Please find my submission to Plan Change 7 attached.

Kind regards

Alister Metherell
Submission on Proposed Plan
Change 7 to the Canterbury
Land and Water Regional Plan

Form 5: Submissions on a Publicly Notified Proposed Policy Statement or Regional Plan under Clause 5 of Schedule 1 of the Resource Management Act 1991

Return your signed submission by 5.00pm Friday 13 September 2019 to:
Proposed Plan Change 7 to the Land and Water Regional Plan
Environment Canterbury
P O Box 345
Christchurch 8140

Full Name: Allister Kelth Metherell
Organisation*: Melbury Limited
Postal Address: 1 Royal Elm Lane, Bryndwr,
Christchurch
Email: allister.metherell@gmail.com

Phone (Hm): 03 351 6118
Phone (Wk): 03 353 8567
Phone (Cell): 021 900 467
Postcode: 8053
Fax:

Trade Competition

Pursuant to Schedule 1 of the Resource Management Act 1991, a person who could gain an advantage in trade competition through the submission may make a submission only if directly affected by an effect of the proposed policy statement or plan that:

a) adversely affects the environment; and

b) does not relate to trade competition or the effects of trade competition.

Please tick the sentence that applies to you:

☐ I could not gain an advantage in trade competition through this submission; or
☐ I could gain an advantage in trade competition through this submission.

If you have ticked this box please select one of the following:

☐ I am directly affected by an effect of the subject matter of the submission
☐ I am not directly affected by an effect of the subject matter of the submission

Signature: ___________________________ Date: 13/9/19

Please note:
(1) all information contained in a submission under the Resource Management Act 1991, including names and addresses for service, becomes public information.

☐ I do not wish to be heard in support of my submission; or
☐ I wish to be heard in support of my submission; and if so,
☐ I would be prepared to consider presenting my submission in a joint case with others making a similar submission at any hearing
SUBMISSION ON
PROPOSED PLAN CHANGE 7 TO THE CANTERBURY LAND AND WATER
REGIONAL PLAN

TO: Canterbury Regional Council
    PO Box 345
    CHRISTCHURCH 8140
    Via email: mailroom@ecan.govt.nz

SUBMITTER: Dr Alister Metherell
           Melbury Limited
           1 Royal Elm Lane
           Bryndwr
           CHRISTCHURCH 8053
           Mobile: 021 900 467
           Email: alister.metherell@gmail.com
1. **INTRODUCTION**

1.1. I have a B. Ag. Sc (Hons) and a PhD in agricultural science and have previously been employed by the Ministry of Agriculture and Fisheries and AgResearch as a scientist with a particular focus on soil fertility, nutrient cycling and modelling fertiliser requirements, including major contributions to the development of the Overseer model. I am currently employed by Ravensdown Limited in a role focused on science related to soils and fertiliser and modelling nutrient cycling and fertiliser requirements.

1.2. I am a Director of Melbury Limited, a family company, which owns a 309ha farm (approximately 280ha effective) at North Loburn, which has been in family ownership for over 100 years. The farm has been leased to third parties since 1992, but I retain a strong interest in its viability as an agricultural enterprise. The farm is currently a dryland operation with a mix of sheep, beef, dairy grazing and cropping with the mix of enterprises in any one year depending on market and climate factors.

1.3. The Loburn Irrigation Company has proposed purchasing 5ha of land from Melbury Limited to build a storage pond. A Memorandum of Understanding was signed whereby, in exchange for the sale of farm land, Melbury Limited would purchase shares in the irrigation company to provide sufficient water to irrigate about 30ha. As the farm is in an Orange Nutrient Allocation Zone, under the planning regime of Plan Change 5, this addition of less than 50ha irrigation would be a Permitted Activity.

1.4. In my role at Ravensdown I had a great deal of involvement in preparing evidence for Plan Change 5 in relation to the Schedule 28 modelling proxies. I was a member of the Technical Working Group, brought together by Environment Canterbury, which has subsequently reviewed the fertiliser and irrigation proxies. I was also invited by Environment Canterbury to contribute to a study to estimate the uncertainty in Overseer modelling in the Waimakariri Zone.

1.5. This submission is a personal submission and does not necessarily reflect the views of Ravensdown.

1.6. I wish to be heard in support my submission.

2. **AREAS OF CONCERN WITH PLAN CHANGE 7.**

2.1. **Calculation of GMP N loss rates**

I am very concerned Plan Change 7 has continued to use the GMP N loss rates as calculated by the Farm Portal and Schedule 28 modelling proxies.

The ECan Good Management Practice Technical Working Group concluded that the Nitrogen (N) Fertiliser Proxy currently implemented in the Farm Portal is not fit for purpose to calculate Good Management Practice (GMP) N Loss Rates from Overseer model output files and recommended that the fertiliser proxy be disabled in the Farm Portal. The Technical Working Group also recognised that there were technical issues with the P fertiliser proxies. The Technical Working Group also recommended that the irrigation proxy be disabled in the Farm Portal and replaced by a revised lookup table for on-farm GMP assessment. These recommendations were endorsed by the Implementation Working Group and presented to an Environment Canterbury Council meeting.

2.1.1. **Use of GMP N loss rates in PC7.**

The Implementation Working Group recommended to Council that Plan Change 7 should be delayed until the issues were resolved stating “It would not be responsible
to notify Plan Change 7, given the Technical Working Group’s advice has significant implications for catchment models used to assess effects and determine appropriate reduction regimes.”

The Council Chair in a letter to the chair of the GMP Implementation Working Group dated 8 July 2019 stated “Council agrees with the Working Group that the nitrogen fertiliser proxies can contribute to nitrogen loss rate figures that are erroneous. We have considered your recommendation and propose to proceed as follows:

• Council is required to retain a Farm Portal that reflects the requirements of Schedule 28 of the LWRP. Disabling the proxies would only be possible via a plan change to amend Schedule 28 of the LWRP. The nitrogen fertiliser proxies in the Farm Portal cannot therefore be ‘disabled’.

• However, the LWRP does already contain an ‘alternative pathway’ rule framework (see below) that allows an application for consent to be made and an ‘Equivalent GMP Loss Rate’ to be calculated, in circumstances when the Farm Portal generates an erroneous loss rate number.

• As is already allowed for, in such cases the N proxy is not used (i.e. it is ‘disabled’ for that case) – as recommended by the Working Group.”

Plan Change 7 was the opportunity to make that change. However Plan Change 7 has not removed or modified the irrigation and fertiliser proxies. Instead it has made extensive use of GMP loss rate calculations including the proxies in the proposed rules and in the modelling underlying the basis for the Plan Change. This has compromised a substantial part of the basis of the Plan Change, especially in relation to the proposed N reduction targets in the Nitrogen Priority Area of the Waimakariri Zone. In particular the catchment modelling based on Overseer used Overseer files modified by the Schedule 28 proxies and included a step to estimate the difference between Current Management Practice to Good Management Practice. Given the use of the flawed proxies this aspect of the model was given a relatively high degree of uncertainty, hence inflating the overall confidence levels in the model results. If it was not for this inflated uncertainty, the 95th and 99th percentile confidence intervals presented for Christchurch aquifer nitrate concentrations in the interzone modelling report would be lower.

2.1.2. I am extremely concerned that Plan Change 7 includes any reference at all to GMP loss rates in any of its rules. It is my submission that all references (they are too numerous for me to list individually) to GMP loss rates be removed from the Plan and be replaced by Baseline Loss rates OR that the Plan Change adds a clause to specifically remove the Schedule 28 fertiliser proxies and modify the irrigation proxy in line with the Technical Working Group recommendations.

2.2. Winter Grazing Thresholds

In the PC5 submissions and hearings there was considerable debate about the appropriate level for area or the percentage of a farm used for winter grazing as a permitted activity. As a result of evidence presented the threshold was changed and a region wide threshold of 10% of the farm area for farms between 10 and 1000ha was adopted as being a level which would not make a typical farm management practice an activity requiring a consent. However within months of PC5 being made operative on 1 February 2019, Plan Change 7
seeks to change that rule for the Waimakariri Zone, reducing the percentage of the farm area to 5%. Firstly, this makes a mockery of the planning process, and secondly is not justified as the change was apparently based on a concern that small holdings (ie. Lifestyle blocks) would suddenly become hotspots of winter grazing as farmers transferred operations from their farms to other blocks of land in the district. This is a most unlikely scenario for either farmers or small holders. The actual impact of a reduction in the winter grazing area per farm is that farmers will seek to maximise crop yields through the use of more fertiliser and higher yielding crops such as fodder beet instead of brassicas, thus creating more intense hotspots on the individual farms and a higher risk of nitrate leaching.

2.2.1. The definition of Winter Grazing should take into account how Winter Grazing is actually managed as there is no differentiation between 24/7 and restricted grazing in conjunction with pastoral blocks which can have a markedly different nutrient loss impact.

3. Orange Zone

The area of the Waimakariri Zone north of the Ashley River is classified as an Orange Nutrient Allocation Zone, which in the region wide rule 5.54 (introduced under Plan Change 5) the use of land for a farming activity is a permitted activity provided

i) the area of the property irrigated with water is less than 50 hectares; and

ii) the area of the property used for winter grazing is less than:

a) 10 hectares, for any property less than 100 hectares in area; or

b) 10% of the area of the property, for any property between 100 hectares and 1000 hectares in area; or

c) 100 hectares, for any property greater than 1000 hectares in area.

Plan Change 7 has not changed the designation of the Ashley / Rakahuri FMU from an Orange Zone, but has stealthily changed the thresholds for permitted activities to be equivalent to those of Red Zones with no increase in irrigated area above 10ha. There is no justification for this change and none was presented in the ZIPA. In fact a recent Ecan report states: “Modelling results for the Ashley River/Rakahuri catchment suggest that nitrate concentrations are unlikely to change significantly under the GMP, PC5PA and Current Pathways scenarios for most watercourses” (Kreleger and Etheridge, May 2019. Waimakariri Land and Water Solutions Programme Options and Solutions Assessment Nitrate Management Report No. R19/68), where PC5PA is Plan Change 5, Permitted Activities with full uptake of permitted activity rules for winter grazing and irrigation. It is extremely unlikely that there would be full uptake of permitted activity rules as there is a very limited supply of water available for irrigation and a significant proportion of the area is in small holdings which are very unlikely to have winter crops for cattle grazing. Nitrate levels in the Ashley River are currently low and have a decreasing trend (Kreleger and Etheridge, 2019). Hence further restrictions on permitted farming activities in the Ashley / Rakahuri FMU are not justified.

There is nothing in the objectives of the Waimakariri Water Zone Committee that justify the effective re-designation of the Orange Zone.

Objective 6 of the Waimakariri Zone Committee is to have irrigation water with a reliability of 95% available in the zone. Currently the reliability of the Loburn Irrigation Company water supply can be compromised by low flow levels in the Ashley River. As the scheme currently has no storage, low flows will immediately result in cessation of irrigation. Planning has been underway for some years to build a storage pond to provide for irrigation during low flows. This plan was just coming to fruition, with a Special General Meeting of the Loburn Irrigation Company on 26 June 2019 giving approval to its board to buy 5ha of land from Melbury Limited on which a storage pond would be constructed and in exchange sell irrigation shares to Melbury Limited, which would allow Melbury Limited to irrigate approximately 30ha.

However the rule changes introduced in Plan Change 7, result in the irrigation of 30ha of Melbury Limited land no longer being a permitted activity. Whilst the addition of 30ha well managed irrigation would have little impact on the nitrate leaching footprint of the 309ha property the requirement to be in a consenting regime and having to meet an erroneous GMP N loss target means that Melbury Limited are now not prepared to formalise the proposed agreement with the Loburn Irrigation Company. Hence an outcome of Plan Change 7 is that it has failed to increase the reliability of irrigation in the Waimakariri District.
The specific provisions of the Proposed Plan that my submission relates to are:

My submission is that: (include whether you support or oppose the specific provisions or wish to have them amended and the reasons for your views.)

I seek the following decisions from Environment Canterbury: (Please give precise details for each provision. The more specific you can be the easier it will be for the Council to understand your concerns.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Sub-section/Point</th>
<th>Oppose/support</th>
<th>Reasons</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4.25</td>
<td>a</td>
<td>Oppose</td>
<td>Further restriction to the region-wide rules should not be applied to the Ashley / Rakahuri Fresh Water Management Unit which is classified as an Orange Nutrient Allocation zone. There is no evidence that either Current Pathways or Permitted Activities with full uptake of permitted activity rules for winter grazing and irrigation will result in a significant change in nitrate concentrations in the Ashley River/Rakahuri catchment (Kreleger and Etheridge, May 2019)</td>
<td>Rule 8.4.25 must specifically exclude the Ashley / Rakahuri Fresh Water Management Unit or the Orange Nutrient Allocation zone OR specifically only include the Nitrate Priority Area or the Red Nutrient Allocation Zone.</td>
</tr>
<tr>
<td>8.4.26</td>
<td>a, b, c</td>
<td>Oppose</td>
<td>1) As above this rule should not apply to the Ashley / Rakahuri Fresh Water Management Unit or Orange Nutrient Allocation zone. 2) Remove all references to GMP or Good Management Practice Loss rates as this implies using the Farm Portal calculations which include the erroneous fertiliser and irrigation proxies.</td>
<td>1) As above, specifically exclude the Ashley / Rakahuri Fresh Water Management Unit or the Orange Nutrient Allocation zone. 2) Replace Baseline GMP loss rate with Baseline Loss Rate.</td>
</tr>
<tr>
<td>8.4.28</td>
<td></td>
<td>Oppose (in part)</td>
<td>The spatial extent that this rule applies to is ambiguous. It is not clear whether it applies to the whole of the Waimakariri Sub-region or just the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone.</td>
<td>Reword so that it is clear that the requirement for audited Farm Environment Plans only applies to farms directly adjoining a river or coastal lake within the Ashley Estuary (Te Aka Aka) and Coastal Protection Zone.</td>
</tr>
<tr>
<td>Section</td>
<td>Proposal</td>
<td>Comment</td>
<td>Reason</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>---------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>8.4.28B</td>
<td>Oppose (in part)</td>
<td>Remove the word “limited”.</td>
<td>In most circumstances the Farm Portal will generate erroneous Baseline GMP Loss Rates and erroneous Good Management Practice Loss Rates, hence an Equivalent Baseline GMP loss rate or Equivalent Good Management Practice Loss Rate will have to be calculated omitting the N fertiliser proxy and applying a different set of irrigation management inputs than used in the Farm Portal.</td>
<td></td>
</tr>
<tr>
<td>8.4.38</td>
<td>a</td>
<td>Oppose</td>
<td>Changing the review date for all surface water or stream depleting groundwater permits within the Ashley River/Rakahuri Freshwater Management Unit that have a direct or high stream depletion effect will result in the consent conditions for the Loburn Irrigation Company water take from the Okuku River expiring in 2027 instead of 2032. This reduces the duration for which there is certainty of water supply for undertaking the proposed development of irrigation water storage infrastructure and on-farm irrigation development by Melbury Limited.</td>
<td></td>
</tr>
<tr>
<td>8.5.23A</td>
<td>a, c</td>
<td>Oppose</td>
<td>Delete clauses a and c.</td>
<td>This proposed rule will make most farms in the Waimakariri Sub-region discretionary activities, and therefore subject to a resource consent, because for any farm that has used nitrogen fertiliser or irrigation, the N loss number generated from the Farm portal will be erroneous.</td>
</tr>
<tr>
<td>8.5.23B</td>
<td>a, c</td>
<td>Oppose</td>
<td>Delete clauses a and c.</td>
<td>Proposed rule 8.5.23A (see above) will make most farms and farmlets greater than 5ha in the Waimakariri Sub-region discretionary activities, and thus require an Accredited Farm Consultant</td>
</tr>
<tr>
<td>Section</td>
<td>Oppose</td>
<td>Reason</td>
<td>Action</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td></td>
</tr>
<tr>
<td>8.5.23C</td>
<td>A farming activity should not become a prohibited activity as a consequence of the Farm portal being generating erroneous results.</td>
<td>Remove this rule.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5.24</td>
<td>3a, b</td>
<td>The permitted activity rule has unjustifiably changed the threshold for an increase in irrigated land area and decreased the threshold for winter grazing for properties in the Orange Nutrient Allocation zone. As noted in the introduction to this submission, the ECAn study by Kreleger and Etheridge (May 2019) has shown that full uptake of the PC5 permitted activity rules for irrigation and winter grazing will not significantly change nitrate levels in the Ashley / Rakahuri catchment.</td>
<td>Exclude the Ashley / Rakahuri FMU from this rule and apply the region wide thresholds.</td>
<td></td>
</tr>
<tr>
<td>8.5.25</td>
<td>3a, b</td>
<td>This rule refers to 8.5.24 and applies the same thresholds to Orange zone farms.</td>
<td>Exclude the Ashley / Rakahuri FMU from this rule and apply the region wide thresholds.</td>
<td></td>
</tr>
<tr>
<td>8.5.26</td>
<td></td>
<td>This rule refers to 8.5.24 and 8.5.24 and by implication applies the same thresholds to Orange zone farms. The rule also refers to erroneous Baseline GMP loss rates and Good Management Practice Loss Rates.</td>
<td>Exclude the Ashley / Rakahuri FMU from this rule. Remove reference to Baseline GMP loss rates and Good Management Practice Loss Rates.</td>
<td></td>
</tr>
<tr>
<td>8.5.27</td>
<td>Oppose</td>
<td>The wording of this rule “The use of land for a farming activity as part of a farming enterprise is a discretionary activity ...” makes all farming activity a discretionary activity, with no allowance for permitted activities.</td>
<td>Remove this rule.</td>
<td></td>
</tr>
<tr>
<td>8.5.28</td>
<td>Oppose</td>
<td>This rule refers to 8.5.25 and 8.5.26 and by implication applies the same thresholds to Orange zone farms.</td>
<td>Exclude the Ashley / Rakahuri FMU from this rule.</td>
<td></td>
</tr>
<tr>
<td>8.5.29</td>
<td>Oppose</td>
<td>This rule refers to 8.5.26 and by implication applies the same thresholds to Orange zone farms. Non-compliance with unjustified and erroneous rules should never be a prohibited activity.</td>
<td>Remove this rule.</td>
<td></td>
</tr>
<tr>
<td><strong>Table 8.9</strong></td>
<td>Oppose</td>
<td>The loss reduction targets in this table are based on the erroneous Baseline GMP. The nitrogen loss reductions proposed beyond 2030 are ridiculous and unachievable, and if implemented would have a huge economic and social cost. These targets cannot be justified by the current groundwater modelling which has a very high degree of uncertainty and current monitoring which provides very little evidence to support the modelling.</td>
<td>Remove reference to Baseline GMP in the calculation of loss reduction targets. Remove all columns beyond 2030. Increase the amount of groundwater monitoring and improve the reliability of the groundwater modelling.</td>
<td></td>
</tr>
</tbody>
</table>