

Living Lakes Symposium Presentation – 16th November 2011

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Slide 1: Title slide – LUWQ – Opportunities and challenges

The management of agricultural diffuse pollution is at the heart of a national debate facing New Zealand between pressure to intensify agricultural production and the effects on the country's water resources. Nowhere is this more apparent than in the Canterbury Region.

Canterbury is home to many highly valued waters, however, it also accounts for 70% of irrigated land in New Zealand, approximately 500,000 ha. And this 500,000 ha is only half of the potentially irrigable land in the region. The aspirations articulated for Canterbury through the CWMS, of increasing the area of land under irrigation and improving environmental water quality, bring the weaknesses in the current methods for managing diffuse pollution into sharp relief.

Slide 2 – Talk outline

In this talk I will describe what we have termed the 'preferred approach'. I will also comment on some of the issues that have been brought to the surface through the preferred approach and look at some of the implications for farmers. I will finish with some of the lessons learnt.

Slide 3- Abstractions & groundwater trends

Looking at the quality of water resources in the region, it is clear that there is some degradation for both flows and water quality. This graph shows the recent trend in surface water abstractions. The surface water abstraction alone have more than doubled and have had an impact on mean flows for rivers and streams across Canterbury. For water quality, the map shows just one parameter - Dissolved inorganic N and the yellow and red dots indicate the increasing nutrient enrichment and we can see the greatest impact in the lowland streams.

It is generally agreed that that agricultural is a significant although obviously not the only contributor to this degradation.

Slide 4 – Opportunities and challenges

Canterbury is on a journey to try and find effective ways of managing agricultural diffuse pollution for water quality. On this journey there are some significant opportunities but also some challenges. The opportunities lie in the improved environmental outcomes and the potential for further development that new water brings. The challenge is in achieving the latter while meeting the community agreed outcomes for freshwater.

This paper describes some of that journey briefly describing what has been termed the 'Preferred Approach' to managing the cumulative impacts of land use on water quality. As a first step in this journey Environment Canterbury initiated a Land use and water quality project in 2009 using the Hurunui catchment in North Canterbury as the pilot study area.

Slide 5 – Hurunui catchment

The intention of the pilot was three fold –

- to develop a technical approach to assess cumulative effects,
- to use stakeholders and communities to make recommendations on the preferred outcome they want to see or are willing to tolerate for their local water resources, and
- thirdly to build a framework for managing those cumulative impacts.

Slide 6 - Logos

The development of the ‘preferred approach’ has been a strongly collaborative exercise involving a wide range of parties as can be seen from this slide. It would be nice to say that this collaboration has been all plain sailing but it hasn’t. I will touch on some of the lessons in this area later in the talk.

Slide 7 – Preferred approach – setting the scene

The preferred approach and the various methodological steps inherent in it, is based on a number of core principles. These principles recognise the fundamental importance of a collaborative approach, of the consideration of environmental, economic, social, and cultural considerations and of the need for adaptive management and a learning approach given the uncertainties and complexities inherent in managing the cumulative effects of land use on water quality. In its simplest form the preferred approach is the combination of two processes; one for setting catchment limits and the other for managing to these limits.

Slide 8 – Preferred approach – Setting limits key components

The process for setting limits is an iterative process and includes a number of steps including establishing the values that various stakeholders hold for freshwater. These values are inextricably linked to the potential for economic use and the degree of conflict between environmental and economic priorities. Scenarios are used to explore the extent of this conflict and also social and cultural implications of various development options. The information gathered through the scenario analysis phase is used to inform the discussions (or deliberations as it is called) around limit setting. Ultimately it’s about weighing up all the evidence, working through a negotiation process and making informed decisions around the limits.

In the case of the Hurunui pilot a separate stakeholder group was established to have these discussions. In future deliberations the relevant zone committee is likely to be central to the discussion process. The role of the stakeholder group or zone committee is to make recommendations to Ecan on preferred freshwater objectives. Ecan is then able to take these objectives, and convert them to in-stream nutrient concentrations and load limits. There is another step in here which I won’t expand on. That is the statutory process where the limits are included within the appropriate planning document.

The process as I have outlined all takes time. It is tempting to cut corners but in my view it is better to put the time in upfront to minimise the risk of perpetual on-going conflict and debate down the track. Ultimately, it's about developing enduring solutions which the majority of the communities are prepared to live with and support.

Slide 9 – Managing to limits – Fundamental approaches

Once limits have been set the question becomes how best to manage to these limits. At the most fundamental level there are two approaches that can be taken to managing to limits:

- The first approach is one where obligations on landowners are set and imposed by the regional council.
- The second approach is one where a high level of responsibility is retained by landowners and industry groups operating within an agreed framework of expectations.

The preferred approach for managing to limits represents a hybrid of these approaches but with emphasis on that later. The fundamental approach is to empower those responsible for, or who benefit from, land use effects on water quality within a catchment to develop their own catchment-specific and property-specific means to deliver on the agreed management objectives.

Overall the preferred approach for managing to limits is best described as a *collaborative self management approach* whereby industry and other stakeholders work within an agreed regulatory framework to achieve the desired outcomes.

The approach differs from a purely voluntary or purely regulatory approach in that the catchment targets will be 'regulated', but the 'on the ground management' is devolved to industry organisations and land managers. While the ultimate responsibility for the sustainable management of the environment rests with the regional council, one significant advantage of the self management approach over the conventional regulatory approach is that it allows internal solutions to be pursued as long as the agreed outcome or process is met.

This all sounds good I know but I suspect that a number of you will already be saying, 'we have heard this all before and how can we really be sure that it will work.'

Slide 10- Not a soft option

The preferred approach is not a soft option. The approach that I have just summarised is time bound and has a strong regulatory underpinning. It also assumes that commitment to this approach and to appropriate participation by industry should be locked in through a regional partnership agreement between the Council and primary sector and other stakeholders. At the farm level, an audited self management regime is expected. ASM

requires that farmers have a farm plan. Audit in the ASM context means an independent third party audit against agreed management objectives.

To give an example of how it might work, the recently notified Hurunui-Waiiau regional plan sets farming (dryland and irrigated) as a permitted activity provided these farms are part of an approved ASM programme by January 2017. If they are not then farming becomes a discretionary activity.

To summarise this section of the paper, limits have been set for the Hurunui and these are now being considered through the formal Hurunui-Waiiau Regional Plan process. A managing to limits – implementation programme has been developed and is well underway.

The next cab of the block is the Te Waihora catchment where initial discussions have been held with the SWZC. Over the next 12 months you will be hearing a lot more about this subject within this zone and I would encourage those with an interest in the area to get involved and be part of process of working through the preferred approach.

Slide 11 - Issues

In developing the preferred approach some really crunchy issues have emerged. Some of these issues we have resolved while with some issues we still have some work to do. I would like to touch on a few of the issues that have arisen.

- Who is the community? - Is it only those who actually live in the area or does it include those who visit the area from time to time? What weighting do you give to the legitimate views of both those who live in the community as against those who visit? This issue can raise real concerns within affected communities. Concerns about whether their views will be heard or whether they will be dictated to by so called 'outsiders.' The preferred approach provides for input from all stakeholders whether they live in or outside of the catchment but also recognise the need to actively engage with the local community (particularly farmers) throughout the process. Certainly, in my view, in order for land users to implement good management practices they must want to do so, they must know what to do and how to go about it, and they must have the biological, physical and financial capacity to do it. None of these key ingredients, - knowledge, resources and commitment, can be achieved unless people are involved to the point where they assume responsibility for improving land use and management. Active involvement upfront is key to making this happen.

- What's the starting point? In a purest sense you could argue that you could start the limit setting process with a blank sheet of paper giving equal weight across the four well beings (environment, economic, social and cultural). In reality it doesn't work that way. Like any negotiation process there will be a number of bottom lines. With the Hurunui pilot we had quite a lot of debate around what recognition should be given to the objectives within the NRRP and whether consideration of these objectives should be

elevated ahead of other considerations. The conclusion was that given their statutory nature that consideration of these objectives needed to be right upfront. The point I am making here is that when you go into discussion on these issues you are not starting from a blank sheet of paper and the playing field is not necessarily level.

- How do you deal with uncertainty and risk? Scientific uncertainty is a reality of the limit setting process. The degree of this uncertainty was brought home to us with the Hurunui work. More data and better computer models with time will reduce the level of uncertainty but it is unlikely that it will completely eliminate it. Add to this discussion the concept of risk and the level of acceptable risk.

Slide 12 – Managing risk and uncertainty

These tables are taken from the Hurunui study. The table on the left refers to the Hurunui at SH1. The table on the right to the Pahau, a tributary of the Hurunui. Down the left hand side of each table are a range of values. Across the top are a range of development scenarios ranging from largely undeveloped to fully developed. The coloured boxes indicate the likelihood that the values will be achieved. As you move from left to right the level of uncertainty and risk increases.

Slide 13 – Back to slide 11 follow-up

- Is all this effort worth it? As you can imagine the preferred approach (setting limits component) all takes time. As I mentioned the process for the Selwyn-Waihora zone is underway now. We are looking at a bit over 12 months to work through the process to the stage where limits can be included in the regional plan. Multiple this time frame up across the region and you are looking at several years. You have to weigh the benefits of all this up against the alternative which is to set limits based largely on environmental considerations. This may work in some instance whereas in other instances and in these cases it should be considered as an option. However, in other instances, taking a short cut approach runs a high risk of resulting in perverse outcomes such as severely limiting future development. What the preferred approach does is that it provides the opportunity for a good debate on the subject where decisions made are transparent and where the consequences of these decisions are clear.
- Is good practice enough? In some instances good practice may not be enough to achieve the agreed catchment limits. Some of the gap may be fillable through catchment scale mitigation options such as wetlands. However, if the catchment limits are set at a level that requires more than what is recognised current good practice then should the community be providing some form of economic incentives for this additional improvement to happen? I don't have an answer to this but this is an area of discussion that I think we should have in the very near future.
- What about lag times? I am told that the lag times in the Selwyn-Waihora system are in the vicinity of 30 years+. So, how do you convince a landowner to do something on their land today, (and probably spend money doing it), to reduce nutrient losses and where the results of this action may not show up for 30years+? While there is not an easy answer to this issue, what is sure is that if we don't start looking closely at how we can

reduce nutrient losses now then in 30 years time we may have passed the point of no return.

- Resourcing – Resourcing of the preferred approach is a major issue. Realising the opportunities that I have talked about comes at a cost. Resourcing both in dollar and capability terms is a major issue that both Ecan and the primary sector must face.

The question remains, so what does this all mean for your average farmer in the Hurunui or Te Waihora catchments or indeed through the Canterbury region? Clearly, farmers have a part to play in the setting of limits. Farmer and other stakeholder involvement is crucial at this stage. However, it's the managing to limits stage that I want to spend a couple of minutes on.

Slides 14 and 15 –Hurunui overseer data

These slides shows the results of some modelling work done as part of the Hurunui project on N and P losses under a range of land uses. What the results tell me is what we are seeing is a range in on-farm performance in terms of nutrient losses. Some of the range will be due to differences in soils types and management systems but I suspect a lot will be due to on-farm management. What these results tell me is that there are some farmers who are doing very well while there are other farmers who have scope for improvement in terms of reducing nutrient losses.

Back in 1991 I had the privilege of being part of the organising team for the first international Conference on SLM which was held in Napier. One notable quote from that conference was:

Slide 16 – 1991 conference quote

“SLM is not business as usual but a whole new game”

Come forward 20 years and the statement could equally apply today and in many ways is more pertinent than it ever was. The difference now to 1991 is that the imperatives for change are more urgent than ever.

I mentioned earlier the CWMS and opportunities that new water brings for the environment, production and economic growth. As a region if we are going to realise this opportunity then we have to address the LUWQ issue. What this suggests to me is that over time good practice will need to become synonymous with normal practice. On some farms this will mean significant on-farm, management and practice change. Whether this change occurs this year or in 5 years time is not the issue. The important thing is that the required changes do occur and that farming and farming practices are put on a path of continuous improvement in terms of reducing nutrient losses. Obviously the sooner things happen the better. However, we also need to recognise that in some instances people are making significant investments in change and these changes may take time. Despite all of this, we

have to keep it in mind that if we don't tackle the problem at source (on-farm), then we may well struggle to achieve the sort of outcomes that everyone is looking for.

Slide 17 – key lessons

Let me finish this presentation with what I see as some of the lessons from the Hurunui case study and the development of the preferred approach.

Quality and quantity

The Hurunui pilot was around setting water quality limits. By the time we got to the end of the pilot it was very clear that future exercises needed to combine quality and quantity. A combined approach is certainly the way we are heading in the Selwyn-Waihora zone.

Collaboration

Collaboration is the in-thing to do but it's not easy. You have to work at it and it takes time. The Hurunui experience has shown us this. Collaboration assumes a degree of trust between the parties. It has been said that trust is the lending bank for almost every transaction within a collaboration. Trust can take a long time to develop but it can be destroyed in an instant. Collaboration requires leadership. Leaders are needed in all the fields, to be prepared to draw lines in the sand and work with others to find ways forward.

Collaboration requires a process for consensus decision making. This can be real challenging but I have been amazed that when parties with sometimes widely differing views are prepared to work together to find solutions, that the solutions come despite the differences.

Agreed or accepted outcomes.

The use of the term outcome is important here as it, right from the start, opens up the opportunity for use of multiple mechanisms to achieve success. Rarely, when people are asked what they want for a water body, rarely will they say, a concentration of X mg/l of dissolved inorganic nitrogen .more commonly people express ideas such as I want to fish in it or swim in it, or collect food from it. It may well be that the best way to deliver that outcome is to have a concentration of X mg/l of dissolved inorganic nitrogen, but there may be other ways of achieving the same outcome – this flexibility is key.

Adaptive management

In the absence of complete information or completely certain information, catchment management for diffuse pollution needs to take an adaptive management approach whereby improved information, be that on new innovative mitigations, or data on environmental outcomes, can feedback into decision-making processes allowing adjustment of both desired outcomes and responses over time. The use of an adaptive management process requires a transparent and robust monitoring regime. Transparent data collection and results, and also how the monitoring link to actions.

Certainty

As a counter to this – agricultural units of time are seasons or years – and investments, such as some of those needed to improve practices, can be considerable, and therefore having catchment limits that change very frequently would be impossible. So there needs to be a long game and a short game strategy – the ability to assess and revisit overall cumulative effects on a longer return period to allow farmers some surety in planning for their enterprises, but with the ability to react to immediate or localised, non cumulative effect issues.

And finally – Clarity.

It is a crucial criterion that the process for managing diffuse pollution in a catchment gives clear and transparent and defensible targets or management practices for land managers. This is both to enable land managers to clearly understand any rules or responsibilities that might apply to them and therefore be able plan their enterprises accordingly, and also to form part of the monitoring programme - that can be audited and reported on – a point fundamental to the trust of the wider community.

Slide 18 Closing and summary

There is a whole lot more that I could talk about around the preferred approach but time precludes that today.

We are on a journey here in Canterbury to find ways of realising the opportunities that more water and new development brings but at the same time address the challenges that the vexed issue of land use and water quality brings. The preferred approach is a significant component of the roadmap for this journey. We haven't reached our destination yet but I am confident that we are on the right track to get there.