

ENVIRONMENTAL CONSENTS – HOW WE MIGHT IMPROVE THEM IN NEW ZEALAND

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ABSTRACT

Since 1991, the Resource Management Act (RMA or the Act) has been the umbrella statute under which all our wastewater projects have been consented, managed and monitored in New Zealand. Case law and appeals have also had an influence on how the Act is interpreted and we have also seen some major amendments to the RMA as our experiences have shown where it could be improved. Over the years we have also heard calls from many stakeholders and special interest groups to change or relitigate the Act, as well as promises from Governments of the day to “take a fresh look at the RMA”.

However, as Water and Wastewater practitioners, we should also see how we could better use the Act as it is, perhaps with some tweaks, so that the environment – particularly receiving fresh and marine waters – would be better served, managed and, in the long term, improved. With Central government strongly flagging change in how the 3 Waters are managed in New Zealand and recent recommendations from the Land and Water Forum (LAWF) to Ministers, change is in the wind in how point-source discharges are to be managed and monitored under national and regional regulation. This paper discusses some possible improvements, citing examples in the USA from the EPA and water utility perspective.

KEYWORDS

RMA, Consents, EOCs, Environmental Compensation, Land and Water Forum, TMDLs

PRESENTER PROFILE

As Global Water Business Development Manager and Technical Director with Beca Ltd, Garry is widely recognised as an expert in wastewater engineering with over 40 years’ experience in a wide variety of wastewater projects, both in New Zealand and abroad. He has a high profile involvement in many industry organisations, including Water NZ, IPENZ and the Water Environment Federation.

1. INTRODUCTION

Since 1991, the Resource Management Act (RMA or the Act) has been the umbrella statute under which all our wastewater projects have been consented, managed and monitored in New Zealand. Case law and appeals have also had an influence on how the Act is interpreted and we have also seen some major amendments to the RMA as our experiences have shown where it could be improved. Over the years we have also heard calls from many stakeholders and special interest groups to change or relitigate the Act, as well as promises from Governments of the day to “take a fresh look at the RMA”. A more recent national call has been about concerns for our fresh and nearshore marine water quality and how this is affecting, or could affect, our health, the ecosystems, our ability to irrigate and our international reputation for being “clean and green”.

2. RECENT DEVELOPMENTS

There has been increasing concern nationally and locally about the environmental state of our natural waters. This is in spite of over 27 years of regional councils permitting all water takes and point source discharges under the RMA and the very small number of National Policy Statements which are enshrined in regional plans. Many of the country's major wastewater discharges are to the ocean but the number of municipal discharges to freshwater environs is characterized by a few major ones (Hamilton, Rotorua, Palmerston North for example) and a much larger number of smaller community discharges. The introduction of the draft National Policy Statement for Freshwater Management (NPS-FM) has given further impetus to improving at a regional level our freshwater environment, including wetlands and estuaries.

Often, criticism for the lack of significant or even measurable improvement in freshwater quality has been directed towards diffuse sources of contamination arising from various land use practices, such as dairying, horticulture, forestry and pastoral farming with high application rates of fertilisers. The Land and Water Forum (LAWF) was set up in 2009 under a previous Government to enable these primarily diffuse sources of contamination to be explored more fully. The Forum produced a number of reports which, amongst many other conclusions, recommended that one of the most important things that government can do for all aspects of freshwater management is to ensure, through national instruments, that everyone – urban and rural – is using “good management practices” (GMPs) to achieve consistently high standards of discharge to the freshwater environment. For the reasons stated earlier, the focus of LAWF has been mainly on the rural/land use sectors even though the urban sector has been represented in the Forum workshops and meetings. However, this is not to say that the urban sector does not need to understand and agree on what are appropriate GMPs for the management of the 3 waters in urban settings, and the latest LAWF Report (May 2018) to the Ministers of Agriculture and Environment has a full section on “Urban Water Management”.

This report covers three key areas:

- The urgent need for identification of “at risk” catchments and the requirement for effective action plans to avoid further deterioration;
- The better management of sediments by expanding and improving erosion and sediment control programmes already underway;
- The establishment under the NPS-FM of catchment limits for water quality, in particular nutrients and with a focus on nitrogen.

What this means is that, in the current absence of a national framework (which may still come), the present regional council work plans will explicitly or implicitly result in an allocation of nutrient loads between non-point and point source discharges.

However, before one allocates any load allowances one must measure what is already there and decide from where these contributions arise. Unfortunately, the practices by which consents have been issued across the different regional councils for point-source discharges, and the manner in which they have been managed through imposed conditions and routine reporting requirements, has not made this particular “contaminant allocation” task any easier for regional councils to administer and for municipal councils to advocate for and defend current permitted contaminant loads – especially of nitrogen.

3. OVERSEAS PRACTICES TO CONSIDER

Going forward we should look at what GMPs would be appropriate to adopt in the urban 3 Waters sector, particularly in regard to water takes and wastewater discharges. Stormwater management and discharges to freshwater bodies and harbours are subtly different in that they are principally driven by land use and urban design as well as being “event driven”. However, the contributions of sediment (affecting receiving water clarity) and pathogens through contamination with sewage (affecting water contact and shellfish harvesting) should not be overlooked in an holistic approach to developing urban water GMPs.

In its early years following formation in December 1970, the USA Environmental Protection Agency (EPA) was faced with similar issues as NZ does now, but on a much greater scale of environmental damage from industrial and urban pollution and farming practices, with the challenge of how to fairly target polluters to maximize the benefits to the freshwater environment. In 1992, the EPA’s Clean Water Act introduced regulations establishing procedures for setting Total Maximum Daily Loads (TMDLs) which since then has formed the basis for restoring impaired waters by identifying the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.

TMDLs identify all point and non-point sources of pollution in a particular watershed. State environmental agencies (similar to our regional councils) complete their own TMDL assessments which are then reviewed and approved (or disapproved) by the EPA, an example of “co-operative federalism” that New Zealand could well follow. Application of the TMDL concept has broadened significantly across the USA to include many impaired watersheds, with one of the best known being the Chesapeake Bay TMDL programme, of which some details are given below as there are some particular outcomes that would benefit NZ consenting and freshwater management practices.

4. TMDL FOR CHESAPEAKE BAY (BAY), USA

On December 29, 2010, the EPA established the Chesapeake Bay Total Maximum Daily Load (TMDL), a historic and comprehensive “pollution diet.” This TMDL included accountability features to guide sweeping actions to restore clean water in the Chesapeake Bay and the region’s streams, creeks and rivers.

Despite extensive restoration efforts during the prior 25 years, the TMDL was prompted by insufficient progress through discharge management and increasingly poor water quality in the Chesapeake Bay and its tidal tributaries. The Bay and its rivers were heavily contaminated with nitrogen, phosphorus and sediment from agricultural operations, urban and suburban runoff, wastewater, airborne contaminants and other sources. The excess nutrients and sediment resulted in murky water and algae blooms which blocked sunlight from reaching and sustaining underwater Bay grasses. Murky water and algae blooms also created low levels of oxygen for aquatic life, such as fish, crabs and oysters.

The TMDL was required under the Clean Water Act and responded to consent decrees in Virginia and the District of Columbia from the late 1990s as the quality of the Bay had been on concern since the early days of the EPA. It is actually a combination of 92 smaller TMDLs for individual Chesapeake Bay tidal segments and includes pollution limits sufficient to meet state water quality standards for dissolved oxygen, water clarity, underwater Bay grasses, and chlorophyll a, an indicator of algae levels. Specifically, the TMDL set Bay watershed limits of 185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus and 6.45 billion pounds of sediment per year (US units quoted directly from the TMDL refer

<https://www.epa.gov/chesapeake-bay-tmdl>). This equates to a 25 percent reduction in nitrogen, 24 percent reduction in phosphorus and 20 percent reduction in sediment.

The TMDL is the largest ever developed by EPA, encompassing a 16.5 million ha or 64,000-square-mile watershed. The TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus and sediment across the Bay jurisdictions and sets pollution limits necessary to meet water quality standards. Bay jurisdictions include Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia.

One of the jurisdictions impacted by the Bay TMDL was the Hampton Roads Sanitation District (HRSD) which was formed in 1940 and services 1.7 million people in 18 counties and cities. Critically, it has 9 major treatment plants in Hampton Roads (a large harbour) and 4 smaller plants on the Middle peninsula discharging a total of 950,000 cu.m (249 MGD US) per day which eventually reaches the main Chesapeake Bay. The Bay TMDL has had a major impact on how HRSD plans the upgrades of its plants and how they renew and manage their individual discharge permits. Through an overall allocation of nitrogen and phosphorus to HRSD across all its plants (a "bubble" or "balloon" permit), the agency has been able to decide amongst its numerous WWTPs which plants are better able to be upgraded to advanced biological nutrient removal (ABNR) and which plants would be better shut down, with wastewater transferred to another catchment for ABNR treatment.

HRSD's accountability framework, along with other jurisdictions in the Chesapeake Bay catchment, includes developing its own Watershed Improvement Programmes (WIPs), two-year milestone reporting, and tracking and assessment by EPA of restoration progress and specific federal actions if the jurisdictions do not meet their commitments. It is both a "carrot and stick" approach in which the reasons for HRSD needing to continually work towards their own TMDL targets is transparent to its customers, who are the ones funding the upgrades but also benefiting from the improved water quality in their immediate and wider regions.

Importantly, the Bay TMDL also included targeted "backstop allocations" for areas where the WIPs from the different jurisdictions did not achieve the allowable allocations or EPA's expectations of reasonable assurance that those allocations would be met. These areas required a plan for enhanced oversight by EPA and contingency actions to ensure progress towards the overall water quality targets.

5. IMPROVEMENTS FOR NEW ZEALAND

Monitoring Practices

As the country moves towards a better understanding to how point and non-point discharges contribute to existing poor water quality and how they could be managed to achieve desirable improved water quality, we need much better information on the current status of all our water bodies and the discharges to them.

The recent LAWF recommendations to Central government on urban 3 Waters management include the following:

1. Develop standardised monitoring methodologies for urban waterways and establish (national) protocols for data capture, storage and sharing [the same should apply to discharges and takes – authors' added note]
2. Develop frameworks to guide the design and operation of remote sensors on stormwater and wastewater networks;

3. Specify methods for event-based sampling of water quality to capture the effects of intermittent and short-duration causes of poor water quality in urban environments (e.g. high intensity short duration rain events with wastewater overflows);
4. Develop frameworks to guide the design and operation of models to complement event-based sampling and longitudinal monitoring and enable forecasting of risk (to the quality of the water body).

The outcome of these actions will be the creation of a transparent, credible and defensible picture of the true health of all our freshwater and estuarine water bodies and from where the "contaminant loads" come, both continuously and on an infrequent (event-driven) basis, as well as showing seasonal and temporal variations.

The above discussion focusses in the more "traditional" contaminants of solids and nutrients which, along with pathogens, are the primary focus of the LAWF report. Recognising that Emerging (Organic) Contaminants (EOCs) in our receiving waters and soils are a high-profile issue for society, we need to know more about them before we can impose controls in consents. However, to do this we need to know what EOCs are being discharged, and how different treatment processes reduce them. Agreement is needed on a national monitoring and reporting programme of EOCs for selected discharges, reporting into a national database. The compounds would be agreed and mandated through new consents or consent variations and funded through either MoH or MfE on the basis that this is in the national interest.

Consenting Practices

It is not inconceivable that, by following the recommendations above, a standardised national reporting system could be quickly introduced into all discharge consents, either as they are granted or renewed in future, or at periodic reviews by regional councils. This should be done first in order to fairly allocate to urban and industrial dischargers allowable loads of suspended solids and nitrogen for their particular water sheds. In planning for this allocation, it is worth us, as an industry, promoting to national and regional regulators some new, fresh thinking in relation to how we manage discharges (and water use) from single urban jurisdictions such as our local Councils.

One method would be the "bubble" or "balloon" permitting of multiple discharges into large water bodies into which a number of parties discharge or a water utility discharges at a number of locations by specifying the maximum loads of contaminants that can be discharged within a certain time period (day, month, year), with dischargers able to allocate (or trade or transfer) these loads amongst their different discharges (refer to HRSD example above).

A second innovation would be the introduction of "trade-offs" or "environmental compensation/credits or offsets" where a water utility is able to make or fund environmental enhancements in the wider water catchment through means other than making large capital investments in upgrading its WWTP or wastewater network.

One example would be regional funding of a utility that was prepared to invest in advanced treatment technology and is able to produce recycled water in order to reduce its water take volumes in times of low river flows or droughts. A second illustration of this is how HRSD has decided to shut down some of its plants which were uneconomic to upgrade and to use the capital funds instead to improve the effluent quality at an adjacent plant, and in one instance inject very highly treated effluent into an underground aquifer which was suffering from over-extraction and saltwater intrusion.

A third advance would be to have a standardised “National Consent Conditions” template, based on a digital framework, which would be administered centrally by (say) Ministry for the Environment (MfE) or the NZ EPA and utilised by regional councils when issuing discharge permits. The template conditions could be supplemented by “Special Conditions” which may be applicable to the particular discharge or its location. Important information on contaminant loads and receiving water quality would either be uploaded automatically (see 1-3 above) or entered online by either the discharger or the regional council. A similar system exists already in the NZ Drinking Water Online Database administered by the Department of Health, so the data platforms and technological tools exist – this important “National Water Quality Database” just needs impetus and for Central government and regional regulators to enact such as system through RMA legislation and practices.

6. CONCLUSION

As New Zealand enters a period of change in the way in which 3 Waters are managed nationally and regionally, as well as facing up to the need to significantly improve our freshwater and estuarine water quality, we must prepared to change our past practices of consenting and monitoring point-source discharges – both municipal and industrial. By looking beyond our limited boundaries, and our experience of just 27 years of the RMA, we can adapt for our own purposes and unique island geography and climate the policy and practices of other countries and utilities that have faced and met similar water environmental challenges.

REFERENCES

Land and Water Forum Advice on Improving Water Quality: Preventing Degradation and Addressing Sediment and Nitrogen. Report to Ministers of Environment and Agriculture. May 2018