data and information agency) from the policy (policy development and implementation agency) is contrary to this philosophical approach.

Should the monitoring and reporting function be shifted elsewhere in spite of this, the Ministry for the Environment will still need to have quality in-house capacity for interpreting scientific data and information, in a timely manner. This can only mean there will be some duplication of scientific capability and function within both the Ministry and the monitoring agency- a luxury we can neither afford nor perhaps actually provide. [25]

It is important to remind ourselves of the fundamental purposes of state of the environment monitoring and reporting. It is most emphatically not to produce, once every five years or so, some notionally objective 'report card'. It should be to provide, **in the most timely manner possible**, identification of the most important and the **most urgent pressures** upon and **state** of the environment. It is to provide the **early detection** of emerging trends so **that timely interventions** can be sought and implemented. It is about identifying cause of environmental change so that actions can be developed; it is about **matching** monitoring to your actions, so that you can evaluate the effectiveness and efficacy of what you're doing. All of these points militate against separating your performance monitoring from your performance actions. At a time when probably most councils have timely and frequent reporting of environmental data to their communities as a priority, the emphasis upon a very occasional omnibus reporting mechanism as the be-all and end-all of state of the environment reporting has passed its use-by date.

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its region'. I am not sure that all councils would receive that endorsement. It is important to note, however, that councils collect information to levels suitable for their needs. That is their statutory duty under the RMA. National needs, which may include reasonable consistency across New Zealand, will not fully be met from a collation of regional data, because the needs are different. The differences, which in some areas are substantial, need to be nationally funded, if they are to be bridged.

[24] There is a muddle at present, between the environment linked responsibilities of the OAG, MFE and PCE that needs sorting, not compounding.

[25] Also of concern is the proposed 'cherry-picking' as to what a separate agency might report on. 'Whole of environment' reporting by an agency with 'whole of environment' responsibility is the only meaningful approach. At a time when connectivity and interdependences are becoming more widely recognised and appreciated, encouraging such a 'silo', ad hoc, and piecemeal mentality is not good strategic thinking.

Rigorous and ongoing state of the environment monitoring and reporting requires systematic, long-term, consistent, and comprehensive competencies. I question whether there is a real appreciation of the strategic role and the resourcing needed to undertake state of environment monitoring work across all domains of reporting. We need to get across this quickly and I commend the Government for its determination to do so. But we must get it right – it is strategically very important.

Summary

With greater competition for water and an increasing awareness of its value for a range of purposes, New Zealand is experiencing a need for more numerous and sophisticated water and related land management interventions. Our responses need to address more complexity, greater risks and more difficult tradeoffs. More than ever, the efficiency and effectiveness of management responses need to be very carefully considered and demonstrated. To be as successful as possible in our water management activities, New Zealand needs a more strategic approach at all levels.

The National Policy Statement for Freshwater Management is not a strategy, nor was it the product of a coherent and comprehensive national freshwater strategy.

We need to understand the role of strategy and develop a New Zealand freshwater management strategy. I think we all agree, that water for all its uses and values, is one of our most important assets, and looking to the future, a major 'competitive advantage for New Zealand that we should seek to leverage and maximise. Frankly it is arguably negligent to not be managing our freshwater within a coherent broadly based, national strategic framework developed via robust process.

Critical to our ability to have an effective national freshwater management strategy are needs to reform our related science and research, and similarly our national state of environment monitoring and reporting. If we do not shape and inform the questions and monitor and communicate the results of our responses with greater accuracy, specificity, and awareness of context, our national responses will carry unconsidered and unnecessary risks of failure and disappointment.

Close

Enjoy your time in Taranaki. Think about your work strategically and how the '**should do/can do/ others want'** formula can be applied to gain advantage.

Basil Chamberlain[26]

[26] I acknowledge the assistance of TRC colleagues Gary Bedford and Gray Severinsen