

## Gay Gibson

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**From:** Andrew Curtis <ACurtis@irrigationnz.co.nz>  
**Sent:** Friday, 24 October 2014 1:55 p.m.  
**Subject:** RE: INZ variation 2 submission  
**Attachments:** INZ Variation 2 Canterbury LWRP.pdf

**Importance:** High

**Categories:** Purple Category

Please find updated version – apologies as I sent an earlier version!

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## The Great Irrigation Challenge

2-3 OCTOBER 2014 AT HOTEL ASHBURTON

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**From:** Andrew Curtis  
**Sent:** Friday, 24 October 2014 1:47 p.m.  
**To:** 'mailroom@ecan.govt.nz'  
**Subject:** INZ variation 2 submission

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## The Great Irrigation Challenge

2-3 OCTOBER 2014 AT HOTEL ASHBURTON



## **SUBMISSION: Variation 2 Canterbury Land and Water Regional Plan**

*Date:* 23/10/14  
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A handwritten signature in black ink, appearing to read "Andrew Curtis", written over a horizontal line.

**(Andrew Curtis, CEO IrrigationNZ)**

Irrigation New Zealand wishes to be heard in support of its submission. However, if others make a similar submission we are happy to present jointly.

### **OVERVIEW**

1. IrrigationNZ (INZ) is a national body that promotes excellence in irrigation. INZ represents the interests of over 3,600 irrigators (irrigation schemes and individual irrigators) totaling over 350,000ha of irrigation (approximately 60% of NZ's irrigated area). It also represents the interests of the majority of irrigation service providers (over 150 researchers, suppliers, designers, installers and consultants).
2. INZ has a strong membership base in the Hinds zone with widespread support from irrigation schemes Mayfield Hinds, Valetta & Eifflerton and also individual irrigators.
3. All INZ members businesses are founded on secure, on-going access to a reliable water supply for irrigation - they need certainty to enable investment and thus continually improve their productivity and resource use efficiency. Without certainty they and the considerable flow on benefits to the regional economy, would be severely impacted. The national economy would also be significantly impacted upon given that NZ is predominantly an agricultural export based economy. INZ actively engages with its members on planning issues, proactively facilitating a wider understanding of the relevant issues by all.

## SUBMISSION

Reference	Issue	Relief Sought
Policy 13.4.6	Once a limit has been set on a surface water body then any water that becomes available within this limit should be available for re-allocation.	<i>Delete the addition to policy 13.4.6</i>
13.4.9 (d)	This policy needs clarity. Firstly INZ's understanding is 45% is the reduction figure required from all sources. Also adopting the Managed Aquifer Recharge (MAR) alone to augment groundwater and/or surface water will likely not achieve the desired outcomes. A 26% reduction in nitrogen loss is what is being requested by existing users so this should be stated. The remainder to achieve the 45% reduction will come from the application of MAR and other options such as Targeted Stream Augmentation (TSA). Therefore these facts need to be introduced to the policy or alternatively the policy needs to be split into two.	<i>(d) reducing overall N losses from farming activities by 26%... and adopting the use of catchment scale mitigations to include Managed Aquifer Recharge and Targeted Stream Augmentation to achieve an overall 45% reduction</i>
13.4.11	N is not an issue in the upper catchment – the focus instead needs to be squarely placed on microbial, sediment and phosphorus. However it is important that Good Management Practices are adopted for N, P and sediment.	<i>Maintain water quality in the Upper Hinds/Hekeao Plains Area by requiring all farming activities to operate at good management practice</i>
13.4.12	The target load of 3,400 is a current best estimate of the load required to achieve a 9.2mg/l of nitrate-nitrogen groundwater concentration. Other catchment scale mitigations will then bring this concentration down to 6.9mg/l. The target load has been derived from an assumed relationship between the modelled existing nitrogen loss at the rooting zone (scaled up to the catchment level) and existing groundwater concentrations. This relationship also makes allowance for time lags before the impacts are observed in the groundwater/spring fed surface water concentrations. INZ believes this process used has under estimated the existing scenario and has therefore led to the target load being lower than is required to achieve the desired nitrate-nitrogen concentration. Due to this uncertainty the policy should instead focus on the nitrate-nitrogen concentration limit – the outcome	<i>Improve water quality in the Lower Hinds/Hekeao Plains Area by reducing the discharge of nitrogen from farming activities to... achieve a groundwater concentration of 9.2mg/l by 2035 or alternatively a target load calculated using the following methodology (Note the preferred option, including a methodology if required, will be provided at the hearing)</i>

	<p>or alternatively a methodology be placed in the policy that allows for the target load to be readily adapted as new knowledge (for example existing baseline, changes in the version of OVERSEER influencing the existing baseline or catchment modelling) becomes available. There are technical complexities with both approaches that INZ has been unable to resolve in the short submission timeframe. INZ therefore intends to provide further evidence at the hearings as to its preferred approach.</p>	
13.4.13	<p>INZ opposes the approach set out in this policy because:</p> <ul style="list-style-type: none"> <li>• The blanket reduction targets for dairy and dairy support farms are not achievable – the analysis has not robustly considered the impacts of the reductions proposed across the range of dairy systems and site specific conditions.</li> <li>• The load target of 3,400 tonnes is uncertain and should instead be expressed as either a concentration or methodology for a load target as per 13.4.12.</li> <li>• A case by case approach, using an independent expert panel is the only equitable method to achieve the required nitrate reductions.</li> </ul> <p>The figure of 27kg/N/ha has been used (and should be substituted throughout the plan change) to provide consistency with the land use change rule for the 30,000ha and existing irrigation scheme consents within the catchment.</p>	<p><i>Farming activities including farm enterprises in the Lower Hinds/Hekeao Plains Area whether or not they are supplied with water by an irrigation scheme or a principal water supplier, achieve a target load using the methodology set out in policy 13.4.12 or groundwater concentration (see comments in 13.4.12):</i></p> <ol style="list-style-type: none"> <li>1) <i>Requiring existing farming activities to implement good practices from 1 January 2017</i></li> <li>2) <i>Requiring a collective reduction in nitrogen loss from farming activities across the lower Hinds/Hekeao Plains Area for all properties with a nitrogen loss calculation exceeding 27 kg per hectare per annum in accordance with Table 13(h); and</i></li> <li>3) <i>Determining the extent and timing of nitrogen loss reductions to be achieved on individual farm properties from 1 January 2020 by:</i> <ol style="list-style-type: none"> <li>a) <i>use of an independent expert advisory panel for reviewing resource consent applications and any associated Farm Environment Plans and providing advice to Environment Canterbury about the opportunities for nitrogen loss mitigation given the individual circumstances of each farm property.</i></li> <li>b) <i>having regard to the following matters in considering the individual circumstances of each farm property:</i></li> </ol> </li> </ol>

		<ul style="list-style-type: none"> <li>i. <i>The nitrogen baseline for the property and the level of any reductions already achieved from that baseline; and</i></li> <li>ii. <i>Any natural or physical constraints to lower nitrogen leaching faced on-farm that are outside of a farmer’s control; and</i></li> <li>iii. <i>The level of investment in farm infrastructure and where a farm might be in the cycle of infrastructure replacement; and</i></li> <li>iv. <i>The capital and operational costs of making nitrogen loss reductions and the benefit (in terms of maintaining a farm’s financial sustainability) of spreading that investment over time.</i></li> </ul> <p>4. <i>Enabling, by way of resource consent process, changes in land use on a maximum of 30,000 hectares of land, provided the nitrogen loss calculation is limited to no more than 27kg/N per hectare per year.</i></p>
13.4.14	<p>It is important that the enabling of MAR and TSA are undertaken in a way that engages all parties (both those who benefit and those that could be impacted). Importantly this must include the Hinds drainage district.</p> <p>Artificially raising groundwater levels during the spring, autumn and winter increases flooding risk, impacted parties therefore need to be robustly engaged in the investigation and implementation phase of such catchment scale mitigations. This will ensure the costs (for example the potential need for the upgrade of the drainage district) are equitably considered.</p>	<p><i>Enable managed aquifer recharge and targeted stream augmentation, where adverse effects can be appropriately managed. In determining whether adverse effects can be appropriately managed Environment Canterbury will:</i></p> <ul style="list-style-type: none"> <li><i>(a) Encourage consultation to be undertaken with affected communities and landholders before any application is lodged for a MAR or TSA project; and</i></li> <li><i>(b) Ensure research is undertaken to allow (in conjunction with the information gathered through the process described in (a) above) for the full assessment of the matters listed in (c) below.</i></li> <li><i>(c) Require that:</i> <ul style="list-style-type: none"> <li>i. <i>adverse effects on cultural values, including those</i></li> </ul> </li> </ul>

		<p><i>associated with unnatural mixing of water are avoided or mitigated;</i></p> <p><i>ii. ...</i></p>
13.4.16	<p>The concepts of water allocation and actual use (demonstrated use) should not be confused. This is of particular importance in NZ where irrigation season rainfall significantly impacts upon actual use from one season to another. INZ opposes the use of demonstrated use as a reallocation mechanism as -</p> <ul style="list-style-type: none"> <li>• <i>It does not account for NZ's cyclical climatic variations</i> - NZ has irregular (3-10 year) climate cycles. Irrigators need a given reliability of supply, calculated from long-term climate data, to allow them to successfully manage cyclical climatic variables through irrigation. Without this investment in efficient irrigation is compromised.</li> <li>• <i>It does not provide for rotational cropping farming systems</i> - Cropping farmers typically run a 4 – 8 year rotation to avoid issues such as increased disease resistance or incidence, and to meet market entry requirements, seed crop quarantine needs for example. Crops vary significantly in their water needs based on their rooting depth, leaf area, the length of their growing season, the soil they are grown and there planting date. As some takes are due for renewal within the next few years, applying a demonstrated use approach to their allocation has a high probability of unfairly reducing the reliability of supply for a cropping irrigator - allocating them less water than their farming system requires to efficiently operate.</li> </ul> <p>Instead a reasonable use test should be applied based on nine in ten year reliability and 80% application efficiency.</p> <p>Better enabling the transfer of water is an important mechanism for driving improved water use efficiency - one of the main targets of the Canterbury Water Management Strategy (CWMS). Water use efficiency is also a principle driver for the achievement of the region's water quality objectives (another CWMS target) as it is linked to reduced nutrient loss through reduced drainage</p>	<p><i>Improve flows in spring-fed waterbodies and the Lower Hinds River/Hekeao to meet economic cultural, social and environmental outcomes ion the Hinds/Hekeao Plains Area by requiring adherence to flow and allocation limits and limiting the volume and rate of abstraction on replacement water permits to reasonable use calculated in accordance with method 2 in Schedule 10.</i></p>

	<p>and/or surface run-off. It also decreases water infrastructure requirements (intake, storage and distribution), aiding both the hydrological achievability and financial viability of improved water supply reliability and increased irrigated area (again CWMS targets).</p> <p>Water use efficiency can be broken into technical, allocative and dynamic components. However it is dynamic efficiency (enabling water to move to its highest value use over time - transfer) that is paramount. Enabling dynamic efficiency drives both allocative and technical efficiency - it will help ensure the Canterbury region receives the 'best value use and return' from its ample water resources.</p> <p>Lastly over-allocation should be dealt with through a catchment specific inclusive approach. Confusing over allocation policies and rules with those for transfer will create unintended outcomes for the zones CWMS targets and must therefore be avoided.</p>	
13.4.18 & 13.4.19	<p>A 2020 timeframe for the new minimum flows in table 13(e) to apply is not realistic. The optimal combination of catchment scale mitigations (such as MAR &amp; TSA either from Alpine or deep groundwater) will have to be trialled, understood and then implemented if significant impacts are not to be incurred by those that presently take from surface water. This will take longer than a 5 year timeframe. A straight surface water - groundwater swap is also not a possibility as groundwater is not available on every property – the ability to access it (find it) is not guaranteed. A 20 year timeframe (2035) would instead be a more realistic for this policy and also for table 13(e).</p>	<p>13.4.18 ...until 30 June 2035 13.4.19 After 1 July 2035...</p>
Rules 13.5.8, 13.5.9, 13.5.10, 13.5.11 & 13.5.12	<p>INZ opposes the baseline condition in the Upper Hinds/Hekeao Plains Area on the basis that nitrogen is not the main driver of water quality.</p>	<p>13.5.8 <i>Despite any of Rules 13.5.9 to 13.5.12 the use of land for a farming activity in the Upper Hinds/Hekeao Plains Area is a permitted activity provided the property is less than 5 hectares</i></p>

		<p>13.5.9  <i>The use of land for a farming activity in the Upper Hinds/Hekeao Plains Area is a permitted activity, provided the following conditions are met:</i></p> <ol style="list-style-type: none"> <li>1. <i>The Practices in Schedule 24a are being implemented and the information required is recorded in accordance with Schedule 24a, and supplied to the Canterbury Regional Council on request; or</i></li> <li>2. <i>A Farm Environment Plan has been prepared and implemented in accordance with Schedule 7 part A, and supplied to Canterbury Regional Council on request</i></li> </ol> <p>13.5.10  <i>The use of land for a farming activity as part of a farming enterprise in the Upper Hinds/Hekeao Plains Area is a discretionary activity, provided the following conditions are met:</i></p> <ol style="list-style-type: none"> <li>1. <i>The farming enterprise is solely in the Upper Hinds/Hekeao Plains Area; and</i></li> <li>2. <i>A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A.</i></li> </ol> <p>13.5.11  The use of land for a farming activity that does not comply with conditions 1 or 2 of Rule 13.5.9 or condition 2 of Rule 13.5.10 is a non-complying activity.</p> <p>13.5.12  Delete</p>
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13.5.15	The nitrogen baseline interpretation is problematic and needs to be clarified for the Hinds sub-regional chapter. Currently the practical implementation of the nitrogen baseline definition is creating many issues for farming enterprises that have increased their intensity of operation between 2009-13. An average over this period is being used to derive their baseline. This means a number of enterprises are now finding themselves 'non-compliant' through 'Business As Usual'.	<p><i>...provided the following conditions are met:</i></p> <ol style="list-style-type: none"> <li><i>1. The nitrogen loss calculation for the property does not-exceed the maximum annual (30 June to 1 July) nitrogen loss for that property over the period 1 July 2009 to 30 June 2013; and either</i></li> </ol>
13.5.17	The current matters of discretion should instead be aligned with the amendments proposed above in policy 13.4.13. As stated in 13.4.13 the specified target load in Table 13(g) is uncertain and needs to be clarified based on, a more accurate picture of current use, the consistent use of OVERSEER and its input protocols, and improved catchment modelling.	<p><i>The exercise of discretion is restricted to the following matters:</i></p> <ol style="list-style-type: none"> <li><i>1. The quality of, compliance with and auditing of the Farm Environment Plan; and</i></li> <li><i>2. From 1 January 2017 the Good Management Practice Nitrogen Loss Rates to be applied for the baseline land uses; and</i></li> <li><i>3. For the period after 1 January 2020, the matters listed in Policy 13.4.13</i></li> <li><i>4. The potential benefits of the activity to the applicant, the community and the environment.</i></li> </ol>
13.5.20	INZ does not agree with the application of prohibitive activity status. The tool used to derive the nitrogen loss calculation (OVERSEER) currently has many assumptions and limitations associated with its use. For examples there is a 3-5 year time lag before it can account for new technologies and a number of good management practices factors can only be accounted for in a crude manner and some not at all. Non complying activity status is therefore more appropriate as this enables an individual to present evidence in addition to their nitrogen loss calculation to demonstrate how they will mitigate their effects.	... is a non-complying activity
13.5.30	See Policy 13.4.16	...calculated in accordance with method 2 in schedule 10.

13.5.31	This rule restricts the option available for irrigators to make a groundwater-surface water swap. Groundwater is not always available on the same property as the existing resource consent. There are potential infrastructure options available where a larger take on one property could supply several properties. For example this is how the Eifflerton Irrigation Scheme currently operates.	...shall include the following additional conditions: 1. There is no increase in the proposed rate of take or annual volume. 2. ...
13.5.33 & 13.5.34	See policy 13.4.16	Delete both rules
Table 13 (d) & (e)	See policies 13.4.18 & 13.4.19	Change the 2020 timeframe to 2035
13 (f)	For the Mayfield Hinds and Valetta groundwater allocation limits, the table needs to be split into separate allocations for: groundwater irrigation; adaptive permits for groundwater irrigation (note these take already into account their adverse effects upon the environment due to the minimum water level take conditions contained within them); and an allocation for the transfer of surface water to groundwater takes. This will avoid perverse outcomes occurring. For example the table in its current form will mean surface to groundwater swaps will create an over allocation or further over allocation that has to then be resolved. INZ is therefore opposing the new proposed Mayfield Hinds groundwater limit (as there is more water than assessed available for allocation) and also the Valetta limit in its current form. In the short timeframe for submissions INZ has been unable to provide a new table so evidence around this will be provided at the hearings. The scope for requesting that the Valetta limits table is revised comes through rule 15.5.30 that makes a change to rules 5.123 and 5.128	Delete the table - a new allocation table 13(f) will be provided at the hearing
13(g)	See policy 13.4.12	For the upper plain the nitrate load limit should be removed For the lower plain a target concentration from farming activities or a target load methodology should be included instead of the current actual target load

13(h)	See policy 13.4.9 & 13.4.13	Collective reductions upon the	2020	2027	2035
		Farming activities with a nitrogen loss calculation for a property greater than 27kg N per hectare per year	15%	20%	26%
		Farming activities with a nitrogen loss calculation for a property greater than 27kg N per hectare per year	0%	0%	0%
13(k)	<p>There are a range of options available to achieve the surface waterbody limits/targets in the spring-fed plains. Therefore the groundwater concentration limit does not have to equate to the spring-fed surface water limit. The Ministry of Health groundwater drinking water limit (maximum allowable level) is set at 11.3mg/l. Therefore the groundwater limit could be higher than the proposed 6.9mg/l and through alternative solution (TSA) the proposed spring fed surface waterbody limit of 6.9mg/l could still be achieved. In the submission timeframe available INZ has been unable to determine this target, and will instead provide this at the hearing.</p>	An alternative nitrate N groundwater concentration will be provided at the hearing.			