

LESSONS LEARNT FROM A COLLABORATIVE APPROACH TO NUTRIENT MANAGEMENT IN TAHARUA CATCHMENT

Brendan Powell

Hawke's Bay Regional Council

Abstract:

Taharua catchment is a microcosm of many of the issues facing New Zealand. These are compressed in both time (a relatively short history of development ~30years from native vegetation) and space (a small catchment of ~13500ha).

This headwater sub-catchment of the Mohaka River has received increased public attention as intensification of land use has correlated with increasing N levels in the Taharua stream, nuisance algae in the upper Mohaka and adverse impacts on the outstanding trout fishery recognised by Water Conservation Order. Two monitoring sites immediately downstream of two of the catchment's three dairy farms have the highest nitrate levels of any stream sites monitored in Hawke's Bay.

Council began meetings in the catchment to discuss water quality monitoring results with landowners and Fish and Game in 2007. A broader working group of key stakeholders was formed in November 2009 (Taharua Stakeholders Group -TSG) to develop enduring solutions.

Work with individual landowners and the TSG has so far resulted in:

- Acceptance of the issues and a commitment to working on solutions
- Agreement on desired outcomes for the catchment
- Provisional (subject to economic evaluation) agreement on making land management changes within 10 years to reach desired water quality target within 15yrs.
- On-farm changes to reduce nutrient losses.
- A significant decline in P levels in the Taharua stream.

The National Policy Statement for Freshwater management 2011: Implementation Guide, advocates collaborative work at the catchment level. This paper outlines some of the key elements of success along with challenges and issues for securing future sustainable management of the catchment.

Introduction:

Some current topical issues in New Zealand are:

- Land use intensification leading to degraded water quality.
- Growth of dairy into non-traditional dairy areas.
- Government investment to gain greater productivity from land. This is currently discussed in relation to the irrigation acceleration fund, but in the past has taken other forms eg Land Development Encouragement Loans.

- The National Policy Statement for Freshwater requires regional councils to come up with water quality limits and catchment nutrient limits by Dec 2030
- Which approaches are best? Regulation or non-regulation (participation, collaboration etc as mentioned by the Land and Water Forum)
- Foreign ownership of land.

These issues are all represented in some way in Taharua catchment.

Taharua catchment is a tributary of the Mohaka River and lies approximately 30km southeast of Lake Taupo. It is on the north-western boundary of the Hawke's Bay Region, bordering Waikato Regional Council and Bay of Plenty Regional Council's areas. The soils are pumice based.

Land development in the lower catchment began in the 1960's. The main development of the upper catchment began in the early 1980's with clearing of native vegetation and conversion into sheep and beef. This development was facilitated by central government, Land Development Encouragement Loans. Further public money was provided from the Hawke's Bay Catchment Board for erosion control works, which have largely been successful.

There are 3 large dairy farms occupying 35% of Taharua catchment and a large drystock, forestry and tourism operation downstream of these. The drystock and tourism operation is in foreign ownership and one of the dairy farms is currently under offer (subject to Overseas Investment Office approval) from a Chinese group. If this purchase is approved, it will take overseas ownership in this catchment to over 50%.

Land ownership has changed several times over the short history of development, and two of the dairy farms entered into receivership in the last two years. This background of unstable ownership has focused the group on working towards solutions that are not just dependent on the goodwill of people currently in the catchment, but will endure beyond changes in farm ownership.

Nitrate nitrogen concentrations in the stream have been the main focus of public attention. N levels have increased 2-3 fold in a ten year period. Two monitoring sites immediately downstream of the top two dairy farms have the highest nitrate levels of any stream sites monitored in Hawke's Bay. Phosphorus levels in stream have also exceeded the generic regional plan guidelines (0.015mg SRP/l) fairly regularly.

The Process:

Work in this catchment has been both on-farm with individuals and through the Taharua Stakeholder group (TSG). Work with the stakeholder group began at the stage of taking the issues to them with no predetermined solutions, but with a realisation that something needed to be done. Each meeting focused on building agreement. Where there was disagreement or blocks to progress we sought to identify what the barriers were and if there was any background work that needed to be done to understand these better, or steps to take to resolve them.

Early on in the process the group agreed that:

- Catchment issues need addressing

- They were willing to be fully involved in the process
- We needed to work towards certain and enduring solutions

The last point is one that we might now look at again. Uncertainty is a reality that has to be factored into any proposed solutions.

The group then went through a values exercise asking the question “What should care of the catchment look like?” This drew heavily on the ICM work done in the Golden Bay area. At the same time catchment modelling was undertaken by NIWA to understand the relationship between nutrient losses from land and concentrations in stream.

Through the values exercise, the TSG identified values that were grouped into four categories:

- People
- Biophysical/Ecological
- Economic/Sustainable future
- Recreational

The most commonly mentioned value by all groups was water quality, particularly in regard to clarity.

These values were transformed by the TSG into outcomes for the catchment. The Hawke’s Bay Regional Council (HBRC) science team used the desired outcomes to come up with water quality guidelines that were taken back to the group.

Amongst the uncertainty there were some things we could say with reasonable certainty:

- Current N loads in the catchment will not achieve the proposed guidelines.
- A further reduction of around 30 Tonnes of N leached would be necessary to meet these guidelines.

At this stage the TSG has a provisional agreement to meet the proposed water quality guidelines within 15 years by making the required land management changes within 10 years. This agreement is provisional on having an economic assessment of management options. This work is almost completed. Next steps depend on whether these options are within the economic resources of the landowners or beyond them.

Lessons Learnt so Far:

Collaboration

Collaboration can work, but is dependent on the people you are dealing with, and their willingness to be fully involved.

- You need a reason or issue to get a group together
- Self determination is a strong incentive to be involved. The alternative is that someone else makes decisions affecting their future ie legislation.
- Participatory processes need to start at the issues stage, not with “Straw man” solutions. It is then the role of the whole group to come up with the solutions rather

than be in a position of arguing against a pre-formed idea. This allows space for real participation.

- A critical mass of these groups will help new ones progress. We have benefitted from drawing on the work and experiences of groups in other areas and have been able to bring farmers from the Rerewhakaaitu and Okaro lakes and Aorere catchment to talk to the TSG. This helps normalise the idea that farmers can actively participate in the solutions.
- We need to decide on, and clearly articulate, targets for catchments. At present many farmers get nutrient budget outputs without knowing how these relate to desired outcomes for catchments. The only guidelines seem to be; lower is better. A target is required to assess ‘how good is good enough’?
- Stability is an advantage in stakeholder groups making progress. This applies both to landowners and representation from other organisations. Interactions and the ability to act as a community rely on relationships built up over time. Knowledge of the issues and systems at work also takes time. Introducing new members requires taking them back to ground the group has already covered.
- Real participation involves listening and learning as you go. It is useful to check with the group “where to next” as effective ideas emerge that no one person or organisation would think of in isolation.

Certainty vs uncertainty

- Certainty is expensive. Many nutrient loss mitigation options have a wide range of effectiveness. Which figures to use involve reasoned choices that may or may not turn out as anticipated. Simple and more certain solutions such as, converting land from pastoral use to forestry is very expensive. In this catchment we do not have a large independent fund to facilitate solutions like that.
- Dealing with uncertainty requires an adaptive approach.

Solutions

- We need multi-disciplinary approaches and “joined up thinking” rather than an approach of breaking our problems down to small units and dealing with them one at a time. Such an approach fails to recognise the importance of the linkages between the units and that the units and the system can be viewed in different ways.
- If we fix problems one at a time we may create new ones. An example of this would be winter grazing-off animals from this catchment in a neighbouring catchment in Bay of Plenty Regional Council’s area. This may cost effectively solve the Taharua issues, while shifting it for someone else to deal with later.
- We need to look at solutions for the whole system, not just on-farm or on the milking platform. This means increasing the size of the system we think about and looking at the whole chain. If animals are grazed off-farm, where are they going and what are the effects? If feed is being bought in eg. Maize, what are the effects where this is grown?
- Stakeholders are a very wide group. Banks and others we may not have traditionally included hold the keys to allowing implementation of some of the solutions.

Nutrients

- Different people doing nutrient budgets can get wildly different answers. When we began, nutrient budgets done by different people for the same farm had farm average N leaching values ranging from 15-35kgN/ha/yr.
- We need a common approach or agreed protocol of how to approach an area, so that different people make the same basic assumptions eg around level of detail entered or rainfall figures used.
- Reducing nutrient losses take 2 main pathways; less intensive/ lower cost, or increased spending on mitigation. In this catchment the lower cost approach seems to offer more promise.
- Winter cropping – This is a management practice that can double average farm leaching. As a large contributor to nutrient losses per hectare it is important to hone in more on this practice to look for improvements and alternatives.
- Herd homes or covered feed areas to allow controlled duration grazing. For one 3000 cow farm this would require 2.1ha of concrete and \$4.5million investment or 20% of the value of the farm. For all three dairy farms in the catchment this would involve 5.8ha of concrete @ \$12 million. Further assessment of this is underway.
- Ecosystem services values are difficult to quantify from natural areas such as wetlands that contribute N loss attenuation. However when these have been lost through drainage and modification the replacement value is prohibitive, and much greater than the development/drainage cost.

Overseas ownership

The second Chinese application to the overseas investment office, for purchase of a large farm in this catchment, was based around sustainability. It made the case that the previous NZ owners of the farm had failed to manage the land in terms of economic and ecological sustainability. The application then detailed how the applicant intended to do better. If this is approved, potential NZ bidders would have been outcompeted on the basis of more money offered in the purchase deal and also on the basis of ecological sustainability.

References:

HBRC. (2009) Taharua Catchment Nutrients from Land Use.

<http://www.hbrc.govt.nz/LinkClick.aspx?fileticket=Q1S8OaorfS0%3d&tabid=1068>

Reed. C. (2011). Taharua Catchment, Defining the Issue, Finding Solutions.

<http://www.hbrc.govt.nz/LinkClick.aspx?fileticket=y0gdxkqRCXw%3d&tabid=1068>

SIDE. Final Report for Southland Wintering Systems Project.

<http://www.side.org.nz/Top%20Links/SIDE%20Funded%20Projects/Winter%20Feeding%20Systems%20for%20Southland>

Powell, B.(2012). Taharua Cow Pads and Housing (Unpublished)