

Agenda Memorandum

Date 25 July 2017



**Memorandum to
Chairperson and Members
Policy and Planning Committee**

**Subject: Notes on Land Use and Water Quality
Conference 2017**

Item:

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Document: 1882164

Purpose

The purpose of this memorandum is to outline some significant themes that were presented at the international 'Land Use and Water Quality 2017' conference held recently in the Hague.

Executive summary

Participation at key conferences on themes central to the work of and issues facing the Council provide opportunities for reflections on and enhancement of the Council's policies and activities. They allow review and evaluation of what the Council is already doing or could do, and testing against developments and emerging interventionary approaches elsewhere. In this way the efficiency and effectiveness of the Council's programmes are continually promoted.

One of the Council's directors attended the week-long 'Land Use and Water Quality 2017' conference held recently in the Hague. The New Zealand contingent of 18 personnel, from regional councils and Crown research institutes, was the fourth largest of the 30 nationalities that attended. A presentation was given describing the Council's riparian programme, covering its design, scale, implementation, and environmental outcomes. The uptake and ecological success of this voluntary, unsubsidized, and large-scale programme, brought into the context of highly regulated, highly funded, and highly politicised European Union regimes, was a significant talking point.

A number of observations drawn from other presentation are set out below for the interest of Committee members.

The opportunity to participate in the conference is deeply appreciated.

Recommendations

That the Taranaki Regional Council:

1. receives the memorandum 'Notes on Land Use and Water Quality Conference 2017'
2. notes the themes that emerged at the conference.

Background

The largest contingents at the conference came from Denmark, Germany, and the Netherlands, with smaller groups from UK, other western and eastern European countries, the Middle East, and USA. Papers were presented across ten broad subject areas:

- systems functioning (the characteristics of the hydrological, geochemical, and biochemical drivers and processes that affect land and water);
- water quality monitoring and data management;
- climate change- implications for land use and ground and surface water quality;
- evaluation of national and regional policies and their effectiveness;
- quantifying the impacts of land management at plot, field, farm, and catchment scale on water quality;
- managing protected and sensitive areas for water supply and nature conservation purposes;
- decision-making processes- carrots and stick (stakeholders and community engagement, social and economic incentives, regulatory mandates);
- the multi-functionality of buffer margin management- sediments, nutrients, and biodiversity;
- achieving water quality through voluntary measures; and
- spatial targeting of interventions.

Discussion

Some of the key economic, sustainability, science, community engagement, communication and regulatory themes and ideas that were evident are as follows:-

- There was a major emphasis upon the need to focus on adopting the right measure in the right place at the right time if interventions were being considered- this means optimisation at the paddock scale and even the sub-paddock scale. There is a mood of a real turn away from a blanket, one-size-fits-all everywhere approach to regulation. Even where a regulatory approach is being considered, thought is going into designing the regulations to be multi-faceted to provide for a better fit to specific situations: eg different rules for different zones, differing degree of contribution to pollution, and/or different susceptibility to contamination.
- There was still a lot of nation-scale aggregation of load reductions and the reporting of overall ground water and surface water quality - but there is also growing concern that these load reductions may not be enough to achieve the water quality targets, or that if these are pursued further they may carry too high an economic/production cost to be viable in the long term.
- The blanket interventions are also increasingly recognised as inefficient and costly, and providing a poor incentive to landowners and land managers in that any gains at a local scale cannot be recognised and quantified.
- It is absolutely necessary to take the community with you if enduring and meaningful changes are to be achieved; this takes a major investment of time and

energy focused on engaging with communities, on a one to one level, ideally well before commencing or imposing the works or interventions that are to address the physico-chemical factors. The programmes that are seen to work are the programmes where there is a very high degree of ongoing community engagement and participation.

- Better farm and nutrient management can successfully be married to better economic performance, better environmental outcomes, and better productivity; notably, the examples given each had a high degree of ongoing farmer engagement as a common factor.
- Cost-benefit evaluations are becoming more central, requiring the weighing up of alternatives and determining which are the most effective and most cost-effective.
- There are a number of three-way partnerships- the farming community, the regulators, and the water companies who have to supply safe and clean drinking water to communities. Some interesting tensions around responsibilities and costs occur.
- Social and economic factors have to be added in alongside environmental. All three have to be sustainable. We're not there yet.
- The Water Framework Directive (WFD) requires good ecological health of waterways. The Nitrates Directive requires reductions in nitrate going to groundwater and the sea. But what happening was that the WFD was interpreted in the light of the Nitrates Directive. It is now recognised that this is inadequate if good ecological condition is the target.
- In Europe, 'environmental' is interpreted as meaning drinking water quality for ground water, management of phosphate-limited eutrophication for lakes and rivers, and management of nitrogen for coastal eutrophication. Nitrogen is seldom if ever mentioned in the context of fresh water ecological quality.
- You have to understand water flow, in order to understand nutrient flow (and to guide optimal location and choice of nutrient mitigation measures within the landscape).
- Even the best models in use are accounting for 50% or less of what actually happens in downstream/receiving environments as a consequence of upstream actions. In other words, we have at best only a crude idea of what works or of how much difference it might make. One should not offer hope when it cannot be substantiated. Alongside these discussions, there is ongoing work on identifying and quantifying nitrate assimilation transformations within groundwater systems, and exploring the implications for nitrogen load setting policy. Big changes in groundwater nitrate concentrations have been found to have little or no relationship with calculated nitrogen surpluses on the overlying farmland. Permitted derogations (allowances for higher nitrogen loadings above regulations) were not found to lead to increased nitrate.
- Nutrient use and flow models are used as the starter for an on-farm conversation, not as a regulatory tool.
- The connection between input nutrients and freshwater ecological health remains tenuous or elusive. As an example, across the Netherlands, the number of water bodies in good condition as indicated by ecological measures- macroinvertebrates, fish, algae, or water plants- have increased by variously 4-12% over 2009-2013, yet there has been negligible reduction in nitrogen and phosphorus exceedances over the same period. Habitat and hydrological factors are identified as the main potential contributors to improved ecological condition. At the same time, future reductions in nutrient loadings to waterways have been identified as an additional measure to be

pursued (while at the same time geographical differentiation of interventions is critical). Interestingly, nutrient reductions are sought via control of runoff and preferential flows (ie not via control of land loadings).

- There is still no clear link of how reduction targets can be set to achieve the eutrophication gains required. Targets and criteria are often set on the basis of a comparison with how things used to be, rather than with any knowledge of how things need to be for a given environmental endpoint. There is an increasing expectation that any policies and interventions must have a clear scientific basis and justification, and an awareness that this is not yet available.
- Silo science is being challenged; the question is how to create and best utilise multi-skilled teams.
- Interventions are needed across land management practices (the source), as well as at nutrient transport disruption nodes.
- Is water quality a nutrient discharge issue or a nutrient utilisation issue?
- Recognising and managing soil quality is emerging as a means to manage water quality.
- New Zealand is considered in Europe to have excellent water quality (and when you see the European data, we do). The degree of nitrate contamination of groundwater in Europe is staggering by NZ comparisons.
- There is a movement towards incorporating citizen science- developing methods and equipment usable by the general public, leading to a more aware and informed population and a better appreciation of water quality and its challenges and complexities
- Farming in some countries (not all) of Europe has become extremely highly regulated across every facet of activity.
- There is a degree of adverse sector reaction to environmental regulation, because of the costs and constraints they impose.
- Monitoring and measuring land uses and the application of regulations intended to promote better water quality is very demanding on resources and necessary, and is not done much. 'Manure fraud' (the under-reporting of the amount of manure and/or fertiliser applied to a farm, against regulated limits) is a real phenomenon.
- Both the getting and the interpreting of the right data are ongoing challenges.
- There is a very strong interest in riparian margins as an alternative to/in addition to controls on land management. The catch-cry is 'intelligent buffer strips'- ie, those designed intelligently to reflect the local situation, as distinct from the universal regulation of 10 m wide strips formerly proposed and now abandoned in Denmark. 'catch crops'- crops intended to capture and utilise excess and residual nitrogen within the soil, while providing supplementary income, a second arable crop, or farm fodder supply- also featured; but the additional soil disturbance (tilling) can offset some of the gains.
- This is all a costly and complex business, that takes a lot of time for clear gains to be made. The easy stuff has been done, but it hasn't achieved what is still or now required. The conference offered reflections on the validity of the policies, on the place of cost-effectiveness as a criterion, and on the options of voluntary versus regulatory intervention. The policy cycle, from more precise and quantitative problem definition, through formulation of feasible and defensible technical options, to policy formulation and testing, to engagement between policy makers and stakeholder groups, to policy implementation, and then to monitoring and effectiveness evaluation and feedback, were all topics for discussion.

There will be opportunity to further reflect on these observations within the process of developing the next *Fresh Water and Land Plan for Taranaki*.

Decision-making considerations

Part 6 (Planning, decision-making and accountability) of the *Local Government Act 2002* has been considered and documented in the preparation of this agenda item. The recommendations made in this item comply with the decision-making obligations of the *Act*.

Financial considerations—LTP/Annual plan

This memorandum and the associated recommendations are consistent with the Council's adopted Long-Term Plan and estimates. Any financial information included in this memorandum has been prepared in accordance with generally accepted accounting practice.

Policy considerations

This memorandum and the associated recommendations are consistent with the policy documents and positions adopted by this Council under various legislative frameworks including, but not restricted to, the *Local Government Act 2002*, the *Resource Management Act 1991* and the *Local Government Official Information and Meetings Act 1987*.

Legal considerations

This memorandum and the associated recommendations comply with the appropriate statutory requirements imposed upon the Council.