IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of the hearing of submissions on Proposed Plan Change 5 (Nutrient Management and Waitaki Sub-region) to the Canterbury Land and Water Regional Plan
BY	**WAITAKI IRRIGATORS COLLECTIVE LIMITED**
	Submitters
TO	**CANTERBURY REGIONAL COUNCIL**
	Local authority

STATEMENT OF EVIDENCE OF KERI JOY JOHNSTON

Dated: 22 July 2016

INTRODUCTION

1 My name is Keri Johnston. I hold a Bachelor of Engineering in Natural Resources Engineering from the University of Canterbury. I am a Professional Member of the Institute of Professional Engineers New Zealand (MPIENZ) and a Chartered Professional Engineer (CPEng).

2 I also hold a certificate from Massey University for Farm Dairy Effluent Design and Management, and a national certificate (level 4) in irrigation evaluation.

3 Upon completion of my degree, I worked for Meridian Energy Limited as a graduate engineer, based in Manapouri and Twizel. After twelve months, I accepted a position with Environment Canterbury ("ECan") as a Consents Investigating Officer before taking on the role of Environmental Management Systems Engineer with the River Engineering Section of ECan. During my three and a half years with ECan, I was the Consents Investigating Officer for the applications associated with the Canterbury Regional Landfill at Kate Valley, and developed environmental management systems in accordance with ISO 14001 for several units within ECan.

4 I left ECan to join RJ Hall Civil and Environmental Consulting Limited as an Environmental Engineering Consultant. I was employed in this position for three and a half years. Work mainly involved the preparation of resource consent applications for all land and water activities, dairy conversions and engineering related works, as well as being a contract Consents Investigating Officer for applications associated with the Central Plains Water Trust and the Ashburton Community Water Trust.

5 Since 2007, I have been a director and principal of Irricon Resource Solutions Limited, a resource management and environmental engineering consultancy.

6 In preparing this evidence, I have reviewed the following material:

6.1 Plan Change 5.

6.2 The Section 32 report for Plan Change 5.

6.3 Supporting technical documents for Plan Change 5.

6.4 Submissions on Plan Change 5.

6.5 The Section 42A report for Plan Change 5.

CODE OF CONDUCT

7. I have read the Code of Conduct for Expert Witnesses within the Environment Court Consolidated Practice Note 2014 and I agree to comply with that Code. This evidence is within my area of expertise, except where I state I am relying on what I have been told by another person. To the best of my knowledge I have not omitted to consider any material facts known to me that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

7 My evidence will provide background information on the resource consents granted following the Lower Waitaki hearings, the conditions that they are subject to and why, and how this relates to Section 15 of Plan Change 5 (PC5).

8 I will provide comment on the difficulties I foresee implementing Section 15 of PC5 from a practitioner's perspective.

9 I will also provide comment on other matters raised in the submission of the Waitaki Irrigators Collective (WIC).

EXECUTIVE SUMMARY

10 WIC's submission has requested that consent holders in the Valley and Tributaries FMU, Whitney's Creek FMU and Hakataramea Flat Zone FMU that hold consents that require extensive water quality mitigation to be implemented on farm, should not be required to obtain an additional consent under Plan Change 5 for the sole purpose of implementing a property-based nitrogen loss limit.

11 The conditions that these consents are subject too are comprehensive and go beyond what would be required of these farmers to meet the Good Management Practice Loss Rate, as defined in Section 2 of Plan Change 5. There are XX consent holders in the Valley and Tributaries FMU, Whitney's Creek FMU and Hakataramea Flat Zone FMU that hold these consents.

12 Coupled with this, is the fact that current water quality in these FMU's is good, and it is also highly unlikely that the nitrogen catchment allocations for these FMU's will be exceeded,

13 Therefore, I consider that requiring these consent holders to obtain a land use consent to farm under Plan Change 5, is neither necessary, nor will it result in any positive environmental outcome.

THE LOWER WAITAKI HEARINGS

14 I was a consultant acting for 35 applicants (individuals and irrigation schemes) who were seeking to take and use water from the Lower Waitaki Catchment, whose applications were part of a series of applications heard at a joint hearing of Commissioners appointed by ECan between 2008 and 2010. Of these, six applicants were seeking to take and use water from the Hakataramea Catchment (which is the Hakataramea Freshwater Management Units (FMU)), with the remainder from either the Waitaki River or a tributary located on the south side of the river (in the Valley and Tributaries FMU).

15 The effects from the use of water on water quality was one of the key issues arising from the hearing. Many submitters were concerned that water quality in the greater catchment could deteriorate and sought relief to ensure that this water quality was protected.

16 In response to these concerns, the applicant group proffered a comprehensive suite of water quality conditions. These included:

16.1 Implementing a Farm Environment Plan, which is audited on an annual basis, and must implement Mandatory Good Agricultural Practices (MGAP's)[1] across the property.

16.2 Undertaking OVERSEER nutrient budgeting and management.

16.3 Fertiliser timing restrictions.

16.4 The requirement for fertiliser to be applied in accordance with the Code of Practice for Nutrient Management.

16.5 Any new irrigation infrastructure is designed and certified by a suitably qualified independent expert.

16.6 All irrigation infrastructure is to be tested on a regular basis in accordance with the Code of Practise for Irrigation Evaluation.

16.7 Developing or maintaining riparian margins and shelter belts.

16.8 Fencing of waterways.

16.9 Other forms of riparian management.

[1] The term MGAP has been replaced with GMP, but it is the same concept.

17 Consents granted in the Hakataramea Catchment were subject to further conditions that required a comprehensive water quality baseline assessment be undertaken, as well as ongoing water quality monitoring at a number of sites. This assessment was done in 2012, and the on-going water quality monitoring programme has been fully implemented since this time.

18 All consents were granted for a duration of 35 years. A list of the relevant consents and copies of the conditions they are subject to, are attached to this evidence in Appendix One.

SECTION 15 OF PLAN CHANGE 5 (PC5)

19 Many submissions highlighted the fact that there are consents that are subject to extensive water quality and modelling conditions, and question the need for an additional consent to be obtained under the proposed PC5 rule framework.

20 I acknowledge that there are areas within the area covered by Section 15 of PC5 where water quality outcomes are at risk of not being met, such as the Hakataramea River and Hakataramea Hill Zone FMUs. This is acknowledged in the WIC proposed rule framework, which subjects land owners in these zones to more regulation. This is entirely appropriate and supported by the on-going water quality monitoring programme which shows that despite N and P levels in the Hakataramea River currently being low (and well within the levels set by PC5), there is evidence of a declining trend emerging, as well as sustained low flows and increasing water temperatures. The Lower Hakataramea River had high coverage of cyanobacteria during the summer of 2013/14 that resulted in warnings being issues to protect human health during contact recreation.

21 However, for the Valley and Tributaries, Whitneys Creek and Hakataramea Flat Zone FMUs, I do not consider that there is any benefit to requiring further regulation (by way of another consent with a condition limiting the N loss from the property) over existing consent holders who are already operating under a comprehensive suite of water quality conditions. Water quality in these zones is good, with low levels of nutrient enrichment and relatively healthy ecological communities [2]

22 In its submission, the Waitaki Irrigators Collective (WIC) sought amendments to many of the rules. In particular, WIC sought permitted activity status for the Valley and Tributaries, Whitney's Creek and Hakataramea Flat Zone FMU's, in respect of:

[2] Lower Waitaki Catchment Water Quality and Ecology: State and Trend – ECan Technical Report R15/111, by Graeme Clarke and Michael Greer

(a) Farming activities being managed under a resource consent that is held by an irrigation scheme or principal water supplier and the permit is subject to conditions which require the preparation and implementation of a plan to mitigate the effects of the loss of nutrients to water and that plan specifies auditing requirements; or

(b) Land that is subject to any other permit that is subject to conditions which require the preparation and implementation of a plan to mitigate the effects of the loss of nutrients to water and that plan specifies auditing requirements; or

(c) A Farm Environment Plan has been prepared, implemented and is audited in accordance with Schedule 7; and

(d) The property is registered in the Farm Portal by 1 July 2017 and information about the farming activity and the property is reviewed and updated by the property owner or their agent, every 24 months thereafter.

23 Existing resource consents that are subject to the water quality conditions do not include a property-based nitrogen limit, and at paragraph 22.94 of the Section 42A report, the officer states that because of this, it is uncertain whether cumulative loss rates will be managed within the PC5 nitrogen limits. However, the officer invites further evidence to be provided that demonstrates that farming activities will be managed within catchment limits, and in that case, appropriate amendments to the PC5 framework to provide for these consents may be justified.

24 I consider that there are three points to be addressed in order to demonstrate that farming activities authorised by consents already subject to water quality conditions can be managed within catchment limits, and do not require an additional consent that would stipulate a property-based nitrogen limit:

- Whether the available nitrogen allocation is likely to be exceeded;
- Whether those consent holders are operating at a minimum of GMP as this is a fundamental assumption in the nitrogen allocation limit setting modelling undertaken for the development of PC5;
- How will the council have confidence that the catchment loads are not being exceeded (compliance) and that GMP is being implemented on farm?

Will the Catchment Nitrogen Allocation Be Exceeded?

Valley and Tributaries FMU

25 The modelling work that PC5 is based on for the Valley and Tributaries FMU identified that 95 T (being that available for future on-land development) was sufficient to irrigate a further 4,252 hectares of land less than 10^{o} slope (and this would be dairy farming) and provide for an additional 10% nitrogen load to allow for dryland intensification or other activities. The assumption is also that everyone is operating at GMP as a minimum.[3]

26 It is stated in Appendix G of the Section 42A report that should all the consents currently in process be granted, it is likely that the Valley and Tributaries Zone nutrient allocation will be full. This is on the basis of assumptions by the report writer that the consents in process equate to a further 4,776 hectares of irrigation, and that most of this is proposed to be dairy farming.

27 Irricon has lodged all of the consents in process listed in Table 12 of Appendix G of the Section 42A report, and many of the comments in the table are incorrect, as are the above assumptions in relation to the further development potential for dairying. Corrections are identified below.

27.1 CRC154166, Otewai Holdings – this is not 285 ha of new irrigation for dairy farming as stated by ECan. The applicant, already a dairy farm, currently has access to scheme water, and this application is being sought to replace it on the same terms and conditions. Therefore, there is no new irrigation or change in land use.

27.2 CRC154154, Mt Parker Farm Limited – this is new irrigation but not dairy farming (sheep and beef). There is no change in land use sought under this application from the current land use, with a modelled increase in N loss, using OVERSEER, from 7 kg/ha/year to 8 kg/ha/year.

27.3 CRC161657, Kurow-Duntroon Irrigation Company Limited – the 3,640 hectares is not all new irrigation. At least 50% of this is providing an alternate source of water to already irrigated properties. The new irrigation land will not all be converted to dairy.

27.4 CRC162767, Station Peak Limited – already a fully irrigated dairy farm. The application seeks additional volume (with no increase in rate as the property already has sufficient rate to efficiently irrigate their property).

[3] Appendix G of the S42A report.

28 Therefore, the assumptions that the grant of the consents in process could result in the nitrogen allocation becoming full are incorrect. At best, and as a result of a grant of consents in process there would be 2,392 hectares of new irrigation, of which less than half of that is new dairy farming.

29 Although the limit set for this FMU provides for further expansion, this is likely to be limited by the poor availability of water, particularly in the tributary catchments.

30 There are a number of existing mining rights in the tributary catchments. Mining rights are not subject to many conditions at present, but in 2021, when they have to be replaced with a resource consent, conditions such as volumetric limits and minimum flows will be imposed on replacement permits, and this will impact those user's reliability of supply. Many of those users are currently assessing alternate, more reliable sources of water in acknowledgement of the reduced reliability of supply that will result from the renewal of the mining rights.

31 The Waitaki River is the only reliable source of water in this FMU. Abstraction from the river is governed by the Waitaki Catchment Water Allocation Regional Plan (WCWARP), which controls allocation by two means. The first is by annual allocation (cubic metres per year) and are specified in Table 5 of the WCWARP. This sets allocation limits on a category basis, for example, Agricultural and Horticultural and Town and Community Supply. There are no Table 5 allocation barriers at present in this FMU.

32 The second means is by flow rate and a minimum flow. These limits are specified in Table 3 of the WCWARP. The flow rate allocation limit for the Waitaki river is nearing full. The flow rate allocation was reduced from 90 m^3/s to 79 m^3/s under Plan Change 3 of the WCWARP. If all applications currently in process are granted, the total allocation would be 78.2 m^3/s, leaving only 800 l/s of available allocation from the Waitaki River.

33 Instead of being used for brand new irrigation projects, a significant portion of the available allocation on the Waitaki River is likely to be taken up by the permit holders, such as the mining right holders, who are looking at options to take water from Waitaki River as a way to maintain or improve their current reliability of supply., This therefore limits the potential for a further 4,776 hectares of irrigation as stated in my evidence.

34 Therefore, it is my view that the assumptions used to determine the nitrogen allocation for the Valley and Tributaries FMU is generous, and therefore, the allocation is not likely to be exceeded.

35 It is also noted that the supporting technical assessment to PC5 also shows that this generous allocation will only result in a modest increase in instream nitrogen concentrations from current levels, and the same supporting technical assessment, as described earlier in my evidence, shows that the current levels are good with low levels of nutrient enrichment and relatively healthy ecological communities.

Whitney's Creek FMU

36 Whitney's Creek is a highly developed catchment, to the point where it is almost fully developed. The Zone Committee objectives for Whitney's Creek were to maintain low nitrate concentrations and reduce *E.Coli* and sediment in the creek. Therefore, by requiring all land owners within the FMU to operate at a minimum of GMP, including any industrial discharges they may receive, will reduce the nutrient load going to the stream and this is acknowledged in the technical reports. The catchment load for the creek has been set at 8% above current land use (at GMP) to allow for all irrigated land to be converted to dairy at three cows per hectare. In a catchment that is already highly developed, to the point where it is fully developed,[4] the likelihood of the catchment nitrogen allocation being exceeded is extremely small.

Hakataramea Flat Zone

37 The catchment nitrogen allocation is based on current consented load plus an additional 4%. This allows for unimplemented consents (for irrigation) to be exercised, as well as providing load for further development. Again, the allocation assumes that all landowners are operating at a minimum of GMP.

38 The Hakataramea FMU has been split into three zones. I acknowledge that the more sensitive zones (being the River and Hill zones) should be subjected to a more stringent rule framework.

39 As with the Valley and Tributaries FMU, development potential in the Hakataramea is limited by the availability of water. There is only high flow water available for allocation in the catchment, but to access this requires large amounts of storage to be built. This will be prohibitive to many in the catchment. Therefore, the additional 4% is likely to be used for dryland development, but on a modest scale. Given this, there is a very small possibility of the Hakataramea Catchment Nitrogen allocation being exceeded as a result of land use in the Hakataramea Flat Zone.

[4] S42a report – paragraph 12.50

Will the Consent Holders Be Operating at GMP?

40 The short answer to this is "yes". As described earlier in this evidence, existing consent holders are subject to a comprehensive suite of conditions, including the requirement for MGAP's to be implemented on the properties. MGAP's are as follows:

Mandatory good agricultural practices	**What these practices mean on farm**
Fertilisers applied according to code of practice for fertiliser use	The fertiliser users' code of practice aims to ensure that where fertilisers are used that they are used safely, responsibly and effectively and in a way that avoids, remedies or mitigates any adverse environmental effects. The code of practice includes guidance on fertiliser use, application, storage, transport, handling and disposal.
Use a fertiliser recommendation system (nutrient budget) and account for all sources of nutrients including applied effluents and soil reservoirs accounted for	Planning fertiliser applications to all crops, determining crop requirement and accounting for soil nutrients and organic nutrient supplies, all reduce the risks of applying excessive fertiliser above the crop requirement. This maximises the economic return from the use of fertilisers and reduces the risk of causing nutrient pollution of the environment Accounting for all sources of nutrients including imported sources and soil reservoirs is an important management measure in all farming systems and become especially important on farms where manure is produced and applied to the land. The re-application of organic manures to land is often thought of as a disposal of a waste product, and the available nutrients within the organic manures are not accounted for. The use of an integrated nutrient budgeting tool such as OVERSEER automatically accounts for nutrients supplied in organic manures.
Fertiliser application applied evenly	The even application of fertiliser is an assumption of the OVERSEER model as included in the fertiliser code of practice. Fertiliser spreaders should be tested and calibrated in-house at least annually and every 5 years by an independent auditor.
Irrigation and effluent applied evenly	The even application of water and or effluent is an assumption of the OVERSEER model. Irrigators should be tested and calibrated in-house at least annually and then every 5 years in accordance with the code of practice for irrigation evaluation by a qualified irrigation auditor.
Crop, cultivation, nutrient inputs and yield records kept per farm management unit	Maintaining good crop input records is important for: • The calculation of cumulative annual organic fertiliser applications and also their contribution to long term nutrient supply; • The prediction of realistic crop yields that are used to determine crop requirements; • Providing accurate inputs to the OVERSEER

Mandatory good agricultural practices	What these practices mean on farm
	nutrient budgeting model that is being used here as a proxy for measuring diffuse nutrient losses.
Good design of irrigation systems	Design will match soil properties and low application amounts on shallower soil to prevent summer drainage.
Robust irrigation scheduling	Good irrigation scheduling to prevent summer drainage.
Supplement and feeding out management	To be addressed in the Farm Environmental Risk Assessment.
Winter grazing management	To be addressed in the Farm Environmental Risk Assessment.

41 MGAPs alone are comprehensive and most certainly align, if not go beyond, the Industry Agreed Good Management Practices.

42 Coupled with this, specific consent conditions are also imposed relating to fencing and riparian management.

43 OVERSEER is also a key feature of the existing consent conditions and use of OVERSEER is tied to FEPs and auditing requirements.

44 The purpose of the FEP's is to ensure that the MGAP's are being carried out on farm, OVERSEER losses are being modelled and reported on, and that all water quality consent conditions outlined in paragraph 15 of my evidence are being met.

45 Therefore, because of the conditions of these consents, a level of practice beyond GMP is being implemented on these farms.

How Can the Council Be Sure that the Catchment Nitrogen Allocation is Not Being Exceeded and that GMP is being carried out on farm?

46 The rules proffered by WIC still require that to be a permitted activity, the land owners must continue to use the Farm Portal.[5] Therefore, the council will still be able to fulfil its "nutrient accounting" functions and be certain that the Catchment Nitrogen Allocation is not being exceeded

47 With respect to GMP, under existing consent conditions, FEP audits are required to be completed and submitted to the council. As stated in my evidence, the purpose of the FEP's is to ensure that the MGAP's are being carried out on farm, OVERSEER

[5] The nutrient management database accessed at www.farmportal.ecan.govt.nz

losses are being modelled, and that all water quality consent conditions are being met. Therefore, FEP's are the method which identify and implement GMP as it is defined in PC5.

48 Auditing of the FEP's is required to be done on an annual basis, and therefore, each year for the life of those consents, the council will receive an audit report detailing what is being done on farm, and verifying compliance with the water quality consent conditions. Therefore, determining compliance for these consent holders will be a very easy task.

IMPLEMENTATION DIFFICULTIES FROM A PRACTITIONERS PERSPECTIVE

49 As highlighted in the evidence of Elizabeth Soal, the rule framework of Section 15 of PC5 is complex and many farmers giving evidence on the plan have also supported this statement. The public perception of PC5 is that it was supposed to be "user friendly", straight forward, and a plan that regulates those that need regulation, while leaving good farmers to carry on.

50 As a practitioner, it is my view that the plan has not delivered what was expected in terms of ease of use and leaving good farmers in areas such as green zones to be good farmers. It is not a plan that you can pick up, read, and easily work out which rule is applicable and where you need to end up (i.e. baseline GMP, GMP for the previous four years, or better than GMP). This is in part due to the fact that despite narrative terms being used in the rules (such as 50 hectares of irrigation or 20 hectares of winter grazing), you need to use the Farm Portal to work out "where you fit", and the average person will not be able to do this.

51 My view is that it is a "resource heavy" plan. Using a "drafting-gate" analogy, PC5 was expected to draft the "sensitive areas" off into the "requires resource consent" pen, although it has not achieved that. I wholly acknowledge and support that there are areas that require more regulatory support to ensure that water quality is not degraded any further, or that really good water quality is protected. The Hakataramea River and Ahuriri Zones are good examples of this.

52 Instead, and again using my analogy, the "drafting gate" is set to draft nearly everyone into the "requires resource consent" pen, except very small land owners or very low emitters. Therefore, instead of drafting 20% of the region, 80% is being drafted, and for little to no environmental benefit. Dealing with the sheer numbers that will require resource consent is going to take far more resources than either industry, or the council for that matter, has.

53 There is a view held by some that resource consents provide more certainty, especially if everyone if subject to a nitrogen loss number. However, in practice, the number means very little to the average farmer or landowner. Focusing on a broad range of GMPs on a farm is more easily understood and using FEPs as the tool to achieve this, in my view, will have far more of a positive effect on water quality than requiring a farmer to comply with an OVERSEER output number. After all, it's not OVERSEER outputs that have resulted in poor water quality in some areas, it's what has actually happened on the land, and by encouraging change 'on the ground' and working with farmers and land owners to effect more change, over time, you will see a difference.

OTHER MATTERS

54 WIC also submitted in the definition of Winter Grazing, in particular the fact that the definition specifies a time period of 1 May to 30 September. WIC sought to amend the time period from 1 May to 31 August.

55 WIC's request is discussed in the S42a report at paragraph 7.218. It states that "*it is my understanding that during September, particularly when grass growth is limited, cattle may continue to be grazed on these kinds of fodder crops… In my opinion, a reduction in the date range could potentially lead to difficulties of enforcement and compliance, whereby those parts of a winter grazing crop earmarked for grazing in September, would potentially be excluded from the definition. Alternatively, including the date range through to 30 September is likely to cover the full winter grazing season".*

56 There are a number of reasons why the S42a report writer's reasoning for including September in the definition of Winter Grazing just simply does not make sense as it does not fit with typical farming systems. September is 'spring' and farming systems have either entered, or are entering the next phase of the faming cycle, being 'reproduction'.

57 From a dairy farming point of view, winter grazing occurs when the cows are dried off, and have gone onto a fodder crop for the winter months (being late May to June, July and early August) before calving. By September, dairy cows have calved, returned home from winter grazing, and are being milked.

58 Even in a sheep and beef farming system, cows and sheep are often grazed on a fodder crop for the winter months, but by September, calving and/or lambing is underway and they are back onto pasture.

59 Land that has been in a winter crop also needs to be re-sown either into a second crop (such as oats or triticale), or back into pasture as early as possible in the spring to maximise growth from the rising soil temperatures.

60 Given this, in the time period in definition of Winter Grazing should be amended to be from 1 May to 31 August.

CONCLUSION

58 There are 13 consent holders in the Valley and Tributaries FMU and 5 consent holders in the Hakataramea Flat Zone FMU that hold resource consents that are subject to a comprehensive suite of water quality conditions. However, they are not subject to a property-based nitrogen loss limit.

59 Submissions were received questioning the need for these consent holders to obtain a further consent for the purpose of imposing a nitrogen loss limit.

60 The conditions already imposed on the existing consents require landowners to implement practices beyond what is expected under GMP. Current water quality in the FMU's where the consents are held is very good and coupled with the probability of the catchment nitrogen allocation limits ever being exceeded being very small (if at all), is not at risk of deteriorating beyond the expected PC5 modelling outcomes.

61 Therefore, requiring consent holders with water permits that are subject to an already comprehensive suite of water quality conditions to obtain another consent for the purpose of imposing a property-based nitrogen loss limit is regulating for no environmental benefit. In my view, this is onerous and excessive.

62 The definition of Winter Grazing includes the month of September, which does not reflect what the intention of the definition was. Therefore, September needs to be removed from the definition.

Keri Johnston

Date 22 July 2016

APPENDIX ONE

Consents that are subject to Water Quality Conditions

Consent Number	Consent Holder	Zone
CRC041002	Papamoa Enterprises Limited	Valley and Tributaries
CRC041003	WN Cameron	Valley and Tributaries
CRC061931	Clarkesfield Holdings (1996) Ltd	Valley and Tributaries
CRC157946	Clarkesfield Holdings (1996) Ltd	Valley and Tributaries
CRC155385	Maerewhenua District Water Resources Co Ltd	Valley and Tributaries
CRC156634	GF & JE Keeling	Valley and Tributaries
CRC145300	Torach Farm Limited	Valley and Tributaries
CRC050940.1	Messrs L E, D T, & P M Shearer	Hakataramea Flat and River Zones
CRC050957.1	Messrs L E, D T, & P M Shearer	Hakataramea Flat and River Zones
CRC151673	MFS Ventures Limited	Hakataramea River Zone
CRC146211	MFS Ventures Limited	Hakataramea River Zone
CRC135581	Mr J N & Mrs J V Borrie and Banco Trustees Ltd	Hakataramea River Zone
CRC040999	Hakatamea Valley Station (1990) Limited	Hakataramea Flat Zone
CRC072756.1	Lone Star Farms Limited	Hakataramea Flat Zone
CRC051776	NJ Small	Hakataramea Flat Zone
CRC163429	Kurow-Duntroon Irrigation Company Limited	Valley and Tributaries

CRC092359.1	Kokoamo Farms Limited and DD & VJ Chalmers	Valley and Tributaries
CRC142993	KA White	Valley and Tributaries
CRC147213	Kaimanawa Farms Limited	Valley and Tributaries
CRC132165	Haka Valley Irrigation Limited	Hakataramea Flat and River Zones
CRC042124.1	JR & SD Chalmers Limited	Northern Fan
CRC136237	Downlands Farm Limited	Valley and Tributaries
CRC090293	Waitaki Dairy Limited	Valley and Tributaries

CONDITIONS ON ALL OF THE ABOVE CONSENTS

OVERSEER

a. With the exception of the first period ending 30th June during which this consent is first exercised, for each preceding 12 month period ending 30th June:

   i. An approved method shall be used to model the nitrate-nitrogen concentration in the soil drainage water below the plant root zone and to prepare a nutrient budget for the subject land for that prior 12 month period.
   ii. Records shall be maintained throughout the year of the farm management practices and associated data that will be used as input to the approved method.
   iii. Predictions shall be made of the farm management practices that will be used for the following 12 month period to provide input data to the approved method taking regard of the need to reduce nitrate leaching below the plant root zone where possible.

b. A record of the predicted and measured input data, the calculations undertaken and the calculated nitrate-nitrogen concentration in the soil drainage water below the plant root zone in accordance with clause (a) shall be:

   i. Prepared by 31st August each year.
   ii. Certified as an accurate record by a suitably qualified person.
   iii. Maintained for the property for the duration of the consent; and
   iv. Provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 September each year, or upon request.

c. For the purposes of this condition an approved method is:

i. 'Overseer' (AgResearch).
ii. The Soil Plant Atmosphere Model (SPASMO - HortResearch.)
iii. Any other method approved by the Canterbury Regional Council.

d. For the purposes of this condition, the subject land means the area that is irrigated between 1 July and 30 June of the following year.
e. Between the 1st September and 30 November of each year a groundwater sample ('the Sample') will be taken from the shallowest bore on the property to which this consent applies; and
f. The Sample shall be analysed by a laboratory that is certified for that method of analysis for nitrate-nitrogen; and
g. The results of this analysis shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by the 30th January of each year.

Fertiliser

a. Fertiliser shall be managed and applied in accordance with 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07'.
b. The consent holder shall keep a record of all fertilizer applications applied to the property, including fertilizer type, concentration, date and location of application, climatic conditions, mode of application and any report of the fertilizer contractor regarding the calibration of the spreader.
c. For land based spreading of fertiliser an independent fertiliser spreading contractor shall be used to spread any fertiliser on the property except as provided for by clause (ii) below.

i. Where an independent fertiliser spreading contractor is used the consent holder shall keep a record of the contractor used which can be supplied to the Canterbury Regional Council upon request by the RMA Compliance and Enforcement Manager.
ii. Where the applicant's own fertiliser spreaders are used, the consent holder shall test and calibrate the fertiliser spreaders at least annually, and every 5 years the fertiliser spreader will be certified by a suitably qualified person in accordance with 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07' or any subsequent updates and the results of testing shall be provided to the Canterbury Regional Council upon request by the RMA Compliance and Enforcement Manager.

d. Nitrogen fertiliser shall not be applied to land between 31st May and 1st August in any year except for the use of nitrification inhibitors.
e. All fertiliser brought onto the property which is not immediately applied to the land shall be stored in a covered area that incorporates all practicable measures to prevent the fertiliser entering waterways.
f. Fertlilser shall not be applied to land where the soil water holding capacity is at or in excess of field capacity.
g. If liquid fertilisers, excluding liquid effluent, are stored on-site for more than three working days, the consent holder shall ensure that the fertiliser is stored in a bunded

tank, at least 110% of the volume of the tank to avoid any discharge to surface or groundwater and such that it is also protected from vehicle movements.

h. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.

Irrigation Design and Evaluation

a. In relation to all new (not on the property at the time of commencement of this consent) irrigation infrastructure:

   i. The consent holder shall ensure new irrigation infrastructure is designed and certified by a suitably qualified independent expert, and installed in accordance with the certified design.
   ii. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request by the RMA Compliance and Enforcement Manager.
   iii. All irrigation infrastructure shall be tested within 12 months of the first exercise of this consent and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
   iv. The expert shall prepare a report within two months of the testing, outlining their findings and shall identify any changes needed to comply with the code of practice. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.
   v. Any changes needed to comply with this code of practice shall be implemented within five years from the date of the report.

b. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:

   i. The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
   ii. This report shall be obtained within three months of the first exercise of the consent.
   iii. Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.

c. A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

Farm Environment Plan

Prior to the exercise of this consent, the consent holder shall:

a. Prior to the first exercise of this consent, the consent holder shall prepare, implement and submit to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, a Farm Environmental Management Plan (FEMP).
b. The FEMP shall be designed to achieve the following objectives:

    i. technically efficient use of water, minimising runoff and drainage (leaching);
    ii. minimise contamination of groundwater and surface water, particularly in terms of fecal contamination, nitrogen and phosphorus;
    iii. minimise nutrient losses to water while managing soil fertility to optimise pasture and crop productivity;
    iv. soil in good physical condition;
    v. mitigate adverse effects on water bodies and riparian areas through healthy riparian margins;
    vi. safeguard significant indigenous biodiversity and ecosystem values within the irrigation area.

c. The FEMP shall provide details of the practices and procedures to be put into place, in order to ensure compliance with the conditions of consent and to further avoid or mitigate the potential for adverse effects on the environment arising from the exercise of this consent.
d. The FEMP shall include, but not be limited to:
i. A nutrient budget for the entire property,
ii. The nutrient budget shall be prepared by the 31 August each year for the coming 12 month period using OVERSEER. The nutrient budget shall be certified by an independent person with an Intermediate or Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification.
e. When undertaking the modelling outlined in clause (d)(i) and (d)(ii), the consent holder shall:

    i. use typical farm practices undertaken in the previous 3 year period;
    ii. use either weather records collected on farm or from constructed data from the nearest weather station; and
    iii. keep records of all input data used in the nutrient budget.

f. A property specific environmental risk assessment (including a description of the risks to water quality arising from the physical layout of the property and its operation which are not factored in as Overseer parameters) prepared by a suitably qualified person which identifies any farm specific environmental risks along with measures to mitigate the farm specific environmental risks.
g. Implementation of Mandatory Good Agricultural Practices (MGAPs) across the property
h. Record of all farm management practices, such as cultivation, nutrient inputs, stock movements, yields.

The FEMP shall be audited annually by a suitably qualified independent assessor. The audit shall include but is not limited to ensuring the FEMP meets the objectives and requirements specified in condition (12).

a. A report shall be prepared by 1 August each year by the suitably qualified

independent assessor outlining the findings and recommendations of the annual audit.

b. Any recommendations identified shall be implemented before the following 31 August.
c. A copy of the report shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within two months of the date set in clause (b) of this condition.
d. For the purposes of this condition, the 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.

The FEMP shall apply to the farms operated by DD Chalmers and Kokoamo Farms Ltd and to any areas irrigated under this consent.

a. Should any changes to the land holding occur, the FEMP shall be reviewed and updated before the start of the next irrigation season.
b. The consent holder will provide the amended FEMP to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, with a certificate signed by a solicitor or Justice of the Peace which certifies the amendments made reflect the changes in landholding.

Fencing

Within the irrigated area:

a. In respect of any natural, permanently flowing, surface water feature, permanent fencing shall be erected in general accordance with the Canterbury Regional Council's "Guide to managing waterways on Canterbury farms" & companion guide "Lowland Plains, Streams and Drains."

b. Where practicable, riparian planting shall be carried out within fenced areas.

c. Temporary fencing will be erected when stock are grazing areas of the property where there is access to other waterways, excluded from condition 17(a).

d. All fencing will be maintained in a good state of repair.

CONDITIONS SPECIFIC TO THE HAKATARAMEA CATCHMENT

Baseline and on-going monitoring

The objective and survey of all monitoring programmes shall be to obtain a definitive and representative assessment of any effects of the use of water authorised by this consent on the state of the environment of the Hakataramea Valley.

Without limiting this objective, the purpose of the monitoring plan is to provide information which may be used to determine whether the exercise of this consent is a cause of contributing cause to changes in:

a. Periphyton in the Hakataramea River.

b. Macro-invertebrates species in the surface water bodies.
c. Native fish and salmonids, and
d. Physical and chemical groundwater and surface water quality.

This is a catchment wide survey.

PROVIDED THAT compliance by this consent holder with one or more parts of this condition shall be deemed to be compliance by the following consent holders (Haka Valley Irrigation Group) of the same parts:

a. RPNZ Properties – CRC references 051767, 051768 and 051769
b. RG & ZL Pringle – CRC references 050940 and 050957
c. Star Holdings LTD – CRC references 072756
d. Hakataramea Station (1990) LTD – CRC reference 040999
e. RW & ME Sutton – CRC reference 071114
f. NJ Small – CRC reference 051766
g. Haka Valley Irrigation LTD – CRC reference 032177

PROVIDED ALSO THAT compliance by the Haka Valley Irrigation Group representing all the consent holders who are subject of this condition shall be deemed to be compliance by the consent holder.

Baseline surveys to be undertaken prior to taking of water for irrigation purposes
Subject to sub–clause 14.6 before the first exercise of this consent the consent holder shall provide to the Regional Council a copy of the baseline survey plan prepared in accordance with the sampling design specified in Schedule A.

The baseline survey shall be undertaken over a period of one year and completed within a period of two years from the date the consent is granted.

The baseline survey plan shall be designed and carried out using standard scientifically accepted methods by suitably qualified personnel with appropriate (recognised) experience in the matters being surveyed.

Timeframes specified in the Surface Water Baseline Study, Groundwater Baseline Study and the Land Baseline Study shall be coordinated by the personnel engaged.

The surveys may include any matters which the personnel engaged to design and carry out the baseline surveys consider necessary or more desirable and which are in addition to, or instead of, the provisions on Schedule A.

The consent holder may take water under the terms of this consent from the date that consent is granted. However, taking must cease if after two years from the grant of consent the baseline survey has not been completed in accordance with this condition. Taking water may only resume once the baseline survey has been completed.

On – Going Monitoring

Within three months of the completion of all of the baseline survey the results of each of baseline survey's shall be assessed to determine the location, sampling and frequency of on-going monitoring throughout the exercise of this consent and any analysis that will be undertaken on the basis of the proposed monitoring information in Schedule A.

The consent holder shall provide in advance of implementation to the Regional Council a copy of the annual monitoring plan prepared in accordance with this condition.

All monitoring programmes shall be designed and carried out using standard scientifically accepted methods by suitably qualified personnel with appropriate (recognised) experience in the matters being monitored.

On-going monitoring time intervals shall be re-evaluated and modified as appropriate.

Schedule A shall be reviewed annually and changed as necessary on the recommendation of the personnel engaged to design and carry out the monitoring programme following monitoring results.

At least once every five years for the duration of the consent the consent holder shall undertake an audit of landuse changes in accordance with the Landuse Inventory in Schedule A identifying gross changes.

Reporting of the Baseline Surveys and Annual Monitoring

The consent holder shall provide the Canterbury Regional Council with an annual report no later than 31st July in each year during the term of this consent. The report shall include a summary of the analyses and records collected in accordance with the conditions of this consent and as a minimum shall also:

a. Summarise all the data collected as required under the conditions of this consent (including graphical presentation and statistical summations of monitoring data) and analyse the information in terms of compliance of this consent.
b. Highlight and discuss any important environmental trends in the results.
c. Compare results obtained over the reporting period with the results obtained from previous reporting periods.
d. Audit compliance by consent holders and water users with the provisions of their Farm Management Plans in accordance with condition (17)(d)
e. Report and discuss any operational difficulties, changes or improvements to the Farm Management Plan which would result in a notable variation of water quality.
f. List any maintenance works needed, proposed or undertaken to ensure compliance with the conditions of the consent.

g. Report detailing any remedial steps to be incorporated by amendment to the Farm Management Plan in response to the results of the baseline survey and monitoring program.
h. Report detailing any changes to Schedule A.

Within three months of completion of each of the surveys or monitoring reports the consent holder shall provide copies of survey and monitoring reports and results to, the Director-General of the Department of Conservation, Te Runanga o Ngai Tahu and Central South Island Fish and Game Council.

Shelter Belts

a. Within 12 months of the commencement of this consent, shelter belts will be planted on the northern side of irrigated land within the consent holder's property, except where this will result in shading of a road causing treacherous conditions.
b. Shelter belts will be maintained in a good state of repair.