Proposed
Hurunui and Waiau River Regional Plan

Section 42A Report
September 2012

And Proposed Plan Change 3 to the Canterbury Natural Resources Regional Plan

Creating nutrient headroom

Prepared by

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Kaunihera Taiao ki Waitaha

1. Introduction

1.1 Author

1. My name is Ian Brown. I am employed part time by Environment Canterbury as a Principal Strategy Advisor. In this position I have taken a lead role in the development of the 'Preferred Approach' to the management of land use and water quality in the Canterbury region. I am also a Director of Ian Brown Consulting Ltd providing services to the rural sector and central and local Government. I have BAgrSci and MAgrSci degrees from Lincoln University. I have previously held positions with the Otago and Hawke's Bay Regional Council's and Hawke's Bay and Marlborough Catchment Board's, working with and providing advice to rural landholders on land management issues.

2. My specialist area is in the field of sustainable land management for which I have worked in for over 35 years. During this period I have worked extensively with land owners and primary industry organizations. Of particular relevance for this hearing is my experience in the use of statutory and non-statutory measures as a means of securing improved on-farm environmental management.

3. I also have experience in the promotion and use of risk based environmental farm plans. This includes work undertaken in the mid-1990's to develop an ISO 14001 based farm plan for North Otago farmers. Many of the concepts that were developed through this work have been picked up in the environmental farm plans which are now used by irrigation schemes such as the North Otago Irrigation Company (NOIC) and Morven Glenavy Ikawai Irrigation Company (MGI). For the past six years I have audited the farm plans which all farmers within the NOIC scheme are required to have.

4. Although this is a Council Hearing, I have read the Code of Conduct for Expert Witnesses contained in the Environment Court's Consolidated Practice Note dated 1 November 2011. I have complied with that Code when preparing my written statement of evidence and I agree to comply with it when I give any oral evidence.

5. The data, information, facts, and assumptions I have considered in forming my opinions are set out in the part of the evidence in which I express my opinions. The reasons for the opinions that I express in this evidence are set out in the part of the evidence in which I express my opinions.

6. The scope of my evidence relates primarily to the use of statutory and non-statutory measures as a means of securing improved on-farm environmental performance. I confirm that the issues addressed in this statement of evidence are within my area of expertise,

7. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

1.3 Content of the officer's report

8. This report is prepared under the provisions of section 42A of the Resource Management Act 1991 (RMA). Section 42A allows council officers to provide a report to the hearing commissioners on the proposed policy statement and allows the commissioners to consider the report at the hearing.

1.4 Explanation of terms and coding used in the report

ASM	Audited Self Management
CRC	Canterbury Regional Council or Environment Canterbury (ECan)
CWMS	Canterbury Water Management Strategy
DRP	Dissolved Reactive Phosphorous
Headroom	Means the amount of room created below a specified limit. This term is applied to the water quality load limit. The headroom is the difference between the measured load and the load limit specified in the HWRRP.
HWRRP	Proposed Hurunui and Waiau River Regional Plan
HWZ	Hurunui Waiau Zone or Waiau Hurunui Zone (the area defined in the CWMS as the Hurunui Waiau Zone or Waiau Hurunui Zone. These terms have historically been used interchangeably; the Waiau Hurunui Zone is identical to the Hurunui Waiau Zone)
L/s	Litres per second
m^3/s	Cumec (A measure of river flow. One (1) cumec is the equivalent to one (1) cubic metre per second or alternatively 1,000 L/s)
ZC	Hurunui Waiau Zone Committee (established under the Canterbury Water Management Strategy)
ZIP	Zone Implementation Programme

2. Scope of Evidence

10. I have been asked by Environment Canterbury to prepare evidence on the following areas:

a. Explain the essential elements of an audited self management (ASM) approach that will help ensure improved on-farm nutrient management practice.

b. Describe and explain the full suite of non-statutory approaches that are proposed and/or contemplated to be used in the Hurunui-Waiau Zone (HWZ) to encourage improved on and off farm nutrient management practice.

c. Based on the evidence of Mr Norton, describe the likelihood of achieving the loss rates he describes utilising a mix of statutory and non-statutory approaches.

3. Essential elements of an ASM approach

3.1 Background

11. The aim of the HWRRP in relation to the cumulative effects of land use on water quality is to maintain and improve water quality in the Hurunui and Waiau rivers and protect current values, uses and the mauri of the rivers, while ensuring the economic return from land is maximised. To achieve this, amongst other things there needs to be a reduction in nutrient losses from existing land use activities.

12. The HWRRP is part of a two-pronged approach to achieve the necessary reduction in nutrients to the Hurunui River. The approach includes a suite of non-statutory and statutory measures. The Hurunui Waiau Zone Implementation Programme (ZIP) sets out in some detail the non-statutory implementation actions which include a range of education, advice, leadership and industry initiatives. Reference is made to these actions in section 4 of this evidence.

13 The statutory provisions in the HWRRP include a requirement that any existing land use as at 1 October 2011 is a permitted activity provided that on or before 1 January 2017, one of the following is being implemented by the landowner or occupier:

a. An industry certification scheme, or

b. A catchment agreement, or

c. An irrigation scheme management plan, or

d. A lifestyle block management plan.

Any existing land use that does not comply with this rule becomes a discretionary activity

14. An industry certification system, a catchment agreement, an irrigation scheme management plan or lifestyle block management plan, are collectively what can be termed, Audited Self Management (ASM) schemes. The HWRRP sets out in schedule 2 the requirements that anyone of these schemes must meet. Section 3.2 below sets out what I believe to be the essential elements of any ASM scheme.

3.2 ASM definition, benefits and requirements

15. While ASM can be defined in a number of ways, Environment Canterbury has chosen to use the following definition:

"A process by which activities associated with resource use are implemented to achieve agreed outcomes and progress is measured, reported and evaluated, by way of an audit."

16. Within the context with which ASM is used within Environment Canterbury, ASM is essentially a risk management tool. The benefits of an ASM approach

as the primary tool for the management of on-farm environmental risks include:

a. It is a cost effective means of managing the environmental aspects of the farm business operation.

b. It creates a sense of ownership and buy-in and acceptance of responsibility for the management of identified risks.

c. It encourages the development of innovative local solutions to address local issues.

d. It sets a framework for adaptive management and continuous improvement.

e. It provides an educative pathway for achieving water quality objectives and can be easily adapted to tackle the actual issues.

f. It is collaborative, and importantly its focus is on achieving outcomes on the ground.

g. It establishes a social contract between the farming community and the wider community, providing the opportunity to build relationships and trust.

17. A robust ASM programme must have:

a. Strong governance with clearly defined roles and responsibilities

b. Clear programme targets and objectives

c. Transparent audit and reporting

d. Corrective action and enforcement procedures

e. Monitoring and adaption

18. The ASM approach as proposed in the HWZ context is a collective approach. This assumes that there is a collective entity/s which a landowner and/or occupier may choose, (or in some cases required), to be part of. The role of the collective is to organise and oversee the ASM programme, and set the approach that must be followed at farm level.

19. An ASM system must provide credible evidence of effective on-farm environmental management as demonstrated through the preparation, implementation and review of individual property farm plans. In my view this means that individual property plans must include as a minimum:

a. A process for identify and describing on-farm environmental management risks together with risk mitigation measures.

b. Appropriate management objectives and targets for each management area under consideration. (i.e irrigation management, soils management, nutrient management, riparian management and dairy effluent management). These management objectives and targets would normally

be set at a collective scheme level or could be prescribed within a planning document.

c. A list of management actions an individual agrees to undertake in order to 'do their bit' in achieving the management objectives and targets and ultimately the catchments water quality objectives. This effectively becomes a 'social contract'.

20. Individual farm plans must be auditable. This assumes that there is something tangible to audit. This may include objectives and targets, practices, and systems and processes. As far as is practicable the audit should be on-farm and be based on objective evidence which includes, actual data and/or reports, field observation and stated practice.

21. The farm plan should be audited on a predefined basis - typically every year for the first 3 years and then every 3 to 5 years thereafter provided full compliance is maintained. If during the audit discrepancies are found between the management objectives and targets, the actions agreed upon and the actual management being undertaken, a 'corrective action' pathway should then be implemented. Corrective action involves clearly documenting timeframes and further management actions to be taken to suitably address the issues found.

22. If an individual chooses not to follow the corrective action pathway then sanctions may be applied either through an irrigation schemes ability to 'shut off water,' or through the regulator. The pathway and processes for delivering sanctions need to be clearly set out from the onset of the ASM programme.

23. A reporting and monitoring system must surround an ASM programme. This allows the ASM programme to demonstrate whether its objectives and targets are being met by individuals. It should also assess the ASM programme contribution towards the achievement of the catchments water quality objectives. If it becomes apparent the ASM programme is not meeting its own objectives and targets and/or the catchments water quality objectives, the ASM programme must to be adapted – both at the programme and farm plan level.

24. The ASM process has been effectively used elsewhere, (notably by the North Otago irrigation Company and the Morven Glenavy Ikawai Irrigation Company), as a means of managing on-farm environmental impacts. I am of the view that the experiences gained and lessons learned from these programmes provides confidence that the process will work in the HWZ provided it is set up correctly.

25. Notwithstanding this, there are a number of risks associated with the use of an ASM approach as a primary tool for achieving best on-farm practice and ultimately the desired environmental outcomes. These risks are described in section 5 of this evidence.

4. Non-statutory approaches

26. The ZIP recommends a full range of non-statutory approaches to compliment the statutory measures. A project schedule providing specific goals, targets and actions was adopted by the Hurunui-Waiau Zone Committee in December 2011. The schedule is reviewed, updated and adopted in June of

each year. A copy of the schedule for July 2012 – June 2013 is included as Appendix 1 to this document).

27. The project schedule sets a series of goals to be achieved by 2017. These include:

    a. Good management practice = normal farming practice.

    b. Catchment scale mitigations agreed and/or in place.

    c. Farming within catchment nutrient load limits.

28. The project schedule also includes six areas of action with specific targets for each area. These include: vibrant network of sub-catchment groups; widespread demonstrated best on-farm practice; well informed farming community; strongly collaborative approach; highly innovative farming community; and healthy urban/rural interaction. I need to emphasis here the 'package' approach. Progress across all of the areas is seen as necessary if the goals as described in paragraph 27 of this evidence are to be achieved and is critical to the overall success of the programme.

29. Arising from this suite of action areas are a number of initiatives including:

    a. The formation of sub-catchment groups as a forum for the development of sub-catchment solutions and for information/knowledge transfer.

    b. The provision of assistance to the Amuri Irrigation Company and other interested parties in the set up of ASM programmes. These programmes include the implementation of farm plans at individual property level.

    c. Collaboration between primary sector organisations and Environment Canterbury in the delivery of a range of programmes to the rural community all of which are designed to contribute to the overall goals. It is proposed that the collaborative arrangement be cemented together through a 'local partnership agreement.'

    d. The establishment of a local monitoring forum to discuss progress towards the achievement of the goals. It is proposed that this forum meet at least twice yearly to discuss and review data from a range of sources including the water quality sampling programme, ASM programmes, and community knowledge.

30. While it is still early days progress has been made towards the achievement of the goals as described in paragraph 27 of this evidence. Land user groups have been formed in the Cheviot and Hawarden areas, and discussions are in progress with the Amuri Irrigation Company around the set up of an ASM programme for the scheme. Representatives from a range of industry groups have met and have agreed in principle to work in a collaborative manner wherever possible.

5. Likelihood of achieving loss rates

31. In the evidence presented by Mr Norton, he describes a range of measures (mitigations) that could be implemented at farm level to achieve the required

nutrient loss rates. In his evidence Mr Norton notes (Paragraph 24) that there are obvious implications of these mitigation measures at the farm scale including:

i) considerable variability in effectiveness between farms;

ii) significant cost to implement; and

iii) significant time to fully implement.

In his evidence, Mr Norton assumes that the effectiveness numbers provided reflect the long term overall potential reductions possible at a catchment scale, taking into account spatial variability and implementation time.

32. I have no reason to question any of the numbers or assumptions made in Mr Norton's analysis in relation to the effectiveness of mitigation measures. I would however, note that through necessity the Hurunui limit setting process adopted what could be termed a 'simplistic' approach to estimating the costs of on-farm nutrient mitigations. The potential gains to be made through improved irrigation, fertilizer and animal use efficiencies were not included in the calculations. The scale of these potential gains should not be underestimated and could be made at little or no net cost. (S Ford pers comm.)

33. In his evidence Mr Norton suggests, (paragraphs 35), *"for the Hurunui mainstem at SH1, there could be DIN load capacity for significant new irrigation (i.e. Scenario 3 ~25,000 ha) if full mitigation (Tier 1 and 2) is adopted throughout the catchment and only A block water is taken. If B block water is also taken then there is perhaps only capacity for half that intensification. It seems unlikely there would be capacity for further land-use intensification if A, B and C block water is taken. For DRP the pattern is similar, although taking B block water might put DRP limits out of reach. Certainly allocating C block water makes the DRP load limit unattainable."*

34. Mr Norton's evidence illustrates the difficulty of the task. To increase the overall irrigated area in the Hurunui catchment by 25000ha while maintaining water quality at State Highway 1, will require existing landusers to reduce their nutrient losses by between 30 and 50 percent. It is noted that there is a problem in applying a percentage reduction figure equally across all land users as this unfairly penalises those operations which already have lower nutrient leaching losses. A fairer system would be to benchmark all properties and then apply the percentage reduction to the average leaching loss for farm and soil type.

35. The actual task of reducing on-farm nutrient losses will be more challenging for some property owners than others. On some properties, significant changes in current farming practices will be required, while on others the changes required will be relatively minor. Notwithstanding the comment made in paragraph 32 regarding the potential for reducing nutrient losses through efficiency gains, it is acknowledged and expected that there will be a net cost to some land users in implementing change.

36. An analysis of the risks associated with the implementation of the programme to reduce nutrient losses from existing land users and thus creating headroom for new water users is set out in Table 1.

Table 1:

The Risk *What can happen?*	**Source** *How can this happen?*	**Impact** *From event happening*	**Proposed control strategies**	**Level of risk** **L / M / H**
Large number of farms leave it to 2017 to join an ASM programme	No incentive for existing farmers to be part of an ASM programme. Apathy "we have plenty of time" No schemes available for some farmers to be part of.	Plans to lower on-farm nutrient losses not enacted until after 2017 stretching the timeframe over which gains made.	Information-awareness programmes Working with AIC and other potential providers to implement ASM programme Industry initiatives to encourage uptake Strong support and encouragement from Zone Committee	Moderate
Level of nutrient loss mitigation required is not achieved through ASM and other initiatives	Programme adopted through ASM is not stringent enough to meet targets and/or no on-farm targets in place	Desired nutrient loss reductions not achieved.	Work with local land users and industry partners to translate catchment scale targets to on-farm scale targets. Develop programme of individual on-farm analysis to develop best options for each property. (Not in place yet)	High
Level of nutrient loss mitigation required is not achieved through ASM by 2017	Costs of mitigations and lack of local incentives significantly slow the process.	Desired nutrient loss reductions not achieved.	Work with Amuri Irrigation Company to encourage the adoption of 'good' farming practice as 'normal' farming practice across the scheme area. Work with potential developers to help incentivise the process. Emphasis on innovation to help develop affordable options	High

The Risk *What can happen?*	**Source** *How can this happen?*	**Impact** *From event happening*	**Proposed control strategies**	**Level of risk** **L / M / H**
			On-farm analysis to assist individual landusers find the best solution for their properties.	
ASM programme in place but failure to follow through on non-compliance	Adequate non- compliance procedures not in place.	Desired nutrient loss reductions not achieved	Environment Canterbury, AIC and industry partners to develop compliance protocols.	Moderate
Non-compliance not picked up	Inadequate audit process	Can raise false expectations and false hopes that gains are being made.	Industry initiated Nutrient Management Advisor audit accreditation programmes Work with AIC and industry partners to develop audit protocols	Moderate
Potential off-farm catchment scale actions fail to materialise	Lack of coordination and planning and/or Failure to secure funding source	Desired nutrient loss reductions not achieved	Sub-catchment groups Discussions with potential funding partners.	Moderate-High

37. The analysis indicates that:

    a. There are a number of significant risks associated with the proposed programme

    b. There are programmes or strategies in place and/or proposed to address these risks.

    c. There is a strong reliance on existing landusers to undertake actions on their properties to create the desired headroom that will allow further development.

    d. Industry, (particularly the dairy industry), Amuri Irrigation Company and the ZC have key roles in helping to ensure that the programme achieves the level of nutrient headroom required that will allow the full development potential for the area to be realised.

    e. This is a package approach. All components of the package must come together to ensure its effectiveness.

38. While the HWRRP sets limits for the Hurunui waterways it does not include a nutrient allocation mechanism which would allow individual nutrient discharge allowances to be assigned to each property. The risks which are evident in the analysis above are exasperated by this lack of an individual on-farm allowance. The need for an on-farm allowance was recognised during the process of establishing the Hurunui nutrient limits. At that stage the concept of establishing 'nominal' nutrient discharge allowances which sat outside of the Regional Plan was put forward (see Brown et al. 2011).

39. In my view, to successfully integrate an ASM programme, where the emphasis is on nutrient management, within the regulatory framework, the catchments water quality objectives and limits must be captured by the ASM programme. In reality this means the allocation of a nutrient allowances at farm level. There are a number of ways of establishing an on-farm allowance including;

    a. Benchmarking of existing land use and then applying a percentage reduction based on the mean.

    b. Calculating the maximum allowable losses at the bottom of the root zone that will meet the catchment target then allocating to farm level.

40 A nominal nutrient discharge allowance would be assessed as a 'target' in the scheme plan and individual farm plans instead of an 'absolute number' as would be the case in a regulatory framework. (i.e. as a plan rule). The audit assesses the confidence that the wider farm management system is achieving the target/s, alongside other agreed management actions. This approach provides clear direction and certainty for farmers and allows for the considerable error and uncertainty associated with models to be catered for.

41 In the absence of individual on-farm nutrient allowances, it is unrealistic to assume that landowners will know what the target is that they are aiming for. A landowner may well implement a programme to reduce nutrient losses but miss the target because they are not aware of the target.

42 I understand that Mrs White has recommended changes to Schedule 2 of the HWRRP. (specifically clauses 1f, 1h and 2c). In my view, the changes as proposed effectively address the issue outlined in paragraphs 38-41 above.

6. Conclusions

42 In responding to the three areas considered within the scope of this evidence I conclude:

i. The process of audited self management is an effective tool for ensuring improved on-farm nutrient management provided the process is set up from the beginning according to a strict set of key operating criteria.

ii. A mix of statutory and non-statutory measures will be required if the desired outcomes of maintaining water quality at or about current state while allowing for an increase in irrigated area is to be achieved.

iii. The approach put forward in the Hurunui-Waiau plan is a package approach. It is critical that all components of the package are implemented. The risks are such that failure to do so will jeopardise the whole programme.

iv. If there is anything lacking at the moment in the proposed approach, it is the lack of an on-farm nutrient allowance and a mechanism to enforce these allowances. In my view, the recommended changes to Schedule 2 which have been put forward by Mrs White, effectively address this issue.

I Brown

24 September 2012

References

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Environment Canterbury (2012): The preferred approach for managing the cumulative effects of land use on water quality in the Canterbury region. – A working paper. Report prepared for Environment Canterbury