

# Joint response to an invite for discussion and debate on the Draft Canterbury Water Management Strategy



## **Joint response to an invite for discussion and debate on the Draft Canterbury Water Management Strategy**

**TO:** Environment Canterbury

**FROM:** Horticulture New Zealand, Federated Farmers of New Zealand - Combined Canterbury Provinces, Irrigation New Zealand, Fonterra Co-operative Group, DairyNZ Incorporated, Dairy Holdings Limited. (For the purpose of this paper, the organisations have been collectively referred to as “**the Parties**”).

***New Zealand Winegrowers***, the national grape and wine industry organisation, had indicated an interest in supporting this submission and has asked to be kept informed of developments.

**ADDRESS:** PO Box 10 232  
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**1. Our discussion, debate and the decisions sought, are detailed in the attached schedules**

Schedule 1: General Submission  
Schedule 2: Specific Submissions  
Schedule 3: Comment on the Targets

**2. All the respective Parties mentioned above wish to be engaged in support of the content of this report.**

**3. Background for Horticulture New Zealand:**

3.1 Horticulture New Zealand was established on 1 December 2005, combining the New Zealand Vegetable and Potato Growers', New Zealand Fruitgrowers' and New Zealand Berryfruit Growers Federations, and also includes Olives New Zealand.

3.2 On behalf of its 7,000 active grower members Horticulture New Zealand takes a detailed involvement in resource management planning processes as part of its National Environmental Policies. Horticulture New Zealand works to raise growers' awareness of the RMA to ensure effective grower involvement under the Act, whether in the planning process or through resource consent applications. The principles that Horticulture New Zealand considers in assessing the implementation of the Resource Management Act 1991 (RMA) include:

- The effects based purpose of the Resource Management Act,
- Non-regulatory methods should be employed by councils;
- Regulation should impact fairly on the whole community, make sense in practice, and be developed in full consultation with those affected by it;
- Early consultation of land users in plan preparation;
- Ensuring that RMA plans work in the growers interests both in an environmental and an economic sustainable production sense.

**4. Background for Federated Farmers:**

- 4.1 Federated Farmers of New Zealand is a primary sector organisation that represents over 28,000 farming members. Federated Farmers has a long and proud history of representing the needs and interests of New Zealand farmers.
- 4.2 The Federation aims to add value to its members' farming business. Our key strategic outcomes include the need for New Zealand to provide an economic and social environment within which:
- Our members may operate their business in a fair and flexible commercial environment;
  - Our members' families and their staff have access to services essential to the needs of the rural community; and
  - Our members adopt responsible management and environmental practices.

## **5. Background for DairyNZ, Fonterra and Dairy Holdings:**

### **5.1 DairyNZ**

DairyNZ is the industry good organisation, representing New Zealand's dairy farmers. Funded by a levy on milksolids and through government investment, our purpose is to secure and enhance the profitability, sustainability and competitiveness of New Zealand dairy farming. We aim to do this by leading innovation in world-class dairy farming and by working always in the best interests of New Zealand's dairy farmers.

### **5.2 Fonterra**

Fonterra is New Zealand's largest business and a major contributor to New Zealand's economic, social and cultural well being. Fonterra's business is based on New Zealand's natural advantages of water, sunshine and grass. It draws upon New Zealand's long heritage in farming, and New Zealand's international reputation for technological and scientific innovation in pastoral and food production technology. Fonterra, while global in its outlook, is firmly based in New Zealand.

Fonterra is committed to a long term, sustainable future in New Zealand. Fonterra recognises that sustainability requires both farming and manufacturing to be investing in practises, technology and decision making that manage to strike the right balance between economic growth and environmental management.

### **5.3 Dairy Holdings**

Dairy Holdings is a New Zealand registered company with 100% of its farming assets in the South Island that are managed from the Group's Timaru office

For the 2009/10 season, the Group will operate 58 dairy units on 14,198 effective hectares, milking 42,148 cows to produce approximately 14.9 million kilograms of milk solids. In addition to its dairy farms, Dairy Holdings operates 13 large-scale grazing and dry-stock properties in Mid-Canterbury, South Canterbury, Northern Southland and West Otago. These drystock farms are responsible for the management and return of approximately 7,200 in-calf heifer replacements to the dairy units each year and also provide dairy cow winter grazing and carry dairy service bulls.

The Company is committed to achieving consistent and repeatable levels of profitability predicated on simple, pasture based management systems.

This simple pastoral based farming approach has already enabled a significant number of the Group's 300 farm staff to progress through the Group's employment structure to Contract Milking, Lower Order Sharemilking and 50/50 Sharemilking positions, and subsequently farm ownership.

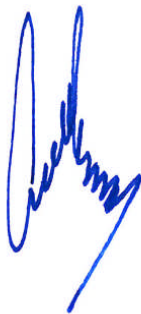
The drive to maximise shareholder profitability, while at the same time satisfying staff career progression, has resulted in approximately one-third of the Group's farms being operated by 50/50 Sharemilkers. These farms are generally the smaller dairy units of up to about 800 cows in size. The balance of the larger farms are operated by Managers and Lower Order Sharemilkers. This structure ensures all operators remain focused and motivated while growing their businesses within the Group.

Of the 71 farms operated by the Group, 56 farms are located in the Canterbury region and are irrigated from surface river flows (with and without storage) and groundwater. Irrigation systems adopted include borderdyke, rotorainer, K-line, centre pivot and sprinklers. Accordingly, Dairy Holdings is the largest Irrigator in Canterbury and will be the farmer most affected by the CWMS.

#### **6. Background for Irrigation New Zealand:**

INZ is a national body that promotes excellence in irrigation development and efficient water management throughout NZ (New Zealand), based on the principles of responsible and sustainable management of water resources. INZ is a national organisation that represents the interests of 3,500 irrigators totaling 350,000ha of irrigation (approximately 50% of NZ's irrigated area). All the key irrigation service providers (trade and consultants) are also members.

**Thank you for the opportunity to inform discussion and debate on the Draft Canterbury Strategic Water Study. From now on in the document, this will be referred to as "the Strategy".**



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Date: 26 February 2009

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## SCHEDULE ONE: General Submissions

- 1.1 The Parties have a major stake in the social, cultural, economic and environmental future of Canterbury. The Parties have made significant submissions and presentations on the proposed Natural Resources Regional Plan, and continue to engage constructively with local government on both national and Canterbury specific water management challenges. For these reasons the rural sector must be represented on the proposed Tripartite Committee.
- 1.2 The parties support the direction of the Strategy. In particular:
- The vision and in general the principles.
  - The emphasis placed on parallel development (i.e increased resource efficiency – water use and nutrients – and increased reliability of water from new storage and distribution of infrastructure).
  - The commitment to economic models of the costs and benefits of different water management scenarios.
  - Water users within zones having more ability to determine how the Strategy’s Vision can be achieved.
- 1.3 The Parties also support the spirit of the proposed collaborative approach. It is recognised that there is potential for the Strategy to reduce conflict and avoid costly litigation. But the parties to this paper are concerned that the detail of the approach needs to be further worked through before this potential is realised. Our key areas of concern are outlined below, with some suggestions for a way forward.
- 1.4 *Regulation process and intent*  
The Strategy requires a regulatory framework. This is recognised and a number of ‘implementing’ options are suggested on pages 46-48. The timetable notes that a working party has been established (or is to be established shortly) to discuss ‘legislation and authority’ with central government.
- Far more certainty about the process is required for organisations engaging in the Strategy. There has already been massive commitment to the proposed Natural Resources Regional Plan. An important element of building trust is an outline of the proposed regulatory path and the timeframes, for consideration.
  - Further information is required about what new powers would be sought for the zone and regional water management committees and the national tripartite committee. This is mentioned in pages 44-45 of the strategy.
  - Once the Strategy has been ratified by the community, it would be beneficial for enabling legislation to address the potential for appeals through the Environment Court.
  - We require further information on why there is a need for the Water Executive to be semi autonomous and question why this could not be set up within the existing bureaucracy of the Canterbury Regional Council. We also require clarification of how integrated land and water resource management planning would occur with a semi autonomous Water Executive.
  - There is some concern about the number of levels to the new bureaucracy and the parties to this paper note and affirm the risks identified on pages 46 – 47. The parties support in principle the ‘subsidiarity’ concept.
  - It is unclear how the Strategy proposes to incorporate the work currently being progressed as “Variation 27” related to land use effects on water quality, and the

current work being undertaken on charging mechanisms for State of the Environment monitoring activities.

1.5 *Transition phase*

The timetable for transition and implementation is not feasible. Particularly, the Strategy points to appointment of the zone and tripartite committees within the first quarter of 2010. Parties consider that terms of reference and support for these zone committees need to be carefully thought through ahead of them being set up if they are to be effective. Further detail on this can be found in Schedule 2.

1.6 *The Vision, Principles and Targets*

Parties to this paper agree that the Vision, Principles and a limited number of region wide targets must be set prior to resolving the detail of the Strategy. The vision is useful, and reflects many of the values that parties to this paper seek. The Principles and priorities are generally supported<sup>1</sup>. The division into secondary and primary priorities; primary and supporting principles is not. Successful achievement of the Vision requires all principles and priorities to be met.<sup>2</sup>

Land use flexibility is also a key component of rural economic success and a principle of maintaining land use flexibility should be included in the Strategy.

The Mayoral Forum has stressed that it wants realistic targets established. The parties support some of the targets but are concerned that others are very aspirational. We also think that it is critical for zone committees to have 12 months to confirm which targets provide the appropriate focus in their zone. Further comment is provided on the targets in Schedule 2 of this paper.

1.7 *The proposed entities, executives and committees*

The parties have agreed to provide this shared perspective on the Strategy to support the collaborative approach and assist the council with deliberations. The process of deliberations should provide for an economic forum where the interested parties can learn more, and comment about the process arrived at. This aligns with the comments made in section 1.2.

The range of bureaucratic institutions, along with the functions, powers and duties they may have require a due diligence process, to explore the likely costs of the current proposal, and to allow comment on other alternatives in more detail. For the parties to this paper, this discussion should be held prior to commitment or endorsement of this approach. It would also be useful to conduct some due diligence on the costs and benefits of having the proposed 10 sub zones to the Canterbury region.

If possible the number of sub zones should be reduced by amalgamating proposed neighbouring sub zones around the main alpine rivers. For example the following proposed Water Management Zones could be amalgamated thereby reducing conflicts between these zones:

- Kaikoura with Waiiau-Hurunui
- Waipara-Waimakariri with West Melton
- Christchurch City with Banks Peninsular
- Waihora/Ellesmere with Ashburton

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<sup>1</sup> More detail is provided in schedule 2

<sup>2</sup> This is in essence a Part II argument, recognising that section 5 of the RMA has primary weight over other sections, and that the proposed division of principles and priorities in the Strategy is not necessarily supported by the order of priority provided in sections 7,8 and 9 of the Act.

- Lower Waitaki with Upper Waitaki

Amalgamating the Waihora/Ellesmere and the Ashburton sub zones would also recognise that the majority of existing Rakaia River water takes flow north. This is because the Rakaia River terrace to the south presents an energy and pumping challenge, (particularly in the inland plains) while the takes to the north are largely gravity abstractions.

Further, the Implementation blueprint in Section 5 implies that groundwater storage is the only infrastructure proposed to deliver reliable water to the Central Plains. We understand that whether or not groundwater storage can enhance reliability for all of the Central Plains has not yet been proved. Until this has occurred the parties contend that a large communal reservoir should be the first priority for delivering reliability of supply. Amalgamating the Waihora/Ellesmere and Ashburton sub zones would keep all options open and ensure that the Waihora/Ellesmere sub zone is not disadvantaged if groundwater storage is subsequently shown to only provide reliable water for parts of the Central Plains.

Economic assessment models are being developed (page 55 of the Strategy). These models should be able to differentiate between a broad of rural land use scenarios.<sup>3</sup> It is appropriate that sectors have the opportunity to comment on the models that are being factored for consideration.

#### 1.8 *The Water Executive*

The role of the Water Executive is unclear and explanation is required about why the Regional Water Management Committee and the Water Executive need to be split. Further explanation would be helpful. It should also be clarified if it is the intent that the Water Executive would undertake work as directed by the Regional Water Management Committee.

#### 1.9 *The Water Infrastructure and services entity*

Utilities in New Zealand are currently able to charge appropriate rents and rates for the use of infrastructure and services. It would be helpful to see the range of public / private options considered by the Mayoral Forum, and the reasons why the “water entity” model has been suggested as appropriate.

The governance arrangements propose that the public private partnership be a 50/50 joint venture however the entity is to remain a council controlled organisation. The parties to this submission are uncertain that this model would be attractive to investors.

It would be useful to see why public / private company options or cooperative models were considered unsuitable. Some explanation of the options considered and discounted is required.

It is also unclear how much capital contribution (separate from national government support) will be provided to enable the partnership. Parties would also like to see how an obligation to supply water in return for a levy paid would work in practice and how water supply for environmental / ecological purposes would be managed within the proposal.

#### 1.10 *Voting structures – appointment of committees*

Parties to this paper seek further information on how appointments will be made to the zone, regional and tripartite committees. The parties also would seek time and opportunity to inform

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<sup>3</sup> As an example, ECAN often takes the approach of combining arable and horticultural farming models. As a minimum, horticultural fruit production models should be developed and it should be recognised there is a significant degree of variance between fruit production and the traditional Canterbury mixed arable and broadacre vegetable cropping farms.

the process and to inform membership / stakeholders of how they can participate. There is an opportunity to use the established networks of the rural sector agencies to inform Canterbury communities and encourage high rates of participation in the governance processes.

#### 1.11 *Existing Users*

Priority of access to reliable supply of water should recognise efficient use by existing users. The incentives provided need to recognise the contributions and investments existing users have made to the regional and national economy. Not all existing users will be able to improve efficiency to the same extent. Existing users that can demonstrate they are currently managing water resources efficiently and effectively should be recognised with the right incentives, including reliable supply and certainty of tenure.

In the same way, recognition should be provided to those who have already invested in water storage infrastructure at the farm or sub catchment scale; through the provision of rebates and exemptions from charging.

We must remember that on-farm investment in irrigation systems is a long term investment. When the current borderdyke and rotorainer spray systems were first commissioned, they were regarded as being efficient. However, the greatest beneficiary from improving the efficiency of older irrigation systems is always the irrigator, but this requires significant capital expenditure that may be difficult to fund. Simple commercial drivers like enabling irrigators to apply freed up water over greater areas are often the most effective incentives towards improved efficiency, but without certainty of tenure this investment is difficult.

#### 1.12 *Efficiency*

Given the difficulty of balancing aspects of efficient water allocation and use, the following hierarchy is suggested for considering efficient water management:

- Actions enabling high allocative efficiency get primacy of consideration.
- Actions enabling economic efficiency get a secondary consideration.
- Technical efficiency should also be considered but within the framework of allocative and economic efficiency.

There should also be benefit in linking to efficiency of energy use, and as a general principal a full life cycle assessment approach to efficiency is supported. Further examination of efficiency concepts is included in Schedule 2.

A pure approach focused on technical efficiency does not recognise the sustainability drivers that are leading to an increase in the sharing and leasing of land, particularly for horticultural and arable crops. The sharing and leasing of land assists with disease control and soil resilience, for example. Share and lease arrangements do not greatly facilitate technical efficiency, but other efficiencies can be gained and a life cycle analysis approach should be flexible enough to recognise why sharing and leasing of land should not penalise water users.

#### 1.13 *Audited self management, auditing and enforcement*

The principle of audited self management is supported. The core principles should support and enable local involvement in water management decisions. Local user groups should be empowered to manage their own affairs where possible. Intervention should only be required where local management is not achieving the Vision. Some thought should be given to an independent mediation service to assist local management groups with resolution of issues where it is requested by parties.

Audited self management systems should also fit the business models that drive production, for example audit systems such as New Zealand GAP should be encouraged to adopt mechanisms that are suitable for regional compliance.

It is not recommended that the council publishes records of any performance rating system that is established. Publication of irrigation efficiency information may be useful at the catchment level, where the public interest is best served. The audited self management system approach, if correctly designed, will give farmers and growers a performance analysis that could be linked to water charging regimes. Publication would do little other than create additional compliance cost.

1.14 *The involvement of all the community*

The community will not be equally incentivised by a driver of reliable water. In particular, the urban community's support will be required to enhance a "culture of efficiency" in the Canterbury. Equally important is the urban community's custodianship of water quality. The significant urban proportion of Canterbury's community should have a stake in environmental enhancement and fresh water quality management. Involvement of; and targets for the urban community send the right signals to the rural community where the strategy is targeted.

In a similar way hill and high country pastoral users have a role to play in water quality protection and mechanisms should be explored to incentivise participation from these rural sectors. It should also be recognised where water quality is already at appropriate standards.

Discussions with ECAN officers have confirmed that there is intent for the targets to apply across both rural and urban communities in Canterbury. However there are not many urban – specific targets for water quantity or quality. A target for local councils and other community water suppliers; to use 20% less water per person by 2040 is hardly a stretch target given the range of measures the rural community is expected to adopt. All other targets are either expressly aimed at the rural community or have only non specific reference to urban goals or actions.

1.15 *Relationship with proposed Variation 27 (Land use intensification)*

Most primary sector organisations are involved in the work being facilitated by ECAN to develop proposed Variation 27. Most of the sectors that are parties to this paper are involved. It should be implicit that the outcomes of that process are the key drivers for contaminant management.

Blanket standards for nutrient management plans are not appropriate<sup>4</sup>. The parties consider that the Strategy needs to define what needs to be achieved and the primary sector, with assistance from government and other interested parties should then be able to work out how to achieve goals. Assessment of model outputs from Overseer show that many rural activities have little or no contribution to nutrient leaching. Examples include grapes on light or heavy soils, onions on medium soils and some of the arable crops such as barley and oats in many cases.

1.16 *Relationship with current work on charging mechanisms (for SoE Monitoring)*

It is recommended that the current work being conducted on charging mechanisms for SoE monitoring be expanded to assess the role of levies and charges as proposed in the Strategy. In

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<sup>4</sup> Targets for drinking water aim for generic uptake of nutrient management plans for all farming activities by 2020.

any case, the full extent of levies and their application needs further clarification before the parties to this paper can provide support.

Crucial to the success of this work will be appropriately assessing and managing cumulative effects, negotiation of the public / private benefit split, and a fair apportionment of intergenerational costs. The strategy has to be mindful that environmental effects have occurred over time, and that governance has incentivised rural community actions with the regulatory approach adopted.

1.17 *Water “Brokerage”, transfer and trading*

It is unclear what is meant by the term “brokerage” as it is applied in the strategy. The support for market trading mechanisms should not be overestimated. The common terminology used differs between transfer and trading. The Strategy should clearly identify the meaning of the term brokerage. Transfer mechanisms are supported. The position on trading is less clear (and perhaps less important), than encouraging efficient transfer of allocated and unused water. If a priority is set, transfer should be the priority. This does not preclude trading being explored.

ECAN officers have indicated that brokerage may apply to the task of reallocating surface and groundwater between different users in different parts of Canterbury.

1.18 *Reliability of supply*

Farmers and growers have differing requirements for reliability of water supply depending on the nature or timing of farming operations. Generally the reliability of supply required is linked to:

- The extent of capital invested.
- The nature of (primarily) fixed and variable costs.
- The number of years where returns produce profits for the operation.

As an example pipfruit models serviced by the Ministry of Agriculture and Forestry show high variability in the profit loss ratio with returns high enough on average in three years out of ten. The factors that influence profitability make it difficult to predict the nature of returns in any given year. Some of these factors include fixed costs (labour and on farm vehicle operations for example), exchange rates, adverse weather affecting harvest and other market forces.

Reliability of supply becomes crucial for these operations. The proposed NRRP provides a level of reliability set at four years in five. This level of reliability is too low as a benchmark for “high reliability”. At a minimum, the benchmark for high reliability should be set at 95%.

Not all operations will require this level of reliability. Growers and farmers must be provided with the options and incentives to select the level of reliability that meets their needs.

1.19 *Restoration*

Restoration may not be the most appropriate benchmark to adopt as a biodiversity or environmental improvement goal, without a benchmark year and recognition of elements that may not be possible to “restore”. As an implementation driver, restoration has been defined as “*implementation to actively promote improved ecological health and functioning in degraded and overallocated catchments*”. It is recommended that the term “restoration” be replaced with the term “improved ecological health”.

1.20 *Biodiversity augmentation for environmental enhancement.*

Biodiversity and environmental restoration have been identified as key drivers for release of new reliable water for irrigation. The mechanisms for release need to be transparent and clear. Firstly, “restoration” is often not a viable target without some baseline data and a historic condition that is desired to be achieved. It is agreed that biodiversity should be enhanced, and that ecosystems require rehabilitation. The case is particularly strong in lowland catchments and along riparian margins. Schedule 2 suggests some principles that could be adopted to provide some certainty about what level of environmental enhancement will trigger development of new reliable water for irrigation.

## Schedule 2 – Specific Submissions

- 2.1 The “key challenges” section on pages 6-7 generally note challenges that are understood or agreed. There are some exceptions:
- *Pressure on river systems*: the levels set as environmental flows may still require some investigation and many are under challenge in the proposed NRRP and related plans. Many more are currently under reassessment. It is recommended this statement is qualified in respect to this.
  - *Cumulative effects on ecosystems*: The figure on wetlands remaining will vary across the region and there is likely to be a more significant proportion of wetland remaining in the high country and some separation or clarification would be useful.
  - *Land use effects on water quality*: The statements made are not objectively qualified. The proposed solutions are being stated here, not the challenges. The stated solutions narrow the opportunity for dialogue and collaborative solution through the proposed Variation 27 process.

A new challenge should also be added (with consequential amendments to the strategy). The new challenge should address the importance of maintaining land use flexibility to allow the rural sector to respond to market signals. One core strength of the rural economy (and community), is the ability to respond to market signals and move production to new, higher value uses over time. An example is the movement from sheep and beef farming to grape and blackcurrant production in the Waipara region.

It should be made clear that that the parties are not supporting conversion of sensitive environments to the highest value return at any cost, without consideration given to the appropriateness of development for the particular landscape.

- 2.2 *Cultural Health* (pp 7, 25) is stated as moderate to poor. Our assumption is that this has been defined through mechanisms such as the Cultural Health Index and ‘State of the Takiwa’ monitoring. It would be useful to clarify how is this defined and what would methods are being considered to address the issues. There should also be clear mechanisms to ensure that cultural imperatives are not used to promote commercial interest and gain competitive advantage.
- 2.3 *Climate change* (pp. 7, 26-27) It is noted that the predictions for the effects of climate change provide strong justification for the development of rural water infrastructure / storage. It is recommended that this is noted and incorporated on page 7.
- 2.4 *Parallel development* (p. 10) Parties endorse the concept of parallel development in the strategy. It is a good principle and it supports the concept outlined in the vision. In relation to infrastructure there is a need to get something started early – a project that is already largely built or well along the consenting process. Some options have been included as examples, Lake Coleridge, Barrhill-Chertsey Irrigation, Central Plains Water, North Otago Irrigation Company’s project or the Hurunui Water project.
- 2.5 *Zone implementation programmes* (p. 12) Parties are interested in definition of the economic resources that will be available to facilitate the reconfiguration of consents between surface and groundwater. If this is to happen, existing users should not be disadvantaged – any reconfiguration must be fair, equitable and recognise the public and private benefits associated.

It is supported that Zone Committees should address water quantity matters. The Zone Committees should also be addressing water quality matters where it is appropriate.

- 2.6 *Cumulative effects on ecosystems* (p. 25) – of the wells monitored recently by ECan, 38 showed increased nitrate concentrations, 5 showed decreases and 170 showed no trend – so the news isn't all bad. It is important that the strategy recognises this. Also, monitoring associated with the Waimakariri Irrigation Scheme shows no significant trend since the scheme began.
- 2.7 *Water quality impairment issues* (p. 28) - The use of water for irrigation, if well managed, can have positive effects. The use of irrigation water can be used to transport nutrients into the plant root zone in a controlled manner and ensure that there are actively growing plants to absorb nutrients when they are applied. Reliable irrigation provides the potential to manage nutrient use to a greater extent than is possible in a dry-land context. It should not be assumed that expanding the irrigated land area will necessarily lead to increased nutrient losses.
- 2.8 *Infrastructure issues* (p. 28-29) - There is an implication, (paragraph 4), that current schemes do not have acceptable minimum flows. Schemes have minimum flows as part of their consents. ECan is currently reviewing these catchment by catchment throughout Canterbury. It should not be assumed ahead of the conclusion of investigations that schemes do not have acceptable minimum flows.
- 2.9 *Paradigm shift needed in water management* (p. 32) - It is assumed that irrigation will lead to increased adverse cumulative effects. This may not be true. See comment above under *Water quality impairment issues* (2.7). The cost of restoring environmental flows, environmental restoration, and ongoing ecological, recreational and cultural development must be justified and fairly shared. The assessment should also be linked to work underway with the Variation 27 proposal.
- 2.10 *Outcome of consultation* (p. 37) –The final paragraph should be amended to read “*water infrastructure planning and development ...*”.

## 2.11 Efficiency perspective

- 2.11.1 For the purpose of this paper, **allocative efficiency** refers to users maximising the use of water available for allocation. Total water actually used varies greatly from the allocated flow in a catchment. For horticulture as an example, allocative efficiency can vary for many reasons including available rainfall, phase of crop rotation, change of crop or change in management practice.
- 2.11.2 Growers and farmers seek *reliable* water for their most water demanding activity.<sup>5</sup> Because growers and farmers seek high reliability, a proportion of water often is not used. Currently, transfer is limited between individuals, for many reasons. Primarily, there is not good protection of the permit holder's ability to retrieve water that is relinquished temporarily. Structures for the

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<sup>5</sup> Reliability of supply is particularly important for horticultural crops. When compared with other agricultural land uses, annual economic returns are high per hectare. But the fixed costs such as labour, plant, infrastructure and post harvest processing are extensive. Horticultural crops are also more at risk from extreme weather events. Profits vary and the MAF pipfruit model, for example shows that a good return may be experienced only 3 years in ten. If reliability is low enough to affect the returns in good profit years, horticulture ceases to be economically viable. The community benefits of sustaining horticultural production are in the high regional multipliers that are typical of horticulture. As an example, for kiwifruit in the Bay of Plenty, multipliers range between 3 and 5, so for every dollar that can be directly attributed as revenue from horticulture, between \$3 and \$5 of value is added to the regional economy.

sharing of water between users are only in their infancy. Information collection and management is not currently coordinated at a catchment level in a way that allows for immediate cooperation between users on a daily, if not hourly basis.

- 2.11.3 The technology to do so does exist, however. The enabling regulations such as the proposed National Environmental Standard for the measurement of water takes will mandate pulse capable water meters. In some parts of the country (for example the Horizons region and the Auckland region) regional authorities are already facilitating telemetered transfer that allows water users to cooperate and share the available water.
- 2.11.4 Otago Regional Council has moved to introduce a new system of priority for water user groups that are prepared to share water resources on a cooperative basis. The parties support the use of water user groups to increase allocative efficiency, particularly where there are constraints on access to water. The resource management merits of this approach are recognised in sections 5 and 7 of the Resource Management Act 1991, promoting efficient use of resources and sustaining the life supporting capacity of land and water.
- 2.11.5 The merits of this approach deserve policy that gives priority of reliable access to resources where it can be shown that a group can substantially improve allocative efficiency through collaborative and audited, self management.
- 2.11.6 Opportunities for allocative efficiency do not just exist where different crops are growing, or where ground is fallow, or at different stages in the cycle of crop rotation. Options to cooperate exist, for example rostering use of water when water is short, or by providing an opportunity for farmers / growers to invest in community water resource infrastructure. Some are also suggesting that allocative efficiency can be enhanced by spatial reallocation of groundwater and surface water resources. This is questioned however and further work is required to explore equity issues related to the cost of accessing water and accounting for investment in existing infrastructure.
- 2.11.7 **Economic efficiency** is at the heart of the current government's new programme for freshwater management, "A Fresh Start for Freshwater". Government has already indicated a preference to direct water allocation frameworks to reward high value use. Economic efficiency can be defined, for the purpose of this evidence as the value gained from the output as a result of the addition of a unit of water. NZIER data presented in the recently appealed Environment Waikato Variation 6 present the following figures for economic efficiency of water:

Land Use	Economic Value of Water <sup>6</sup>
Horticulture	\$1.62 per cubic metre
Dairy (irrigation)	\$0.15 per cubic metre
Hydroelectric generation	\$0.069 per cubic metre
Sheep / beef	\$0.02 per cubic metre
Arable crops	\$0.02 per cubic metre

There are some significant issues with the concept of using economic efficiency to pick winners in the rural sector. Economic efficiency varies over time. It also varies regionally, and the figures in the table above may not apply to Canterbury land use. However, without some basic assessment of economic efficiency in allocation criteria the costs and benefits of allocating

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<sup>6</sup> NZIER Data Feb 2006

reliable water cannot be fully gauged. Economic efficiency in isolation is not a suitable allocation criterion, but is a useful and necessary part of a hierarchy of efficiency considerations.

- 2.11.8 It is generally accepted that it is beneficial in regional terms to have the maximum use of allocable water. The greater the access to irrigation as irrigated land provides much higher levels of production and better returns. *ECAN officers also note, however that a study has indicated regional benefits are maximised with lower security of supply, even if individual benefits may not be.*
- 2.11.9 The parties do not support this comment from ECAN officers. No two rural land uses are perfectly substitutable and the benefits do not often flow equally between rural land uses over either time or geography. No two individuals within a community have an equal ability to make a resource benefit the community. While regional benefits can be aggregated, and together are almost always more than the sum of the parts, it is individuals competing within the market and efficiently using resources to produce returns; that are the core of provision of community benefit.
- 2.11.10 **Technical efficiency** relates to the performance of an irrigation system (design, installation, operation and maintenance). It should be encouraged, but it should also be put in perspective with other forms of efficiency and environmental implications. For example, growers often make use of shared or leased land for soil conservation or disease control purposes. These arrangements are often necessary for sustaining the soil resources and reducing agrichemical inputs, particularly for vegetable production. The level of investment required to create very high levels of technical efficiency on shared or leased land is prohibitive. However, with careful management desirable performance is achievable.

## **2.12 Principles to support an offsetting policy for water storage infrastructure proposals<sup>7</sup>**

- 2.12.1 There is relevant case law relating to biodiversity offsets that is useful. This is outlined in Environment Court decision *W26/2009 Royal Forest and Bird Protection Society Inc v. Gisborne District Council*. In paragraph 71:

*“Dr Norton gave evidence on the concept of biodiversity offsets. He said that the international literature increasingly emphasises the aim of a net gain in biodiversity, and he agrees with Dr van Eynhoven that, well managed, the outcome of what is proposed will be a net gain for biodiversity.”*

- 2.12.2 The Parties contend the same outcome is relevant to water quality decision making, and that generally water quality can be influenced by matters that have co benefits for biodiversity<sup>8</sup>.
- 2.12.3 The decision also refers to criteria, or principles outlined in the Court decision *J F Investments Ltd v Queenstown Lakes District Council (C48/2006)*<sup>9</sup> developed to assist in assessing the value and relevance of off-site work or services offered as compensation, or as a biodiversity offset.

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<sup>7</sup> DairyNZ is interested in following this policy development but does not have an organisational position on it at this stage.

<sup>8</sup> Such as the availability of riparian habitat, the quality of the resource substrate or the temperature and availability of dissolved oxygen in water.

<sup>9</sup> Environment Court decision *W26/2009 Royal Forest And Bird Protection Society Inc v. Gisborne District Council* para 69.

2.12.4 The decision also refers to principles established through expert evidence from a Dr Norton. The same decision also refers to the test in *Newbury District Council v. Secretary of State for the Environment [1980] 1 All ER 731 (HL)*.<sup>10</sup>

2.12.5 The following principles, tests and criteria are offered for discussion:

	<b>Principles</b>
1	The offset should only be applied in the same catchment as the proposed water storage infrastructure project.
2	Offsets should only be used as part of a hierarchy of actions in which a development project must first seek to avoid impacts and then minimise the impacts that do occur.
3	Some form of guarantee must be provided that the offset proposed will occur.
4	Offsets are inappropriate for certain ecosystem (or habitat) types because their rarity or the presence of particular species within them makes the clearance of these ecosystems inappropriate under any circumstances.
5	A clear currency is required that allows transparent quantification of values to be lost and values to be gained in order to ensure equivalency between cleared and offset areas.
6	Determination of what is an appropriate offset must take into account both the uncertainty involved in obtaining the desired outcome for the offset area and the time-lag that is often involved in reaching this point.
7	The offsets should preferably be of the same kind and scale as work on-site or should remedy effects caused at least in part by activities on-site;
8	The offset must be effective; usually there should be conditions (a condition precedent or a bond) to ensure that it is completed or supplied.
9	There should have been public consultation or at least the opportunity for public participation in the process by which the environmental compensation is set.
10	It should be transparent in that it is assessed under a standard methodology, preferably one that is specified under a regional or district plan or other public document.
11	Any exit from obligations to manage the offset should be contractually set for the applicant.
12	That the condition imposed must be for a resource management purpose and not for some ulterior purpose.
13	Consent conditions must fairly and reasonably relate to the development in question.
14	The condition must not be so unreasonable that no reasonable consenting authority could have imposed it.
15	Consent term for all facets of the infrastructure should be granted for the maximum period specified in the RMA 1991.

## **2.13 Zone Management Committees**

2.13.1 The Parties think that more time needs to be taken to:

- clearly define the role of zone management committees:
- clarify how what the zones committees do fit with what the regional council will do; and
- establish processes for the zone committees to use to identify priorities for action and work through trade offs so they can be effective.

There is industry research that could assist Environment Canterbury to do this.

<sup>10</sup> Environment Court decision W26/2009 Royal Forest And Bird Protection Society Inc v. Gisborne District Council para 88.

2.13.2 For example, the Best Dairy Catchments research programme has identified processes and tools to assist local communities to identify priorities for action in relation to water quality and for individual land owners to work out which mitigation options worked best in their farm system. This catchment scale work could be scaled up to a zone level.

2.13.3 The process used involves:

- i. Making an assessment of the water quality status.
- ii. Identifying the key linkages between land management activities and water quality (i.e. so landowners can see the links).
- iii. Defining the key values associated with each catchment which in turn defines a set of catchment specific water quality targets.
- iv. Determines the most appropriate land management guidelines required to meet the targets identified in (iii). [i.e. This is where use of a Best Management Toolkit has been used to assist farmers to identify the mitigation options available to their situation. The toolkit covers: the easy things to do first, effectiveness (in relation to established values for the relevant water body) and cost-effectiveness.
- v. Develops and implements farm plans of varying complexity that address the key environmental performance indicators previously identified.

2.13.4 The research also had a social research stream which focused on gaining a better understanding how to get adoption of environmental best practice. Amongst other things it found that:

- Before water quality targets get adopted farmers have to believe they are feasible. Discussions on how the water quality targets and current state of water relate was important to achieve this.
- Farmers need to understand the links between water quality targets and on-farm practice.
- Adoption of environmental best management practices depended on a farmer's perception of the benefits within a farm context. Farmers' decisions about environmental practices are primarily based on systematic evaluation of their production context and the management options that are available.
- Farmers prefer to consider a suite of mitigation options so they can match individual practices to their farm system rather than having prescriptive practices imposed on them.
- Practical solutions to environmental problems that also address specific on-farm needs have a better chance of success.
- Providing economic information coupled with information about effectiveness of mitigation options is important.

2.13.5 AgResearch is also trialing some trade off analysis work. This involved running a process which enables a community to work through the economic and social implications of having water quality at different levels.

## SCHEDULE 3 – Comments on Targets (Annex G in the Strategy)

The following schedule has been structured to assist interpretation of parties' comments in the following manner:

- The "Goals" are stated in green. Strikethrough has been used to suggest amendments.
- Comments on the Goals are stated in blue.

### Overall Comment

Across all of the areas for outcome targets, further work needs to be with done to establish what the baselines are and the indicators used to track trend changes.

### 3.1 Drinking water

#### 3.1.1 From 2010:

In communities that currently have access to untreated and safe drinking water<sup>1</sup>, the source water quality must remain high enough to meet New Zealand Drinking Water Standards without treatment

This is considered a reasonable community desire. However, there are some issues that mean this target may not technically be able to be met.

There are time delays between activities on the land and impacts on groundwater quality, therefore:

- The impact of current land use intensification and rates of nitrate loss have not been fully measured in groundwater quality monitoring data yet. The current trends in groundwater nitrates, which are of predominately increasing concentrations, indicates that nitrate concentrations may get worse in the next few years, meaning some shallow water supplies may be unsuitable as an untreated drinking-water supply.
- Improvements (reductions) in nitrate losses undertaken today will not be seen for some time (years to decades) in some groundwater systems.

It would be preferable to insert a footnote here along the lines of: 'In accordance with the Drinking Water Standards for New Zealand 2005 (revised 2008)'. This would help to distinguish those communities/individuals who think they have a safe drinking-water supply but in fact they may have a clean but technically unsecure supply. This relates primarily to microbial quality.

This may be less of an issue if this goal only applies to a community drinking water supply as defined in the Drinking-water standards (e.g, 25 people > 60 days per year).

#### 3.1.2 No further decline in source water quality for those communities that currently have to treat drinking water

This is a broad sweeping target that implies that there shall be no further decline in surface water quality, since technically all surface drinking-water supplies need to be treated (at least for microbial contaminants). Domestic drinking water is likely to be taken from many rivers and streams around the region, let alone the community water supplies that take from many of the main rivers in Canterbury. The parties I assume this wasn't the intent of this target. We assume

the intention is to align this target with the operative National Environmental Standards for sources of human drinking-water. An alternative target could be:

*“No further increase in the level of treatment, or monitoring, of source water for those communities that currently have to treat drinking water.”*

Or

*“No further decline in source water quality for those communities that currently have to treat drinking water, such that this requires increased level of treatment or monitoring requirements.”*

These follow the intent of the NES.

- 3.1.3 That there are no activities in a drinking water catchment that reduce access to sufficient quantities of drinking water supplies.

This is a reasonable goal.

- 3.1.4 By 2015:  
Catchment load limits for nitrate and other contaminants (carrying capacity) are defined at least to first order of accuracy consistent with drinking water quality outcomes (or biodiversity or recreational outcomes – see other targets)

The parties agree that catchment loads need to be established. As it stands this target is hard to read and further targets would be needed (for example, another target that focuses on defining longer-term goals for source water quality. The 2040 target (of groundwater nitrate concentrations below half MAV), needs to be assessed and if necessary refined by 2015, in order to set the catchment load limits as described above.

Parties consider that this target would benefit from being defined more simply. For example, “Where necessary to achieve community values for water, catchment loads for nitrate and other contaminants are defined”. There needs to be further discussion between Environment Canterbury, the primary sector and environmental groups on how to do this and assess the tradeoffs associated with different options.

- 3.1.5 ~~80% of all agricultural land in Canterbury has nutrient management plans consistent with drinking water quality outcomes (or biodiversity or recreational outcomes – see other targets).~~

This is one of a group of tools that will be used to achieve environmental targets. It is important that tools such as this one are used effectively to achieve environmental gains and don't become simply a compliance (box-ticking) exercise. Therefore, we recommend removing this target and focusing on defining outcomes; which in this case is access to suitable drinking-water supplies.

- 3.1.6 By 2020:  
~~All agricultural land under irrigation in Canterbury has operational nutrient management consistent with drinking water quality outcomes (or biodiversity or recreational outcomes – see other targets)~~

See comment above

3.1.7 There is an increase in the percentage of the population supplied with water that meets the New Zealand Drinking Water Standards for health-based determinants.

Is this target intended to encompass commitments from water supply authorities (i.e., Territorial Authorities) such as investment in upgrading water treatment and distribution facilities, increasing water supply capability etc? Or is this target still aimed at improvements in source water quality? See further comments below.

3.1.8 By 2040:  
Nitrate levels in all groundwater in Canterbury are below 50% of the maximum allowable value for drinking water.

Further analysis regarding the achievability of this target, and costs/implications to the agricultural sector are needed before the parties could commit to what appears to be a very ambitious target.

Furthermore, regardless of technical capability of reducing nitrate loss to groundwater such that it may be possible to meet this target, the time delays between changing leaching loss and improvements in groundwater mean that this target is very unlikely to be met in all areas of Canterbury within the next 30 years.

3.1.9 ~~All agricultural land in Canterbury has operational nutrient management plans consistent with drinking water quality outcomes (or biodiversity or recreational outcomes—see other targets).~~

Refer to earlier comments.

3.1.10 **Other comments**

The map (figure 7 page 70) of drinking-water status contains considerable inaccuracies. Furthermore, there is a lack of explanation of what this map represents. Presumably it intends to represent the current grading for major water supplies. If so, it is important to clarify that this grading is based on a range of factors, with source water quality being only one factor. A complex algorithm is used incorporating 33 aspects of source and treatment factors to provide a 'Source and Plant grading' (<http://www.drinkingwater.org.nz/general/grading.asp> - sourced 24th September 2009). Some common causes of low grading include inadequate water quality sampling frequencies and protocols, or because of microbial risks from inadequate treatment systems. These are issues that are dealt with by the water supply authority, not by controlling source water quality.

With regard to the list of Activities (Page 98), there are no activities relating to water supply authorities investigating treatment, monitoring and supply options to improve drinking water supply gradings. The drinking-water target for increasing the percentage of population supplied with water that meets the health-based DWSNZ is one that is more strongly influenced by decisions and actions of the water supply authority, not one that is primarily controlled by managing source water quality.

If the CWMS is an all encompassing water management strategy, both targets and activities need to reflect the full range of organisational activities and outcomes required. There is a clear

lack of urban and territorial Authority - focussed targets and activities. The drinking water targets and activities are a clear example of this lack of broad community focus. The parties would prefer to see a more encompassing water strategy.

## **3.2 Ecosystem health/ biodiversity**

### **3.2.1 From 2010:**

**Actions to correct the decline in freshwater species, habitat quality or ecosystems**

The parties consider this is a desirable goal.

### **3.2.2 No further loss of natural wetlands/ecosystem area**

This is a desirable general goal but the term ecosystem area needs to be clearly defined.

### **3.2.3 Maintain the high quality of intermontane basin aquatic and dryland ecosystems.**

This is a desirable goal but needs to be amended to:

*“Maintain the existing high quality areas of intermontane basin aquatic and dryland ecosystems.”*

This recognises that some intermontane basins are not currently in a high quality state.

### **3.2.4 No further loss of ecosystem health in river mouth lagoons/hapua/coastal lagoons**

This is a desirable goal. Ecosystem health needs to be more clearly defined.

### **3.2.5 By 2015:**

**The trend in aquatic ecosystem health in lowland streams is upwards in at least 10% of streams currently in decline (would require a significant new funding stream).**

The parties consider that this needs to focus on streams in poor condition rather than decline

We consider this is a very ambitious target and needs further discussion.

### **3.2.6 80% of foothill streams have a least good aquatic ecosystem health**

Aquatic ecosystem health needs to be defined Assuming this goal refers to ECan’s ecosystem health monitoring programme, in 2008 70% of hill-fed sites had a ‘biotic’ grade of good or very good. The long-term average is about 65% of sites with a grade of good or very good. It may take considerable effort to achieve 80% of hill-fed sites achieving a grade of good or better within five years. This effort would include ensuring adequate flows, habitat protection, and water quality improvements. The parties consider that the timeframe for this target needs further discussion.

### **3.2.7 At least two wetlands have been protected or reinstated in each water management zone.**

This is a desirable goal.

### **3.2.8 Halted decline in populations of fresh water-dependent birds**

This is a desirable goal, but consider this more appropriately fits into the “Braided river” set of goals. This is because the main management interventions needed for the protection of river-dependent birds are those related to braided river bed habitat, and include riverbed weed control, predator control and restrictions on recreational access to particular areas.

- 3.2.9 **Catchment load limits for nitrate and other contaminants (carrying capacity) are defined at least to first order of accuracy consistent with biodiversity outcomes (or drinking water or recreational outcomes – see other targets).**

As with the drinking water goals, important first steps would be defining biodiversity objectives, and then determining the instream nutrient concentrations required to protect the biodiversity outcomes. This needs to be done along side determining other factors that will also provide for, and protect, biodiversity objectives (e.g., flow regimes, riparian protection, pest control). Only then can catchment load limits be modelled, followed by a cost-benefit analysis of all the factors that influence biodiversity values. We are concerned at the focus of this target being nitrate control, which may not be the most important management factor for protecting biodiversity values.

Parties consider that this target would benefit from being defined more simply. For example;

*“Where necessary to achieve community values for water, catchment loads for nitrate and other contaminants are defined”.*

There needs to be further discussion between Environment Canterbury, Ngai Tahu, the primary sector and environmental groups on how to do this and assess the tradeoffs associated with different options.

- 3.2.10 ~~80% of all agricultural land in Canterbury has nutrient management plans consistent with biodiversity outcomes (or drinking water quality or recreational outcomes – see other targets)~~  
See related comments in the Drinking water targets.

- 3.2.11 **Waihora/Lake Ellesmere – a riparian planting programme for streams that flow into the lake and the lake itself is started**

*This is an unusually location specific target.* One of the greatest risks to the success of new and existing planting programmes is the ongoing maintenance and control of existing weeds, particularly willows, for which there is a lack of funding. Parties consider that an addition of “*and maintenance*” to the target may be more beneficial overall but would require an increase in funding.

- 3.2.12 **By 2020:**

**50% of lowland streams have at least good aquatic ecosystem health**

Overall around 25% of lowland stream sites monitored in ECan’s ecosystem health monitoring programme achieve a grade of good or very good (period 1999-2006). However in 2008, only 6% of lowland sites achieved a good or very good grade. Over these past 10 years, while there have been efforts to improve lowland stream ecosystem health (e.g., Living Streams) lowland stream health has declined. Significant factors in the poor condition of lowland streams include reduced flows from reduced groundwater levels and poor habitat quality (particularly sedimentation). It is likely to take considerable time before improved groundwater levels are achieved, particularly if this is dependent on water storage scheme developments. In streams where sedimentation is a significant factor in poor ecological condition, the effects may be irreversible or at least take years to decades before recovery of ecological values occurs.

Therefore, this goal is considered unachievable within a 10 year timeframe, particularly if ECan’s ecosystem health biotic indicator or similar (e.g., QMCI) is used as the benchmark. An alternative goal of improvements in habitat quality indicators are goals that address the major impacts of agricultural activity and are achievable with a concerted effort over the 10 year

timeframe. ECan's ecosystem health monitoring programme includes a habitat quality grade. The overall grades of good or very good for habitat quality of lowland streams are around 40%, but were only 23% in 2008. An alternative goal could therefore be:

*"50% of lowland streams have at least good habitat quality".*

- 3.2.13 ~~90% of all other river types and lakes have at least good aquatic ecosystem health~~  
For the same reasons given above, this goal is considered unachievable within this timeframe. A similar alternative goal that focuses on habitat quality is preferable.
- 3.2.14 **An upward trend in diversity and abundance of native fish populations**  
The parties think this goal is desirable but note that it will be dependent on habitat quality and adequate flows.
- 3.2.15 **There is a 20% increase in the area of wetlands in Canterbury**  
The parties consider that this is a challenging goal which requires further discussion. We are interested in how ECAN identified wetland and what resources are available to achieve this.
- 3.2.16 **Stable populations of fresh water-dependent birds**  
This belongs in the braided river section.
- 3.2.17 **At least one river mouth/coastal lagoons/hapua in each management zone has a significant restoration programme in place.**  
The parties consider that this is a desirable goal.
- 3.2.18 **The length of waterway with intact riparian areas is increased by 50% from 2010 figures.**  
  
**100% of all irrigated land in Canterbury has operational nutrient management plans consistent with biodiversity outcomes (or drinking water quality or recreational outcomes – see other targets).**  
Both of these goals are tools for achieving biodiversity outcomes. It is important to recognise that even if significant reductions in nutrient concentrations in streams were achieved, this alone will not restore ecological values. The focus needs to remain on ecological-based goals that then allow a range of management options to be considered that are likely to secure the best outcome.
- 3.2.19 **By 2040:**  
**Canterbury has thriving examples of lowland ecosystems in each water management zone**  
This is an excellent goal, particularly if it allows the local community to identify their most important/sensitive streams for focussed efforts. The only problem being that there are limited numbers of lowland streams in many of the zones, and none in the upper Waitaki. The parties recommend that low-land ecosystems be amended to spring-fed ecosystems. This will incorporate streams in the upper basins.
- 3.2.20 ~~Water quality and quantity in spring-fed streams meets ecological requirements for fish and invertebrates~~  
This is an ill-defined target, and its intent is captured in the other goals.
- 3.2.21 **100% of lowland streams have at least good aquatic ecosystem health**

This is considered an unachievable goal for the reasons given above. In particular, lowland urban streams (assuming the CWMS applies to urban areas) are highly unlikely to ever achieve this goal. Furthermore, Christchurch City Council has indicated an intention to not set such targets (in a different forum) for streams in their control.

3.2.22 ~~80% of all Canterbury rivers/streams and lakes have very good aquatic ecosystem health~~  
This is similarly an overly ambitious goal, considering between 4 – 46% of sites within river types other than lowland streams currently achieve a 'very good' grade.

3.2.23 ~~100% of agricultural land in Canterbury has operational nutrient management plans consistent with biodiversity outcomes (or drinking water quality or recreational outcomes – see other targets)~~  
As above, this is a tool not a biodiversity goal.

3.2.24 ~~Waihora/Lake Ellesmere riparian protection in place.~~  
Locally specific goal, but achievable.

### **3.3 Water use efficiency**

3.3.1 The parties consider most of these goals are desirable as they align with the Primary Sector Water Strategy goals. The parties suggest that the following goal be deleted: "The production from irrigated land per Mm<sup>3</sup> of water used in a year is on average 20% (30%) greater than that achieved in 2010". It is our view that so long as land owners can demonstrate they are using water efficiently, it is up to them how much they produce.

3.3.2 Water use efficiency general comments  
The definition of irrigation efficiency needs more careful thought with regard to the desired outcomes and feasibility of monitoring requirements. It is likely that a combination of efficiency indicators relating to allocation, application and production (\$'s or tonnes) is the best way forward.

Application efficiency – Water beneficially used / water applied  
Production – production (kg/tonnes or \$ returns) / water used.

3.3.3 There is a potential conflict between maximizing production per unit of water and minimizing nutrient leaching. The goal may provide some unintended consequences if it is seen that it is seeking to drive up productivity.

### **3.4 Contribution to national and regional economies**

The parties consider these goals need further work. For example, we are unclear how water use would control unemployment. There are many other factors impacting on this. Parties would like to work with the Forum to improve these goals.

### **3.5 Recreational opportunities**

3.5.1 **Goals**  
From 2010:  
No loss of the existing diversity and quality of water-based recreational opportunities and experience

The parties support this goal, with the caveat that some tradeoffs may be required by the angling community to restore native fish populations in areas where trout and salmon are significant contributors to native fish decline.

**3.5.2 By 2015:**

**At least 80% of river bathing sites were graded as suitable for contact recreation**

Currently about 60% of popular recreational river sites monitored are suitable for contact recreation (based on microbial contaminants). Of the 40% of sites that aren't currently suitable, the microbial quality of about two thirds of them are strongly influenced either by large populations of birds (either water fowl in urban areas or river-nesting birds on the braided rivers) and/or are influenced by urban discharges (stormwater, industrial and municipal sewage). The other third of river sites are in agricultural areas and are most likely affected by stock access. Therefore, in order to meet this target in the next five years for the existing list of sites, complete stock exclusion would be needed for the affected areas, as well as control of other factors such as birds and urban stormwater. This is ambitious but may be achievable with a concerted effort in particular areas.

**3.5.3 By 2020:**

**All lake and river sites used for contact recreation meet recreational water quality guidelines**

This is unlikely to be achievable at the sites currently monitored, particularly where large populations of birds are primary influences.

**3.5.4 All rivers have environmental flows that enable their recreational use**

This target needs further analysis.

**3.5.5 By 2040:**

**Fishing opportunities have been restored in most lowland stream in each water management zone**

The parties recommend this is amended to "suitable lowland streams".

**3.5.6 There is at least one major fresh water recreational opportunity available in each water management zone that is not currently available in 2010 has been restored.**

This target needs further analysis.

**3.6 Irrigation Targets**

**3.6.1 The Parties would like to see the following goals included:**

*Goals*

*From 2010:*

*No reduction in irrigated land or current reliability of supply.*

*From 2040:*

*At least 1 in 20 year reliability for irrigators is achieved.*

**3.6.2 General comments**

Reliability will ultimately be based on what is economically feasible within each zone. Storage requirements increase greatly as reliability increases and thus will be determined on a site by site basis.

