From:	Raymond Ford
To:	Sarah Drummond
Subject:	FW: Hort NZ submission to PC5
Date:	Tuesday, 5 April 2016 4:07:05 p.m.

From: Lynette Wharfe [mailto:lynette@agribusinessgroup.co.nz]
Sent: Tuesday, 5 April 2016 3:20 p.m.
To: Raymond Ford
Subject: FW: Hort NZ submission to PC5

Raymond

I gave Angela some comment on submissions points and she has asked me to forward these to you.

Give me a call if you want to discuss.

Thanks

Lynette

Lynette Wharfe
Consultant
The AgriBusiness Group
PO Box 10 824
Wellington 6143
E: lynette@agribusinessgroup.co.nz
Ph 04 4723 578
Cell 027 6206379

From: Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
Sent: Tuesday, 5 April 2016 2:32 PM
To: Lynette Wharfe
Subject: Fwd: Hort NZ submission to PC5

Can you forward this to Raymond?

Cheers
Angela

Sent from my iPhone

Begin forwarded message:

> **From:** Lynette Wharfe <lynette@agribusinessgroup.co.nz>
> **Date:** April 4, 2016 at 8:14:49 PM GMT+12
> **To:** Angela Halliday <Angela.Halliday@hortnz.co.nz>
> **Cc:** Damien Farrelly <Damien.Farrelly@hortnz.co.nz>
> **Subject: RE: Hort NZ submission to PC5**
>
> Angela

It was deliberate on my part to reorder the definition.

I was concerned about the 'and' at the end of b)

Effectively as the definition is proposed the auditor would need to be a member of an ISO audit programme AND meet the criteria 1 ,2 and 3.

So the reorder meant that the criteria 1-3 was only required when the pathway is clause a) – or clause b) in the Horticulture NZ submission which requires meeting the criteria.

There needs to be very clear distinction between the 2 pathways of approval.

Happy to discuss with Raymond if you like.

Lynette Wharfe
Consultant
The AgriBusiness Group
PO Box 10 824
Wellington 6143
E: lynette@agribusinessgroup.co.nz
Ph 04 4723 578
Cell 027 6206379

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Monday, 4 April 2016 3:55 PM
To: Angela Halliday
Cc: Lynette Wharfe; Damien Farrelly
Subject: RE: Hort NZ submission to PC5

Thanks Angela
I'll have a look at your submission tomorrow, and get back to you if I have any more questions.

Cheers
Raymond

From: Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
Sent: Monday, 4 April 2016 3:52 p.m.
To: Raymond Ford
Cc: Lynette Wharfe; Damien Farrelly
Subject: RE: Hort NZ submission to PC5

Hi Raymond

The purpose here was to ensure that the NZGAP auditors are recognised. They may not be ECAN auditors and I guess we want to ensure here that the scheme if it is meeting ECAN's requirements is not tripped up by having to have ECAN auditor training made mandatory for them. We are not worried about the ordering of this.

Cheers

Angela

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Thursday, 31 March 2016 1:31 p.m.
To: Angela Halliday <Angela.Halliday@hortnz.co.nz>
Subject: Hort NZ submission to PC5

Hi Angela
I am summarising HortNZ submission on Plan Change 5.

The decision you have requested on the definition of Certified Farm Auditor (pg 13 & 14) is a bit unclear. Clauses (a) and (b) have been reversed and the changes made to the wording of clause (b) (your new clause (a))

Was the intention to amend the wording of clause (b) and reorder the clauses ?

Please give me a call if this is unclear

Regards

Raymond

Raymond Ford
Principal Planner
Environment Canterbury

PO Box 345, Christchurch 8140
Customer Services: 0800 324 636
Pollution Hotline: 0800 76 55 88

027 549 7645
Raymond.Ford@ecan.govt.nz

From: Raymond Ford
To: Sarah Drummond
Subject: FW: Hort NZ submission to PC5 (2)
Date: Tuesday, 5 April 2016 4:06:37 p.m.

From: Lynette Wharfe [mailto:lynette@agribusinessgroup.co.nz]
Sent: Tuesday, 5 April 2016 4:05 p.m.
To: Raymond Ford
Cc: Angela Halliday (Angela.Halliday@hortnz.co.nz)
Subject: RE: Hort NZ submission to PC5 (2)

Raymond

That is correct. Part of it is in 3.4 But the second sentence in 2.6 should also have been included.

Lynette

Lynette Wharfe
Consultant
The AgriBusiness Group
PO Box 10 824
Wellington 6143
E: lynette@agribusinessgroup.co.nz
Ph 04 4723 578
Cell 027 6206379

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Tuesday, 5 April 2016 4:00 PM
To: Lynette Wharfe
Cc: Angela Halliday (Angela.Halliday@hortnz.co.nz)
Subject: RE: Hort NZ submission to PC5 (2)

Hi Lynette
Just to confirm;
The decision sought in Policy 4.37 (para. 3.4) is incorrect, instead it should refer to the decision sought in para 2.6?
Raymond

From: Lynette Wharfe [mailto:lynette@agribusinessgroup.co.nz]
Sent: Tuesday, 5 April 2016 3:20 p.m.
To: Raymond Ford
Subject: FW: Hort NZ submission to PC5 (2)

Raymond

Further clarification on submission points.

Thanks

Lynette

Lynette Wharfe

Consultant
The AgriBusiness Group
PO Box 10 824
Wellington 6143
E: lynette@agribusinessgroup.co.nz
Ph 04 4723 578
Cell 027 6206379

From: Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
Sent: Tuesday, 5 April 2016 2:33 PM
To: Lynette Wharfe
Subject: Re: Hort NZ submission to PC5 (2)

Yes send this clarification through to Raymond as well.

Cheers
A

Sent from my iPhone

On Apr 4, 2016, at 8:21 PM, Lynette Wharfe <lynette@agribusinessgroup.co.nz> wrote:

> Angela
>
> The definition for Baseline GMP Loss Rate had a proviso for where a Baseline GMP loss rate cannot be generated by the Farm Portal.
>
> So we sought that the definition of GMP loss rate also has a proviso for where the Farm Portal can't generate a loss rate.
>
> I had added the change for the definition to the relief under Policy 4.37 but then an additional bit was added to the change sought to the definition of GMP Loss Rate. This means that there is an inconsistency between the 2 points of relief.
>
> So effectively the change that should be in Policy 4.37 is the change to the definition of GMP Loss Rae as in 2.6 of the submission.
>
> Hope that makes sense
>
> Lynette
>
> Lynette Wharfe
> Consultant
> The AgriBusiness Group
> PO Box 10 824
> Wellington 6143
> E: lynette@agribusinessgroup.co.nz
> Ph 04 4723 578
> Cell 027 6206379
>
> ---
>
> **From:** Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
> **Sent:** Monday, 4 April 2016 4:03 PM

To: Raymond Ford
Cc: Lynette Wharfe
Subject: RE: Hort NZ submission to PC5 (2)

Hi Raymond

I guess we are hedging our bets here – the request to get 'good management practices' recognised for those farming systems that may have issues with the portal would trump the redefinition reverting back to the baseline – this is only I guess if the other request is ignored (growers probably haven't done a baseline either so either way it is going to be difficult if not impossible).

I hope this makes sense! We can do a further submission which defines our position more accurately if need be.

Cheers
Angela

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Thursday, 31 March 2016 3:26 p.m.
To: Angela Halliday <Angela.Halliday@hortnz.co.nz>
Subject: FW: Hort NZ submission to PC5 (2)

Hi Angela
Another query.
The decision you have requested on Policy 3.37, page 17 of your submission, refers to the definition of Good Management Practice Loss Rate. Is the reference to the definition correct as you have already sought a separate decision on the GMP Loss Rate ?

Regards

Raymond

From:	Raymond Ford
To:	Sarah Drummond
Subject:	FW: Hort NZ submission to PC5 (2)
Date:	Tuesday, 5 April 2016 9:32:34 a.m.

From: Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
Sent: Monday, 4 April 2016 4:03 p.m.
To: Raymond Ford
Cc: Lynette Wharfe
Subject: RE: Hort NZ submission to PC5 (2)

Hi Raymond

I guess we are hedging our bets here – the request to get 'good management practices' recognised for those farming systems that may have issues with the portal would trump the redefinition reverting back to the baseline – this is only I guess if the other request is ignored (growers probably haven't done a baseline either so either way it is going to be difficult if not impossible).

I hope this makes sense! We can do a further submission which defines our position more accurately if need be.

Cheers
Angela

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Thursday, 31 March 2016 3:26 p.m.
To: Angela Halliday <Angela.Halliday@hortnz.co.nz>
Subject: FW: Hort NZ submission to PC5 (2)

Hi Angela
Another query.
The decision you have requested on Policy 3.37, page 17 of your submission, refers to the definition of Good Management Practice Loss Rate. Is the reference to the definition correct as you have already sought a separate decision on the GMP Loss Rate ?

Regards

Raymond

From:	Raymond Ford
To:	Sarah Drummond
Subject:	FW: Hort NZ submission to PC5
Date:	Tuesday, 5 April 2016 9:32:46 a.m.

From: Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
Sent: Monday, 4 April 2016 3:52 p.m.
To: Raymond Ford
Cc: Lynette Wharfe; Damien Farrelly
Subject: RE: Hort NZ submission to PC5

Hi Raymond

The purpose here was to ensure that the NZGAP auditors are recognised. They may not be ECAN auditors and I guess we want to ensure here that the scheme if it is meeting ECAN's requirements is not tripped up by having to have ECAN auditor training made mandatory for them. We are not worried about the ordering of this.

Cheers
Angela

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Thursday, 31 March 2016 1:31 p.m.
To: Angela Halliday <Angela.Halliday@hortnz.co.nz>
Subject: Hort NZ submission to PC5

Hi Angela
I am summarising HortNZ submission on Plan Change 5.

The decision you have requested on the definition of Certified Farm Auditor (pg 13 & 14) is a bit unclear. Clauses (a) and (b) have been reversed and the changes made to the wording of clause (b) (your new clause (a))

Was the intention to amend the wording of clause (b) and reorder the clauses ?

Please give me a call if this is unclear

Regards

Raymond

Raymond Ford
Principal Planner
Environment Canterbury

PO Box 345, Christchurch 8140
Customer Services: 0800 324 636
Pollution Hotline: 0800 76 55 88

027 549 7645
Raymond.Ford@ecan.govt.nz



From:	Raymond Ford
To:	Sarah Drummond
Subject:	FW: Hort NZ PC5 Submission - query
Date:	Tuesday, 5 April 2016 9:32:58 a.m.

From: Angela Halliday [mailto:Angela.Halliday@hortnz.co.nz]
Sent: Monday, 4 April 2016 3:33 p.m.
To: Raymond Ford
Subject: RE: Hort NZ PC5 Submission - query

Hi Raymond we just wanted an OR option after a and b for those farm systems that are not at this point going to be able to be adequately modelled in OVERSEER (intensive vege) so a) b) OR c).

I will get back to you on the other questions shortly….

Cheers
Angela

Angela Halliday | Advisor, Natural Resources and Environment | **Horticulture New Zealand**
P +64 4 470 5664 | **M** +64 27 947 3344| **W** www.hortnz.co.nz
PO Box 10232, The Terrace, Wellington 6143

From: Raymond Ford [mailto:Raymond.Ford@ecan.govt.nz]
Sent: Friday, 1 April 2016 11:29 a.m.
To: Angela Halliday <Angela.Halliday@hortnz.co.nz>
Subject: Hort NZ PC5 Submission - query

Hi Angela
Another query re Part B Farm Environment Plan content (pg 23).

Your decision sought says “Add to Schedule 7 Part B 4 B) after a) and b)
OR ..”

It looks like the decision you are requesting after the first option is missing

Raymond

Raymond Ford
Principal Planner
Environment Canterbury

PO Box 345, Christchurch 8140
Customer Services: 0800 324 636
Pollution Hotline: 0800 76 55 88

027 549 7645
Raymond.Ford@ecan.govt.nz

From:	Eve Williams
To:	Mailroom Mailbox; Customer Services
Cc:	Angela Halliday
Subject:	HortNZ Submission on PC5 - Appendix attached
Date:	Monday, 14 March 2016 2:28:04 p.m.
Attachments:	HNZ Submission PC5 .pdf Submission on Proposed Plan Change 5 to the Canterbury Land and Water Regional Plan.msg

Good afternoon

We placed our submission on Friday 11th March but missed off the Appendix we referred to in the submission. As per the customer services rep I talked to this morning – please find attached the same submission with the Appendix attached. I have also attached the email of our submission that was lodged on Friday

Many thanks
Eve

Eve Williams | Executive Assistant to Chris Keenan & Angela Halliday | Horticulture New Zealand
P: +64 4 470 5668 | **M:** 021 254 5830 | **www.hortnz.co.nz**
A: PO Box 10232, The Terrace, Wellington 6143 | L4, Co-operative Bank House, 20 Ballance St, Wellington 6011

SUBMISSION ON PROPOSED PLAN CHANGE 5 TO THE CANTERBURY LAND AND WATER REGIONAL PLAN

TO: Environment Canterbury

SUBMISSION ON: Proposed Plan Change 5 to the Proposed Canterbury Land and Water Regional Plan (Nutrient Management and Waitaki sub Region)

NAME: Horticulture New Zealand

ADDRESS: PO Box 10 232
WELLINGTON

1. Horticulture New Zealand's submission, and the decisions sought, are detailed in the attached schedules:

Schedule 1:	Overall comments
Schedule 2:	Section 2 – How the Plan Works and Definitions
Schedule 3:	Section 4 - Policies
Schedule 4:	Section 5 – Region wide rules
Schedule 5:	Schedule 7 and 7A

This submission is also made on behalf of the Horticulture Canterbury which incorporates fruit, vegetable and berry growers in Canterbury.

2. Horticulture New Zealand wishes to be heard in support of this submission.

3. Background to Horticulture New Zealand and its RMA involvement:

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

3.2 On behalf of its 5,454 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 sustainable economic production sense.

4. Trade Competition

Pursuant to Schedule 1 of the Resource Management Act Horticulture NZ is not a body that could gain an advantage in trade competition through this submission.

Thank you for the opportunity to submit on the Proposed Plan Change 5 to the Canterbury Land and Water Regional Plan.

Angela Halliday
Advisor – Resource Management and Environment
Horticulture New Zealand

Dated: 11 March 2106

Address for service:

Angela Halliday
Advisor – Natural Resources and Environment
Horticulture New Zealand
PO Box 10-232
WELLINGTON

Tel: 64 4 472 3795
DDI: 64 4 470 5664
Fax: 64 4 471 2861
Email: angela.halliday@hortnz.co.nz

Schedule One: Overall comments: Matrix of Good management

1.1 Approach in Proposed Plan Change 5

Horticulture NZ generally supports the approach in Variation 5 to include good management practices into the regime for managing land use and water quality in Canterbury. Horticulture NZ was a member of the product development group for the Matrix of Good Management and contributed to the Industry Agreed Good Management Practices. The focus on getting growers to employ Good Management Practices in their operations and to meet or exceed standards is important for Horticulture NZ.

To assist in achieving this Horticulture NZ seeks:

- Recognition of Industry Audited Self-Management programmes, such as NZGAP
- Recognition of the limitations for some cropping systems to use the Farm Portal and incorporation of alternative approaches for these systems.

Farm Portal and cropping farm systems

Horticulture NZ does have concerns about how the Farm Portal will work for growing operations in a practical sense, given the recognised issues with using OVERSEER to represent cropping operations as outlined in Appendix 1 (MGM Arable and horticultural crop modelling). There are also relatively few Good Management Practices which growers can employ that can be modelled in OVERSEER. As such, and in order to be proactive and solutions focussed, Horticulture NZ has met with ECAN staff to try and come up with a possible viable alternative that still uses the OVERSEER model to represent the farm system but uses a proxy and/or representative rotation depending on the farm type being modelled. This is set out below.

Industry Audited Self- Management Schemes

Horticulture NZ is focused on ensuring that growers can practically meet the plan requirements whilst minimising duplication of effort for growers in farm planning and auditing. Horticulture NZ has been working alongside ECAN to enable the quality assurance scheme NZGAP to be recognised for delivering, managing and auditing grower's environmental requirements and Good Management Practices under the Land and Water Plan. This approach is recognised nationally in the Land and Water Forum Report which recommended:

Recommendation 18: Central government, with input from sector groups, councils, iwi and NGOs, should develop a national process for approval of industry audited self-management schemes and have this process in place by 1 July 2017.

Decisions sought:

Make amendment to Plan Change 5 to provide for Industry Audited Self-Management Schemes to work in conjunction with Council to enable growers to gain and prove compliance with the plan.

1.2. Industry Audited self-management schemes

New Zealand GAP (NZGAP) is a certification scheme which defines and endorses Good Agricultural Practices for the New Zealand Horticulture Industry. Members of the NZGAP programme can demonstrate that they understand and meet the expectations of consumers for the production, packing and distribution of New Zealand grown produce.

Established in 1999, New Zealand GAP is a robust assurance programme that has been developed to enable growers to meet a range of regulatory and market requirements, including environmental matters. The programme is based on internationally recognised integrity principles which support an Audited Self-Management model.

The programme provides an efficient, effective management and production system that enables growers to manage the increasing cost, complexity and duplication of standards and audits.

The New Zealand Horticulture Industry has established a reputation its ability to meet market and regulatory requirements. The industry has a high degree of capability among its growers and auditors.

Horticulture NZ is currently further developing the NZGAP scheme to meet the Farm Environment Plan requirements in Canterbury and throughout New Zealand. This will be mutually beneficial to both Council and Industry through:

- moving the regulatory system from a command and control reactive style regulation to a more proactive 'proof of system' where industry, through the scheme, provides Council with evidence of compliance through a certified independently audited scheme;
- reducing compliance costs for growers and council;
- reducing duplication of effort as growers are already being audited through NZGAP which is benchmarked to Global GAP as a requirement of the market.

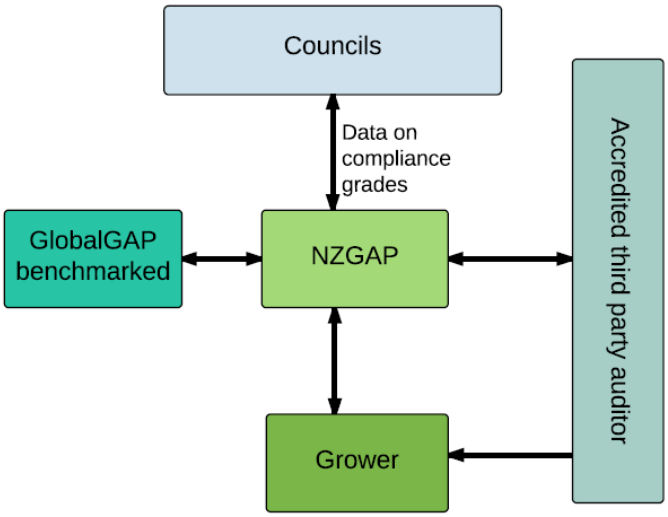
In order to ensure that this initiative can be implemented there needs to be recognition of Industry Audited Self-Management Schemes in the Plan. The requirements to meet the FEP and to also have accredited independent auditors needs to be managed by the scheme in accordance with Council criteria rather than directly by the Council. The scheme would report back to council on compliance in accordance with their tiered audit system (as elaborated on below).

Horticulture NZ aims to build on the existing programme to meet FEP requirements nationally. Councils throughout the country are looking to roll out Farm Environment Plan requirements and NZGAP has the capacity to meet these requirements and shoulder some of the regulatory burden through auditing.

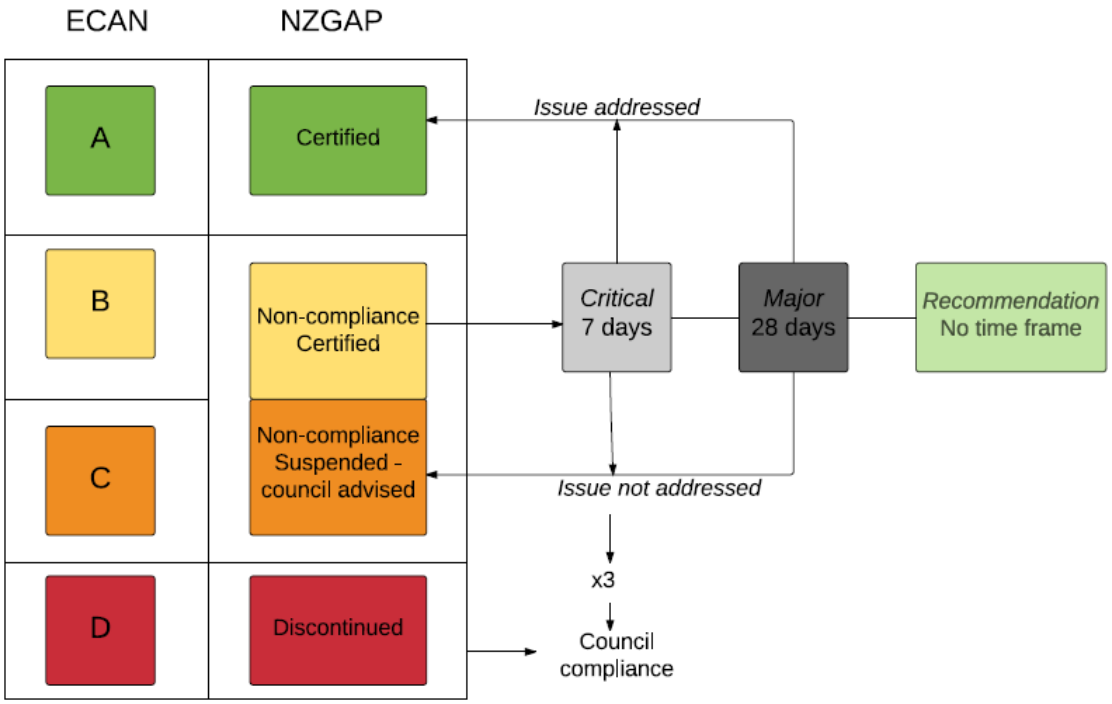
However this does require the Councils to recognise the scheme as able to provide these services and accredit the scheme itself to develop and audit the requirements of the Farm Environment Plan. A description of how the additions to NZGAP will work is outlined below.

NZGAP and ECAN

Below is a schematic diagram of the connection between the scheme and ECAN with the scheme meeting Council requirements and running the scheme in accordance with these.



Following consultation with Council the following diagram was constructed to demonstrate the audit grade connection (for the ECAN tiered system) with the certification system of NZGAP (a certification pass/fail system).



Decisions sought:

Make amendment to Plan Change 5 to provide for Industry Audited Self-Management Schemes to work in conjunction with Council to enable growers to gain and prove compliance with the plan.

1.3 OVERSEER and the Farm Portal

Horticulture NZ has outlined in past submissions on the Plan the issues with use of OVERSEER for cropping systems, while the need for the use of OVERSEER in the regulatory system is recognised, there needs to be a workable solution for practical implementation of the model use for growers. To overcome these issues Horticulture NZ is proposing an approach in which OVERSEER can be the model used for the cropping system but the way the OVERSEER files are built would be based on either a proxy or a representative cropping rotation as discussed below.

The MGM project has used real farm blocks within OVERSEER to come up with 10 different cropping farm systems. The base farm systems (Table 1) were based on an extensive analysis process, exploring both the occurrence of these categories on the cropping survey farms and the sensitivity of modelled N loss to crop type proportions and management activities.

Horticulture NZ seeks the following solution for calculated OVERSEER N loss for growers in these categories:

- Systems 1 – 9 (all systems except for intensive vegetable) are modelled for the operation using a representative rotation for the system. The representative rotation is done in conjunction with the grower to represent the system. This is the system that is used in most horticultural

operations due to the difficulties with blocking OVERSEER for horticulture and the other difficulties outlined in the technical report (Appendix A). This would represent the farm system and rotation as much as possible but would not be exact duplication of the cropping rotation.

- System 10 (intensive vegetable rotation) cannot at this stage be modelled in OVERSEER as crop changes and fertilisation do not happen at a block level with sequential planting and harvesting. At this point in time these rotations are impossible to exactly represent in OVERSEER. Therefore Horticulture NZ is seeking that this category of farm system use the MGM proxy and overlay the soil and climate data for the farm to ascertain the leaching number for the property until such a time that this system can be adequately represented in OVERSEER.

The MGM GMP can be overlaid and the farm systems can be put through the portal, noting that these will be representative rotations.

Table 1: Base farm systems representing cropping in Canterbury for the catchment matrix including irrigation, grazing and residue management options.

	Catchment matrix base farm systems	Description (crop types)	Irrigation	Grazing	Residue management
1	Standard arable rotation	Grain, seed, legume vegetables	Dry/spray/ border	Y/N	Remove, retain, burn, graze
2	Standard arable rotation with >10% of time in forages/fodder	Grain, seed, legume vegetables, forages, fodder	Dry/spray/ border	Y/N	Remove, retain, burn, graze
3	Standard arable rotation with >10% of time in root vegetables	Grain, seed, legume vegetables, root vegetables, other	Dry/spray/ border	Y/N	Remove, retain, burn, graze
4	Standard arable rotation with >10% of time in green vegetables	Grain, seed, legume vegetables, green vegetables, other	Dry/spray/ border	Y/N	Remove, retain, burn, graze
5	Standard arable rotation with >10% of time in forages/fodder and >10% of time in root vegetables	Grain, seed, legume vegetables, forages, fodder, root vegetables	Dry/spray/ border	Y/N	Remove, retain, burn, graze
6	Standard arable rotation with >10% of time in forages/fodder and >10% of time in green vegetables	Grain, seed, legume vegetables, forages, fodder, green vegetables	Dry/spray/ border	Y/N	Remove, retain, burn, graze
7	Standard arable rotation with >10% of time in forages/fodder, >10% of time in root vegetables and >10% of time in green vegetables	Grain, seed, legume vegetables, forages, fodder, root vegetables, green vegetables	Dry/spray/ border	Y/N	Remove, retain, burn, graze
8	Forages/fodder rotation with >10% of time in root vegetables	Forages, fodder, root vegetables, other	Dry/spray/ border	Y/N	Remove, retain, burn, graze
9	Forages/fodder rotation with >10% of time in green vegetables	Forages, fodder, green vegetables, other	Dry/spray/ border	Y/N	Remove, retain, burn, graze
10	Intensive vegetables rotation >80% of time	Vegetables: green vegetables, other	Dry/spray/ border	N	Remove, retain, burn

Decision sought:

Amend Plan Change 5 to include provisions for where a farm system cannot be adequately represented through OVERSEER and the Farm Portal. For horticultural systems with greater than 80% in intensive vegetable rotation apply the MGM proxy for the farm type, and overlay the soil and climate data for the farm to ascertain the leaching number for the property until such a time that this system can be adequately represented in OVERSEER. For other rotational systems develop representative rotations using OVERSEER in conjunction with experts and growers to ascertain the leaching number for the property to enter into the portal.

1.4 Use of external documents

Environment Canterbury has developed a range of documents that it is relying on to implement Plan Change 5. These documents are not necessarily specifically referenced in the Plan, yet for the basis for how the provisions will be applied.

Such documents include:

- Environment Canterbury Farm Environment Plan (FEP) Auditor Manual (referred to in Schedule 7 Part C)
- Environment Canterbury Farm Environment Plan Template approval process
- Environment Canterbury FEP Auditor Certification Process.

It is important that external documents that will be used to implement the Plan are subject to consultation through the Schedule 1 Part 3 process for incorporation of documents and that the documents referred to are specific and certain. Therefore any documents on which the Council is relying should have the date and version included in the Plan with the name of the document.

Decisions sought:
Ensure that all documents which will be used to implement Plan Change 5 are identified and listed in the Plan and provide opportunity for consultation and submission for such documents to be incorporated into the Plan.

1.5 Consequential amendments.

Plan Change covers a range of matters and provisions interrelate across the plan.

Horticulture NZ seeks that consequential changes be made as a result of changes sought in this submission.

Decision sought:

Make consequential changes as a result of changes sought in this submission.

Schedule Two: Section 2 How the Plan works and definitions

2.1 How the Plan Works

The Land and Water Plan includes both region wide and sub-regional sections. It needs to be clear how Plan Change 5 will be implemented where the sub-regional sections are included in the Plan.

Section 2 of the Land and Water Plan states:
"The sub regional sections contain policies and rules which are specific to the catchments covered by that section. The policies and rules in the sub-regional sections implement the region wide objectives in the Plan in the most appropriate way for the specific catchment or catchments covered by that section. Where the Plan contains policies and rules *on the same subject matter*, the more specific sub-regional provision will take precedence, except in relation to Policies 4.2 and 4.10." (Italics added)

Plan Change 5 seeks to add provisions relating to Good Management Practices and use of the Farm Portal so it needs to be clear that the provisions are regarded as being '*on the same subject matter'* as provided in the specific sub-regional sections which take precedence.

Decision sought:
Clearly specify that the provisions in Plan Change 5 only apply where no specific sub-regional section has been developed to manage nutrient discharges.

2.2 Accredited Farm Consultant

The Plan Change seeks to include a definition for 'Accredited Farm Consultant' which is used in the Plan and influences the activity status of the resource consent required. If the Farm Environment Plan and nutrient budget submitted with the application have been prepared or reviewed by an Accredited Farm Consultant the activity status is controlled. Where the condition of the Controlled activity is not met then a more stringent activity status applies.

The intent appears to be that an application reviewed or prepared by an 'Accredited Farm Consultant' will require less robust scrutiny by Canterbury Regional Council.

The definition requires that an Accredited Farm consultant has:

- A Certificate of Completion in Advance Sustainable Nutrient Management in NZ Agriculture from Massey University
  AND
- Has been either:
  Certified by the NZ Institute of Primary Industry Management as meeting the criteria for a Certified Dairy Farm System Consultant;
  OR
  Holds any other qualification that has been approved by the Chief Executive of Environment Canterbury.

Therefore the potential number of consultants who would meet the criteria is limited, particularly in respect of horticulture management as all accredited farm consultants will be required to hold the Massey University qualification. While this qualification is appropriate for pastoral land uses the number of consultants undertaking the course with a knowledge of horticulture systems is limited so it should not be a pre-requisite for accredited farm consultants undertaking Farm Environment Plans and nutrient budgets for horticultural operations.

If a consultant holds an appropriate qualification that is equivalent then the pre-requisite should not be required.

Changes are sought to the definition to ensure that horticultural operations are not penalised because of the definition of accredited farm consultant and the lack of appropriate people being available to undertake Farm Environment Plans and nutrient budgets for horticultural operations. Horticulture New Zealand is prepared to work with ECAN and Plant and Food Research to identify appropriate consultants that have the core competencies and understanding of cropping systems and agronomy to give advice to growers. These trusted consultants may have to demonstrate core competencies for this accreditation but should not be required to undertake a course that does not have an up to date horticultural component.

The Massey Courses provide the sector with very little assurance of good practice. The most recent updated research in the horticultural course component is 2002. Since then the sector has developed a much more sophisticated response, but knowledge of rotational cropping is specialised and more suited to agronomic qualifications.

Decision sought:
Amend the definition of Accredited Farm Consultant as follows:

Accredited Farm Consultant means:

a) A person who holds a Certificate of Completion in Advance Sustainable Nutrient Management in NZ Agriculture from Massey University and has been certified by the NZ Institute of Primary Industry Management as meeting the criteria for a Certified Dairy Farm System Consultant;
   OR
b) Holds any other qualification that has been approved by the Chief Executive of Environment Canterbury as being equivalent standard with respect of the knowledge and competencies required.
   OR
c) <u>Is listed on the approved cropping consultant/agronomist list as prepared by ECAN in consultation with industry (displayed on the ECAN website)</u>

2.3 Baseline GMP Loss Rate

The Plan includes a definition for Baseline GMP Loss Rate which is estimated by the Farm Portal. Where the Baseline GMP loss rate cannot be generated by the Farm Portal is means the nitrogen baseline. This definition recognises that there will be situations where the Farm Portal is unable to generate the required figures, and includes a default for such situations.

This definition is important for horticultural growers as it is likely that Baseline GMP loss rate will not be able to be generated by the Farm Portal.

The Farm Portal is a new tool and there may well be limitations or unforeseen issues arise so there is concern about the extent to which it is included in a regulatory framework.

As outlined elsewhere in this submission there are concerns about the ability of horticultural growers to apply OVERSEER to their operations therefore the ability to meet the requirements in the Plan are limited. Therefore, as set out in the introduction, an exception for complex cropping operations is sought, which includes changes to the definition of Baseline GMP Loss Rate.

Decision sought:
Amend the definition of Baseline GMP Loss Rate to:

Means the average nitrogen loss rate below the root zone, as estimated by the Farm Portal, for the farming activity carried out during the nitrogen baseline period, if operated at good management practice; and where a Baseline GMP loss rate cannot be generated by the Farm Portal it means the nitrogen baseline.

<u>For arable and cropping rotations the baseline GMP loss rate is the rate calculated using the proxy MGM number for intensive vegetable rotations and the representative rotations for all other cropping activities as estimated by the farm portal for the farming activity carried out during the nitrogen baseline period.</u>

2.4 Farm Portal

The farm portal is described as a 'nutrient management database'. It is used to derive a Baseline GMP Loss Rate and Good Management Practice Loss Rates, in accordance with Schedule 28.

Horticulture NZ has concerns about how Schedule 28 is applying the Good Management Practices into the Farm Portal and underlying assumptions made. The way OVERSEER models irrigation and fertiliser application (the main factors affecting nutrient leaching) will be improved with each version of OVERSEER with more modelling efficiency and science to underpin the model. By setting out the Good Management Practice Modelling Proxies in Schedule 28 is essentially locking these in and could lead to problems if they no longer fit the way that OVERSEER models these attributes. There is potential for the cropping and irrigation module within OVERSEER to be further refined to properly represent practices which occur in the sector. When this occurs the current GMP proxies will be rendered redundant. If Schedule 28 is included in the Plan any new proposed modelling method will require a plan change.

The GMP proxies use 20/20 hindsight to calculate accurately the monthly amount of fertiliser and irrigation required and back calculates this on a monthly time step for OVERSEER. This is highly theoretical and Horticulture New Zealand has concerns about the degree of efficiency for irrigation and fertiliser application used in the proxies.

Decision sought:
Amend the definition of Farm Portal by deleting, 'in accordance with Schedule 28.'
Delete Schedule 28.

2.5 Certified Farm Environment Plan Auditor

The Land and Water Plan has a definition for Farm Environment Plan Auditor. Plan Change 5 seeks to amend the definition to Certified Farm Environment Plan Auditor and the qualifications required.

The requirements proposed are:
Either

- Is approved by the Chief Executive of Environment Canterbury as meeting the listed criteria
- OR
- Is a member of an International Standards Organisation accredited audit programme that has been approved by the Chief Executive of Environment Canterbury

Horticulture NZ supports the recognition of independently audited schemes however the scheme and the company that independently audits the scheme need to be clearly defined, the definition here is directly related to the auditor not the scheme or programme.

The audit requirements under Part C of schedule 7 include:

The farming activity occurring on the property will be audited against the following minimum criteria:

1. An assessment of the performance of the farming activity against the objectives, targets, Good Management Practices and timeframes specified in the Farm Environment Plan;

2. An assessment of the robustness of the nutrient budget/s;

3. An assessment of the efficiency of water use (if irrigated).

The role of an auditor should be to check proof that expert advice has been sought and appropriate standards have been met in these areas – auditors should not have to delve into whether the OVERSEER budget is robust or if the irrigation system is efficient. The proof of the processes, expertise and systems used should be sufficient to do this. It is important that under an Industry Audited Self-Management scheme the role of the auditor and advisor are not confused.
.
Horticulture NZ seeks that auditors under the NZGAP scheme be appointed and managed under the scheme rules which meets the Council's auditing requirements programme rather than having auditors carry out analysis of robustness and efficiency they should only require proof that these requirements/processes have been met.

Decision sought:
Amend the definition of Certified Environment Plan Auditor as follows:
Means a person that is:

EITHER
a) an auditor that is operating under an International Standards Organisation accredited certification body (or equivalent organisation) that has been approved by the Chief Executive of Environment Canterbury; ~~as including audit criteria equivalent to that set out in Part C of Schedule 7.~~
OR
b) Is approved by the Chief Executive of Environment Canterbury as meeting the following criteria and is registered on the Environment Canterbury website as a Certified Farm Environment Plan Auditor:
the Listed criteria 1-3 as proposed

2.6 Good Management Practice Loss Rate

The Good Management Practice Loss Rate is estimated by the Farm Portal and is fundamental to how PC 5 will be implemented.

The definition of Baseline GMP Loss Rate provides for where a rate cannot be generated by the Farm Portal then the nitrogen baseline applies. If a Good Management Practice Loss Rate is also required then it should also have a default where the Farm Portal cannot generate the rate.

It is not clear why a Baseline GMP Loss Rate and the Good Management Practice Loss rate are both required as they both seem to be calculating losses under the farm system under GMP.

Horticulture NZ is seeking to include specific reference to cropping systems that can't be modelled in OVERSEER and systems that will require representative rotations to be developed to be represented in OVERSEER consistent with the Baseline GMP loss rate description.

Decision sought:
Amend the definition of Good Management Practice Loss Rate as follows:
Means the average nitrogen loss rate below the root zone, as estimated by the Farm Portal, for the farming activity carried out over the most recent four year period, if operated at good management practice <u>and where a Good Management Practice Loss Rate cannot be generated by the Farm Portal it means the nitrogen baseline</u>. <u>For arable and cropping rotations the GMP Loss Rate is the rate calculated using the proxy MGM number for intensive vegetable rotations and the representative rotations for all other cropping activities as estimated by the farm portal for the farming activity carried out during the nitrogen baseline period.</u>

2.7 Nitrogen Baseline

Plan Change 5 seeks to amend the definition of nitrogen baseline by amending dates and timeframes in which a nitrogen baseline would be determined. Generally these changes provide greater flexibility so are supported.

Horticulture NZ seeks to add provisions to provide where a farm system cannot be adequately represented through OVERSEER and the Farm Portal. For horticultural systems with greater than 80% in intensive vegetable rotation apply the MGM proxy for the farm type, and overlay the soil and climate data for the farm to ascertain the leaching number for the property until such a time that this system can be adequately represented in OVERSEER. For other rotational systems develop representative rotations using

OVERSEER in conjunction with experts and growers to ascertain the leaching number for the property to enter into the portal. The calculation would effectively be the nutrient baseline.

Decision sought:
Retain changes to the definition of nitrogen baseline.
Add a new clause d) where the farm system cannot be adequately represented through OVERSEER and the Farm Portal, the MGM proxy for the farm type overlaid with soil and climate data for the farm is applied to ascertain a leaching number for the property.

2.8 Farm Environment Plan

Fundamental to the Plan is the use of Farm Environment Plans, as set out in Schedule 7. There is no definition of Farm Environment Plan in the Plan, rather it relies on the descriptors in Schedule 7, Part A.

Horticulture NZ considers that it would be useful to have Farm Environment Plan defined in the Plan so it is clear what the term means when it is used.

Decision sought:
Add a definition as follows:
Farm Environment Plan means: A plan that describes the objectives and targets for environmental management of a property for the management areas listed in Schedule 7. A Farm Environment Plan can be based on either:
a) the criteria in Schedule 7 Part B or
b) an industry prepared Farm Environment Plan template or an Industry Audited Self-Management Programme which is approved by the Chief Executive of Canterbury Regional Council as meet the criteria set out in Schedule 7 Part A (2) a).

Schedule Three: Section 4 Policies

3.1 Policy 4.11

Policy 4.11 is in the Sub-regional Section Development section of the Land and Water Plan. The proposed change to the policy is to replace the existing policy regarding introducing good management practices into the Plan.

Proposed Policy 4.11 seeks to limit any resource consent granted under the region wide rules to no more than 5 years past the expected notification date of sub-regional sections for water quality or water quantity provisions.

While in principle the rationale for this approach is understood, the policy wording is such that there is no flexibility if the expected notification date is amended.

Decision sought:

Amend Policy 4.11 to provide for resource consents for 10 years where the expected notification date as set out in the Council's Progressive Implementations Programme is not met.

3.2 Policy 4.34

Policy 4.34 sets out how loss of nutrients from farming activities are minimised. Clause b requires that farming activities that have nutrient losses operate at good practice or better. 'Good practice' is not defined in the Plan but Plan Change 5 introduces 'good management practices' as defined. Therefore it would be more appropriate to refer to 'good management practices'

Decision sought:
Amend Policy 4.34 b) by changing 'good practice' to 'good management practice'.

3.3 Policy 4.36

Policy 4.36 in the Land and Water Plan set out the framework for managing small farming operations. Plan Change 5 seeks to amend it to a policy which sets out how water quality outcomes will be met across all farming systems, not just small scale operations.

It seeks that all farming activities minimise nutrient losses through the implementation of good practice. This policy point duplicates Policy 4.34 b). As with Policy 4.34 Horticulture NZ seeks that the reference is to 'good management practice' as 'good practice' is not defined or quantified.

Plan Change 5 introduces provisions that provide for some permitted activities on properties greater than 10 hectares and requires a Management Plan in accordance with Schedule 7A to be prepared. Horticulture NZ supports this approach as it reflects the risk associated with properties that fall within the framework of the Permitted Activity Rule, relative to the potential for nutrient

losses.

Where a farming activity has potential for more significant nutrient losses then a resource consent will be required. The Policy also requires that nitrogen loss is in accordance with the Good Management Practice Loss Rates as determined by the Farm Portal. However Horticulture NZ considers that the policy should require Good Management Practices to be applied, which will ensure that loss rates are met and provides for situations where a Good Management Practice Loss Rate cannot be generated through the Farm Portal.

Decision sought:
Either delete Policy 4.36 a) or amend by changing 'good practice' to 'good management practice'.
Retain Policy 4.36 b)
Amend Policy 4.36 c) by deleting 'Good Management Practice Loss Rates' and replace with 'Good Management Practices'.

3.4 Policy 4.37

Policy 4.37 sets out how water quality within the Lake Zone and the Red Nutrient Allocation Zone will be improved. The approach requires that Farm Environment Plans are part of a resource consent application and that consent will only be granted where the farming activity is operating at or below the Good Management Practice Loss Rate or in some circumstances the Baseline GMP Loss Rate.

Horticulture NZ has sought changes to the definition of Good Management Practice Loss Rate to ensure that provision is made where a GMP Loss Rate cannot be generated through the Farm Portal. This is important because the Farm Portal is a new tool and there may well be limitations or unforeseen issues arise so there is concern about the extent to which it is included in a regulatory framework.

Decision sought:

Amend the definition of Good Management Practice Loss Rate by adding: <u>Where a Good Management Practice Loss Rate cannot be generated by the Farm Portal then the nitrogen baseline will be the Good Management Practice Loss Rate.</u>

3.5 Policy 4.38

Policy 4.38 sets out how water quality within the Orange Nutrient Allocation Zone will be maintained. The approach requires that Farm Environment Plans are part of a resource consent application and that consent will include conditions on the farming activity to operate at or below the Good Management Practice Loss Rate or in some circumstances the Baseline GMP Loss Rate.

Horticulture NZ has sought changes to the definition of Good Management Practice Loss Rate to ensure that provision is made where a GMP Loss Rate cannot be generated through the Farm Portal. This is important because the Farm Portal is a new tool and there may well be limitations or unforeseen issues arise so there is concern about the extent to which it is included in a regulatory

framework.

Decision sought:

Amend the definition of Good Management Practice Loss Rate by adding: Where a Good Management Practice Loss Rate cannot be generated by the Farm Portal then the nitrogen baseline will be the Good Management Practice Loss Rate.

3.6 Policy 4.38 AB

Policy 4.38AB seeks to extend the Council's consideration of adverse effects beyond that anticipated in the RMA by including adverse effects from an activity which are permitted under the Plan. The permitted baseline is well established and should not be overridden in the way proposed.

Decision sought:
Delete Policy 4.38A

3.7 Policy 4.38A

Policy 4.38A provides for situations where the Baseline GMP Loss Rate can be exceeded.

Horticulture NZ seeks that the policy also include farm systems which cannot be adequately represented through OVERSEER and the Farm Portal by applying the MGM proxy for the farm type, and overlay the soil and climate data for the farm to ascertain the leaching number for the property until such a time that this system can be adequately represented in OVERSEER.

Decision sought:

Add new clause to Policy 4.38A
c) the farm system cannot be adequately represented through OVERSEER and the Farm Portal and the MGP proxy for the farm type overlaid with soil and climate data for the farm is applied to ascertain a leaching number for the property and Good Management Practices are used in the farming activity.

3.8 Policy 4.38B

Policy 4.38B requires the provision of information to the Farm Portal where there intensification or changes to a farming activity. It is unclear what would be considered to be an 'intensification or change' to the farming activity. For instance a change to the crop that is grown should not constitute a 'change' in terms of Policy 4.38B.

Decision sought:
Establish thresholds based on a 20 % increase in area irrigated and a 20% increase in stock numbers over which Policy 4.38B is applied.

3.9 Policy 4.38D

Policy 4.38C sets out timeframes for where compliance with a Good Management Practice Loss Rate is required. The dates set are earlier than that applied in Policy 4.38C for Baseline GMP Loss Rate. It is considered that the dates should be aligned.

Decision sought:
Amend Policy 4.38D so that the dates of compliance are the same as Policy 4.38C – 30 June 2020.

3.10 Policy 4.41A

Policy 4.41A sets out a policy framework for preparation of nutrient budgets and Farm Environment Plans and incentivises through the use of Accredited Farm Consultants. Horticulture NZ has sought changes to the definition of Accredited Farm Consultants to ensure that horticultural operations are not unfairly penalised through the lack of appropriate consultants.

It needs to be clear how the Council will apply the discretion in determining the level of scrutiny to be applied to nutrient budgets and Farm Environment Plans.

Decision sought:
Amend the definition of Accredited Farm Consultant as sought in Schedule 2 above.

3.11 Policy 4.41B

Policy 4.41B sets out how good management practices will be implemented to achieve water quality outcomes, including the use of audit grades and Certified Farm Environment Plan Auditors.

Horticulture NZ has sought changes to the provisions relating to auditing process and the definition of Certified Farm Environment Plan Auditors.

In addition Environment Canterbury has external documents which set out how the audits will be undertaken. The Certified Farm Environment Plan Auditor Manual February 2016 should be specifically referenced in the policy as it sets out the framework for the auditing process. This manual should be open for public consultation as a Schedule 1 process and incorporated into the Plan.

Decision sought:
Add to Policy 4.41B g) the audit and audit grades will be undertaken in accordance with the Environment Canterbury Certified Farm Environment Plan Auditor Manual February 2016.

Notify the Certified Farm Environment Plan Auditor Manual February 2016 for public consultation.

Schedule Four: Section 5 - Rules

4.1 Farming Enterprises

Horticulture NZ is concerned that all the permitted, controlled and restricted discretionary rules for the Red, Orange, Light Blue and Green Nutrient Allocation Zones are property based with the only provision for farming enterprises as a discretionary activity.

This is considered to be unreasonable where a farming enterprise can meet the activity standards of the rules for properties. The Plan includes matters of control and discretion linked to Farm Environment Plans and Good Management Practices which are equally applicable to farming enterprises. It is unclear what additional matters the Council would want to assess under a full discretionary consent process. The way the plan is structured at present it may be more advantageous for a farming enterprise to treat each property separately rather than as an operation across a range of properties. This would appear to be a perverse outcome from incentivising properties and applying more stringent criteria to farming enterprises.

The activity status is discretionary for farming enterprises in all nutrient allocation zones, which does not reflect the different nature of the respective receiving environments.

Decision sought:
Amend the following rules by adding 'or farming enterprise' after property:
Rule 5.44A – Permitted activity Red Nutrient Allocation Zone
Rule 5.44B – Controlled activity Red Nutrient Allocation Zone
Rule 5.45A - Restricted Discretionary Activity Red Nutrient Allocation Zone
Rule 5.54A – Permitted Activity Orange Nutrient Allocation Zone
Rule 5.54B – Controlled Activity Orange Nutrient Allocation Zone
Rule 5.55A – Restricted Discretionary Activity Orange Nutrient Allocation Zone
Rule 5.57B – Permitted Activity Green or Light Blue Nutrient Allocation Zone
Rule 5.57C – Controlled Activity Green or Light Blue Nutrient Allocation Zone
Rule 5.58A – Restricted Discretionary Activity Green or Light Blue Nutrient Allocation Zone

Delete the following rules:
Rule 5.46A
Rule 5.56AA
Rule 5.58B

5.2 Rule 5.44A

Rule 5.44A provides for farming activities on properties greater than 10 hectares in the Red Nutrient Allocation Zone that meet certain criteria to be a permitted activity. Horticulture NZ supports this approach.

Decision sought:
Retain Rule 5.44A

5.3 Rule 5.44B

Rule 5.44B provides for farming activities on properties greater than 10 hectares in the Red Nutrient Allocation Zone that meet certain criteria to be a controlled activity. One of the conditions is that the Farm Environment Plan is prepared or reviewed by an Accredited Farm Consultant. It is considered that the Accredited Farm Consultant should be a matter of control, not a condition of the Rule.

Decision sought:
Delete Rule 5.44B (3) and add new matter of control:
The preparation and review of the Farm Environment Plan

5.4 Rule 5.48A

Rule 5.48A is a prohibited activity rule for the Red Nutrient Allocation Zone where certain conditions of rules cannot be met.

It is considered that a prohibited activity rule is inappropriate given the uncertainties associated with the new Farm Portal and how it may be applied>

Decision sought:
Amend Rule 5.48A to Non-complying.

5.5 Rule 5.54A

Rule 5.54A provides for farming activities on properties greater than 10 hectares in the Orange Nutrient Allocation Zone that meet certain criteria to be a permitted activity. Horticulture NZ supports this approach.

Decision sought:
Retain Rule 5.54A.

5.6 Rule 5.54B

Rule 5.54B provides for farming activities on properties greater than 10 hectares in the Orange Nutrient Allocation Zone that meet certain criteria to be a controlled activity. One of the conditions is that the Farm Environment Plan is prepared or reviewed by an Accredited Farm Consultant. It is considered that the Accredited Farm Consultant should be a matter of control, not a condition of the Rule.

Decision sought:
Delete Rule 5.54B (3) and add new matter of control:
The preparation and review of the Farm Environment Plan.

Schedule Five: Schedule 7 Farm Environment Plan and Schedule 7A Management Plan.

5.1 Schedule 7 sets out the requirements for the Farm Environment Plans. Horticulture NZ has sought a definition for Farm Environment Plans that details the range of plans, programmes and schemes that are recognised as Farm Environment Plans in the Plan.

A definition will ensure that there is clarity about the nature of the plans when the term Farm Environment Plan is used in the Plan.

Decision sought:
Add a definition as follows:
Farm Environment Plan means: A plan that describes the objectives and targets for environmental management of a property for the management areas listed in Schedule 7. A Farm Environment Plan can be based on either:
a) the criteria in Schedule 7 Part B or
b) an industry prepared Farm Environment Plan template or an Industry Audited Self-Management Programme which is approved by the Chief Executive of Canterbury Regional Council as meet the criteria set out in Schedule 7 Part A (2) a).

5.2 Part A

Consistent with the definition sought for Farm Environment Plans Horticulture NZ seeks amendments to Part A which describes the schemes, programmes and templates that are Farm Environment Plans for the purposes of the Plan.

Clause 2b) requires that industry programmes are approved by the Chief Executive of the Council as meeting the criteria in a). Horticulture NZ understands that the Council has guidance material that is used in assessing the appropriateness of industry programmes. If such material is to be used in assessments then it should be clearly identified and stated in the Plan, and such material open for public consultation under a Schedule 1 process.

Decision sought:
Amend Part A as follows:
2) Industry prepare Farm Environment Plan templates, <u>Industry Audited Self-Management Programmes a</u>nd guidance material that:

2 b) Add references to external documents that are used by Council is assessing programmes and provide such materials for public consultation and input.

Add an additional approval option:
2 b ii)) Where the programme seeking approval has an integrated audit programme the approval of the programme may include approval of the audit programme.

5.3 Part B Farm Environment Plan Content

The Plan Change seeks that the following are included in the Farm Environment Plan:

- nutrient budgets,
- nitrogen baselines
- nitrogen loss calculations
- Report from the Farm Portal
- Baseline GMP loss rate
- Good Management Practice Loss Rates.

The list of matters is confusing and uncertain as to how and why provision of all the material is required and how it will be used. The key matter in the Farm Environment Plan should be how good management practices are to be implemented to achieve the targets in the FEP.

In addition Horticulture NZ is seeking changes to allow for the use of MGM proxies for situations where the Farm Portal and Overseer cannot adequately model the necessary calculations. Recognition of such provision should be included in the requirements for the FEP.

Decision sought:

Simplify the provision of reports required under Part B 4B

Add to Schedule 7 Part B 4B) after a) and b)
OR
c) the MGM proxy for the farm type overlaid with soil and climate data for the farm where the farm system cannot be adequately represented through OVERSEER and the Farm Portal

5.4 Management Areas

The Plan Change seeks to add a range of management areas in Schedule 7 which are specific farm activities that need to be considered in the Farm Environment Plan. Each Management Area includes an objective and target.

While the intent of the objectives and targets is apparent it is not clear how the Council will assess specific matters as part of a resource consent application.

For instance: How will Council determine that the amount and rate of fertiliser does not exceed the agronomic requirements of the crop?

How will the Council assess efficiency in irrigation management?

The targets need to be certain and quantifiable so it is clear what is intended to be achieved.

Decision sought:
Amend Schedule 7 Part B Management Areas so that the requirements are certain and quantifiable.

5.5 Part C Farm Environment Plan Audit Requirements

Horticulture NZ has sought changes to the definition of Certified Farm Environment Plan Auditor to ensure that those who carry out audits of Industry Audited Self-Management Programmes are able to be approved by the Council.

Horticulture NZ is concerned that the Environment Canterbury Certified Farm Environment Plan Auditor Manual is referred to as setting out the standards and methods to be used by the Certified Farm Environment Plan Auditor but it is not incorporated into the Plan as an external document. If Council intend to use a manual in a regulatory framework it should be included in the Plan for certainty.

Decision sought:
Amend Schedule 7 Part C by removing italics and referring to Environment Canterbury Certified Farm Environment Plan Auditor Manual February 2016 which sets out the criteria and methods for undertaking a Farm Environment Plan audit.

5.6 Schedule 7A Management Plan for Farming Activities

The requirements in Schedule 7A for a Management Plan are for where an activity is less likely to have significant nutrient discharges. The schedule requires that good practices are undertaken as set out in the table. This approach is supported.

Decision sought:
Retain Schedule 7A

Appendix 1 (excerpt from MGM Technical Report Arable and Horticultural crop modelling Hume et al 2015)

There were challenges when translating grower survey information into the OVERSEER® model. These were mainly due to the inability to fully represent the complexities of cropping farms with the inputs available in OVERSEER®. A key step in the modelling process was the full documentation of the grower information alongside how this was represented in OVERSEER® and the assumptions that had to be made to do this (see Appendix 10 of Overview Report (Robson et al. 2015) for structure followed). This process was transparent and enabled multiple modelling iterations to be conducted, review by other science staff, and consultation with growers on final modelled results.

The following (1–21) are some examples of complexities that were encountered during the modelling in OVERSEER® and assumptions that were made. For each circumstance, the limitation is documented and the approach taken to address the limitation is detailed. This information was shared with OVERSEER® management to support future model improvements.

1. **Substitute crops**

   Limitation: OVERSEER® is not currently capable of modelling all possible crop types grown in NZ. The crop types it does not specifically model are generally specialist vegetables or high value non-herbage seed crops. There is limited research knowledge around the growth and N status of these crops and the area grown in NZ cropping systems is comparatively small.

   Solution: Where a crop was sown in the survey but not specifically included in the OVERSEER® model options, a substitute crop was chosen in OVERSEER® that had a similar growth habit, harvest index and nitrogen content in accordance with OVERSEER® Best Practice Data Input Standards (OVERSEER® 2015) (see Appendix 17 of Overview Report (Robson et al. 2015) for a summary of these substitutions). Approximately half of the crop types sown in the survey were not specifically named in OVERSEER®, but these were mostly low frequency crops and accounted for approximately 7% of the survey. The general impact of this substitution is not thought to be large but cannot be measured quantitatively.

2. **Double-sown crops**

   Limitation: Double-sowing of crops is a management practice that happens on-farm but cannot be modelled in OVERSEER®; more than one crop management option per month is not allowed therefore multiple crops cannot be grown concurrently.

Solution: This situation generally occurred where additional forage was sown with herbage seed (e.g. clover seed) to increase winter grazing potential. To represent this practice in OVERSEER®, as recommended by the Best Practice Data Input Standards (OVERSEER® 2015), the forage crop was sown initially and the herbage seed sown once final grazing had occurred in early spring. This is unlikely to have major impacts on nutrient losses as the herbage seed would have minimal growth over the winter period.

3. **Altering crop growth**

   Limitation: OVERSEER® assumes a default growth curve and harvest date for each crop which did not always match how growers managed their rotations. For example, this could be due to timing differences between varieties, or practices such as spraying off the tops of root vegetables and then storing in the ground for the following months.

   Solution: Expert knowledge in crop physiology was used to alter crop growth where necessary. This was generally through specifying the end of nutrient uptake or selecting the harvest date of the crop. These were also useful tools when modelling crops not specified in OVERSEER® with substitute crops.

4. **Yield units**

   Limitation: OVERSEER® requires crop yields to be specified in tonnes per ha. However, some crops such as vegetables are counted by other units (e.g. number of heads, cobs, bunches in a crate) and thus growers could not always provide a yield in the appropriate units.

   Solution: Yields used in modelling these situations were either entered as the typical yield that is documented for most crops in the OVERSEER® user interface or the average yield based on NZ-based publications where possible.

5. **Crop failures**

   Limitation: In reality crops may fail in the field, resulting in poor yields or even a nonharvestable crop. This is a particular problem for small scale horticultural crops. OVERSEER® does not model crop failure rates for crop blocks.

   Solution: Crop yields modelled in OVERSEER® were the average for that grower and therefore factored in the long-term effect of occasional poor performance crops. As rotations captured in the horticultural survey were typical, the effect of potential early crop failure before maturity could not be captured. However, a grower operating at GMP would not apply further nutrients after the crop had failed and would aim to sow the following crop early to optimise the use of nutrients already in soil.

6. **Monthly inputs**
   Limitation: Decisions had to be made on how to translate fine-scale (e.g. daily) crop management records into the monthly application scale that OVERSEER® works at. For example, in reality a grower may harvest a crop on 10 March and sow another on 24 March but multiple management actions (e.g. harvesting a crop and sowing another) within a month cannot be modelled in OVERSEER®.

   Solution: Pragmatic decisions specific to the situation were made to determine whether, to give the example from above, a crop should be harvested early (i.e. the month before actual) or sown late (i.e. the month after actual). This was done using crop physiology expertise and thus is thought to have a negligible impact on nutrient losses.

7. **Grazing**
   Limitation: For farms that graze stock for part or all of the year (e.g. mixed cropping/pastoral farms), unless the whole farm is modelled (not just crop blocks) stock enterprises cannot be modelled due to feed requirements of stock not being met in OVERSEER®. Many of the growers used imported animals to clean up blocks, but some also specialised in the buying and selling of animals, for example store lambs over winter.

   Solution: Grazing was modelled with non-farm animals, either female cattle, male cattle or sheep and/or deer depending on what was specified by the grower in the survey. OVERSEER® makes a number of assumptions using this method (e.g. estimating animal intake) but these are likely reasonable given the horticultural and arable surveys were aimed at modelling crop rotations, not whole mixed farms (these were captured in the sheep, beef and deer survey).

8. **Part paddock grazing**
   Limitation: OVERSEER® assumes even distribution of animals over a block that is being grazed. However in reality forages and fodders are likely to be break-fed.

   Solution: Grazing events were used to represent break-feeding as closely as possible. As an example, if a grower took five to eight weeks to break-feed a crop, this was represented in OVERSEER® as grazing events in these two months. However, if it was a one-off feeding within four weeks, this was represented as a grazing event in that month only.

9. **Residue management options**
   Limitation: OVERSEER® cannot model multiple residue management options for a single crop. There is also an assumption in the model that all

forages, fodder, green manure and permanent pasture crop types have residues retained.

Solution: For situations in the survey where multiple residue management options were used, the method removing the greatest amount of residue was modelled as recommended in the OVERSEER® Best Practice Data Input Standards (OVERSEER® 2015). It was not possible to represent grower-specified management of residues for forages, fodder or permanent pasture crop types. However most of these occurrences were grazed crops with grazed residues, therefore modelling of grazing events in OVERSEER® likely captured most of the impact of this management. Retaining residues is a valid assumption for green manure crops as all grown biomass is returned to the soil as residues.

10. **Grazing residues in months post-harvest**

Limitation: OVERSEER® does not model grazing of crop residues in months following the final harvest month of a crop (e.g. cleaning up grain stubble and weeds). No animals can be on the block in months where there is no actual crop.

Solution: Occurrences of this situation in the survey data were modelled as crop residues grazed in the month of product harvest and the following months left as bare ground. While this fallow is similar in behaviour to having minimal crop residues remaining, the impact of urine patches from grazing animals on nutrient losses is not captured.

11. **Sequential planting and harvesting**

Limitation: A specific limitation for horticultural growers using OVERSEER® is the inability to model sequentially planted and harvested crops. This is because management inputs and reporting in the model occur at a whole block level. Crops in the survey that had staggered sowing dates (to varying extents) included broccoli, brussel sprouts, cabbage, carrots, cauliflower, leeks, onions, pak choi/shanghai, silverbeet, spinach, spring onions and sweetcorn.

Solution: To model the impact of sequential planting and harvesting in OVERSEER®, one version of the rotation was created with the earliest sowing and harvesting dates for the crop and another version with the latest sowing and harvesting dates. Averaging the results across the two files gave a representation of the losses as the crop moved across the block.

12. **Multiple vegetable harvests**

Limitation: There are no harvest options in OVERSEER® for multiple harvests of vegetables crops, e.g. silverbeet in the survey was picked multiple times.

Solution: Silverbeet was modelled with spinach as a substitute crop and yield was adjusted to represent several pickings over the period grown.

13. **Irrigation**

Limitation: Information collected from surveyed growers on irrigation included some or all of the following: irrigator type, return period, maximum application depth, number of applications and total seasonal application amount. These factors depend on seasonal conditions, water availability and farm-wide soil moisture priorities. Due to the long-term annual average climate data used in OVERSEER®, applying actual irrigation amounts was not seen as appropriate for the purposes of capturing typical rotation management and nutrient losses in Canterbury.

Solution: In each month of a 'typical' climate year that growers would irrigate, the method of irrigation was set as specified by the grower and the rate was left blank (OVERSEER® v6.1.2 and v6.1.3) as recommended in the OVERSEER® Best Practice Data Input Standards (OVERSEER® 2015). The rates calculated by OVERSEER® are based on replacing estimated soil water deficit through a daily water balance, and thus are conservative compared with what is likely practiced in the field in the long term.

14. **Nutrients**

Limitation: Growers tend to use soil nutrient testing in autumn to determine fertiliser applications required for optimal plant growth in the coming season. However, rather than entering a soil mineral N test value in OVERSEER®, N available for plant growth from the various soil N pools is calculated based on management descriptions of the land use prior to the reporting year and long-term annual average conditions. Therefore, actual fertiliser applications may not align with what is required for the OVERSEER® modelled crops.

Solution: 'Typical' average nutrient applications specified by the grower were modelled in OVERSEER® for each crop. These amounts often depended on the preceding crops and potential nutrient returns through residue. Foliar nitrates (e.g. applied to green vegetables) were excluded from modelling due to very low application rates. Typical nutrient concentrations of organic materials were assumed where the grower could not provide actual values.

15. **Variable rate management**

Limitation: OVERSEER® cannot model variable rate fertiliser or irrigation applications as management occurs at a block scale.

Solution: As OVERSEER® is already assuming a reasonable level of uniformity across the block, for example in yield, soil type and fertility, fertiliser and irrigation, average values were appropriate to use for modelling variable rate fertiliser and irrigation.

16. **Cultivation**

Limitation: The options for cultivation in OVERSEER® (direct drilled, minimum till and conventional) are coarse in comparison with actual practices in cropping systems. The restriction of one management event modelled each month also limits the ability to accurately capture effects of cultivation on residue breakdown and nitrogen mineralisation.

Solution: Cultivation practices were modelled in OVERSEER® according to what the grower specified they typically did at establishment and post-harvest for each crop particular to the order it occurred in the rotation. Thus any post-harvest cultivation that was needed affected the choice of cultivation practice modelled at sowing of the following crop. Cultivations were classified as: a) direct drill if it was a single pass with implement to plant seed, b) minimum till if it was one or two passes with non-inversion cultivation in addition to drilling, and c) conventional if it was inversion cultivation or more than two passes with non-inversion cultivation.

17. **Prior land use**

Limitation: Land use prior to the two year rotation in the block is a modelled input in OVERSEER®, however the options are limited to pasture, fallow, grain crop, vegetable crop, first year of seed crop and second year of seed crop. OVERSEER® makes assumptions on most of the management of these prior crops. For example, the month of crop end is assumed by the model with grain and vegetable crops tending to ‘end’ earlier than required.

Solution: When the crop sown prior to the two year rotation in the block was a forage, fodder, green manure or permanent pasture, the prior land use was selected as pasture. No management events such as months of grazing or cutting could be specified in these situations. When the prior land use was a first or second year of seed crop, an exported cut and carry event was used to signify the timing of seed harvest, and any grazing could be specified as described earlier. Control of the end month of prior land use crops was limited and usually enacted by specifying a cultivation event or sowing a new crop. However, improvements have been made in OVERSEER® v6.2 to extend the length of prior land use grain crops which avoids unintentional fallow periods in the model.

18. **Long-term paddock history**

Limitation: OVERSEER® requires the total number of years in pasture three to 12 years prior to the reporting year in the block to be recorded.

This value affects the N mineralisation rate in the block, but was not always known or recorded in the farm surveys.

Solution: Where the information on number of years in pasture was not available, it was assumed that the rotation described had continually cycled over the many years prior. Thus, the number of years in pasture for each block of the rotation was altered according to the time that would have been in pastoral species (including pastoral seed crops) if looking back over the prior 10 years of the continual rotation.

19. **Variable and small crop areas**

Limitation: A complexity particularly characteristic of horticultural growers is the fluidity of 'paddock' boundaries. Often small areas of crops are grown (e.g. 0.2 ha) or varying sized areas are used throughout the year for different purposes as space becomes available. Figure 3 shows a simple example of the dynamics of changing crop areas across consecutive seasons. OVERSEER® is currently designed to model larger areas and even combine paddocks into single blocks in the model based on similarities in soil, crop rotation and management of that rotation.

Figure 3: Simplified representation of how crop areas grown (therefore 'paddock' boundaries) may change across three consecutive seasons of the year. Each colour represents a different crop grown.

Solution: Horticultural survey farms were modelled as typical rotations with the approximate area of crops grown represented as the frequency of that crop occurring in the rotation. This avoided the complexities of modelling small and varying areas of crops across numerous blocks in OVERSEER®, while still capturing the likely long-term average nutrient losses across the farm.

20. **Leased blocks**

Limitation: It is common for horticultural growers in particular to move disease-prone crops such as potatoes and broccoli around leased pastoral blocks. Complete paddock history is not always available, creating challenges for representing these situations in OVERSEER®.

Solution: The crop/s of interest (e.g. potatoes followed by wheat) were modelled with grazed pasture before and after to determine the effect of these crops going into a pastoral rotation. Expert opinion was used to set appropriate management (e.g. fertiliser applications) on pastoral components of the rotation.

21. Soil and climate information

Limitation: Growers provided basic soil information for the surveyed farms, but multiple soil types could occur across the blocks. OVERSEER® models long-term (30 year) annual average climate patterns which is information that a grower is unlikely to be able to provide.

Solution: For the horticultural survey, the climate station tool in OVERSEER® and the dominant S-map soil sibling (modelled as 'soil by order'; OVERSEER® v6.1.2 and v6.1.3) for the particular location were used in the modelling of each farm, as recommended by the OVERSEER® Best Practice Data Input Standards (OVERSEER® 2015). For the arable survey, OVERSEER® default values for climate were used in the absence of knowing the location of the farms (climate station tool requires farm coordinates and was not operational at the time of FAR modelling) and the dominant S-map soil sibling for each block was used (modelled as 'soil by series'). All soils were updated to the full level 2 soils information available from S-map in OVERSEER® v6.2.

While the principles for resolving the limitations of OVERSEER® modelling of crop blocks apply to both the horticultural and arable industries, the majority of them were issues more specific to the horticultural survey farms. Growers, particularly those in horticulture, have very dynamic, responsive management and rotation structures depending upon multiple factors (e.g. market and industry demand and prices, environmental conditions, crop establishment and health throughout growing season, disease and weeds, seasonal yields, and stock availability). The assumptions above allowed the consistent summarisation of 'typical' current practices in Canterbury within the constraints of the OVERSEER® model. Councils using OVERSEER® for regulatory purposes should consider the listed issues and, along with industry bodies (e.g. HortNZ and FAR), inform growers with guidelines and expectations for the modelling of their farms to ensure consistency of outputs across the industry. The ability to model more diverse cropping rotations and range of management practices along with an easy-to-use interface requiring real farm management information will allow more cropping, and especially horticultural, growers to be able to represent their own systems in OVERSEER®.