RDRML and Stakeholders

Environmental Management Plan

for resource consent CRC121664.1

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1. Introduction

This Environmental Management Plan (EMP) has been developed by Rangitata Diversion Race Management Ltd (RDRML) and its associated irrigation schemes in accordance with the conditions of resource consent CRC121664.1.

Together with the RDRML Environmental Management Strategy (EMS)[1] this EMP sets out the procedures and activities that will be conducted and followed by RDRML, the irrigation schemes and in turn the various individual water users to ensure that they can achieve high environmental standards and sustainable outcomes.

RDRML recognises that it is operating under a wider sustainable management framework, in particular the Canterbury Water Management Strategy (CWMS), the Land and Water Regional Plan (LWRP) and the Ashburton Zone Implementation Programmes (ZIPs). The scheme's environmental objectives and activities are intended to assist in implementation of the CWMS and the relevant ZIPs.

2. Sustainability Policy and Approach

2.1 RDRML Environmental Management Strategy

2.1.1 Purpose.

RDRML, the associated community and private irrigation schemes, developed an **Environmental Management Strategy (EMS)** in 2012 to provide protocols, policies and procedures, at the governance and management levels, that they follow in the development, operation and maintenance of their irrigation schemes and associated activities. It provides leadership and commitment to achieving positive environmental outcomes.

The RDRML environmental goal is: To ensure that both the scheme operators and water users can achieve high environmental standards and sustainable outcomes

2.1.2 Coverage.

Water made available through the RDR and associated schemes has a range of values, uses and users including irrigation, power generation, managed aquifer recharge (MAR) and stock water as well as providing amenity, recreational, biodiversity and conservation values. The strategy reflects an understanding of these multiple uses and functions and aims to balance these interests.

2.1.3 Approach.

The EMS Sustainability Policy recognises that sustainability is about ensuring that irrigation schemes and their water users are viable and contribute lasting benefits to society through consideration of social, environmental, cultural, ethical and economic values. There is a commitment to ensure that the resources under the stewardship of RDRML and its Stakeholders are managed to deliver economic and social benefits to communities, are not degraded and will be available for future generations.

[1] Written in 2012, revised in August 2014, revised again in August 2015 approved by ECan in December 2015.

2.1.4 Scope.

The EMS covers five main environmental management areas. They form the five Management Areas in the RDRML Farm Environment Plan (FEP) described later in this EMP.

2.2 RDRML Environmental Management Plan CRC121664.1

RDRML holds resource consent CRC121664.1, which allows for the use water for: Irrigation, stockwater and hydroelectric power generation. It also allows for the use of land for farming activities and the discharge of nutrients to water arising from this land use[2].

This EMP together with the RDRML EMS describe how RDRML, associated irrigation schemes and water users will jointly manage environmental issues related to the on-farm activities of properties within the *Expanded Command Area* described in this consent.

RDRML will use systems and tools including FEPs, FEP auditing, recording and reporting nutrient losses against nutrient limits and robust compliance and enforcement, consistent with the obligations set out in the resource consent CRC121664.1. A copy of this resource consent is attached as Appendix 3.

2.3 RDRML Environmental Management Structure

The relationship between the Environmental Management Strategy, Environmental Management Plan, Water Use Agreements, and Farm Environment Plan, and the ongoing, inter-connected process of adaptive management through monitoring, review and revision are shown in Figure 1.

Figure 1: Relationship between Environmental Management Strategy, Environmental Management Plan, Water Use Agreements and Farm Environment Plan

Instrument / Tool	Monitor Review Revise	Description	Responsibility
RDRML Environmental Management Strategy	⇦ ⇕	Sets policies, procedures, water user requirements & compliance	RDRML & Stakeholders
Environmental Management Plan - CRC180881	⇦	Sets processes, water user requirements & compliance for implementation of CRC180881	RDRML & Irrigation Schemes
Water Supply Agreements with RDRML Shareholders	⇦	Legal contract for water supply, including processes, water user requirements & compliance for implementation of CRC180881	RDRML & Irrigation Schemes
Water Supply Agreements with irrigation scheme shareholders	⇦	Legal contract for water supply, includes requirements to prepare & implement Farm Plan	Irrigation Schemes
Farm Environment Plan	⇦	Action Plan for each property	Farmer Shareholders

[2] Condition 2 (Consent Authorisation) of CRC121664.1

3. Key Environmental Management Areas and Approaches

3.1 RDRML Environmental Management Areas

The RDRML EMS covers five main environmental management areas which form the five key Management Areas in the FEP. Within each Management Area are one or more Objectives and a number of Targets as presented in Figure 2, and described fully in the RDRML EMS. The five management areas defined in the RDRML FEP template are:

- Irrigation Management
- Nutrient and Soil Management including Offal and Farm Rubbish Pits
- Collected Animal Effluent Management
- Livestock, Waterways, Wetlands and Riparian Management
- Biodiversity and Ecosystem Management

In 2014 RDRML revised its FEP to better align with Canterbury's proposed Land and Water Regional Plan (pLWRP) Schedule 7 requirements. The RDRML FEP was approved for use by ECan and the objectives in Figure 2 satisfy the requirements of Schedule 7.

For each property either supplied with RDR sourced water (*Existing irrigation Area* or *New Irrigation Area*) or otherwise operating under the terms of the RDRML ASM programme (*Other Managed Area*), a FEP is prepared and implemented. In the FEP, the land owner addresses each objective the specific targets within. Completion of the FEP produces a description of the on-farm practices being implemented to achieve the objectives and the specific targets within.

RDRML and its irrigation schemes take a proactive role here to encourage farmers to implement good on-farm practices and systems. In these ways the FEP can provide a risk management approach to environmental protection and enhancement on-farm, while optimising farm production and profitability.

Figure 2: RDRML Farm Environment Plan Management Areas, Objectives and Targets (FEP August 2014 version)

FEP Management Area	Objective	Targets
Irrigation Management – Efficient Water Use	To operate irrigation systems that are capable of applying water efficiently and management that ensures actual use of water is monitored and is efficient.	**Regulatory Compliance** - Compliance with relevant Canterbury Regional Council regulatory requirements and consent conditions. - Compliance with relevant irrigation scheme rules **Water Application** - Water is applied efficiently at a time, and volume that meets crop demand and ensures the long term sustainability of production levels **Irrigation waste water** - All practicable steps are undertaken to ensure that the volume of water used does not exceed that required for the soil to reach field capacity and that runoff and by-wash is minimised **Maintenance** - All practicable steps are taken to: Avoid leakage from pipes and structures Ensure the irrigation system is operating efficiently. **New Irrigation systems -** New irrigation systems are designed to the Irrigation New Zealand Code of Practice and Design standards using accredited designers **Staff Training -** Staff members who manage and maintain the irrigation system on a daily basis have appropriate training in the operation, maintenance and management of the irrigation system.
Nutrient and Soil Management including Offal & Farm Rubbish Pits	**(Nutrient):** To maximise nutrient use efficiency while minimising nutrient losses to water in order to meet specified nutrient allowances. **(Soil):** To maintain or improve the physical and biological condition of soils in order to minimise the movement of sediment, phosphorus and other contaminants to waterways **(Offal & Rubbish Pits):** To manage the number and locations of pits to minimise risks to health and water quality	**Nutrient Budgeting and Nutrient Management Planning -** Nutrient losses to surface and ground water are minimised through the use of nutrient budgeting and nutrient management planning. **Nutrient Application -** Nutrients are applied where needed to maximise impact and minimise losses to non-target areas. **Soil erosion -** To minimise the incidence of wind and/or water erosion caused as a result of farming practices **Soil health -** To optimise soil structure and soil biological activity
Collected Animal Effluent Management	To manage the risks associated with the operation of the effluent systems to ensure effluent systems are compliant 365 days a year	**Effluent spreading and disposal -** To ensure that all effluent systems are capable of meeting industry & scheme standards for best practice effluent management

Livestock, Waterways, Wetlands and Riparian Management	**(Livestock):** To manage wetlands and water bodies so that stock are excluded as far as practicable from water, to avoid damage to the bed and margins of a water body and to avoid the direct input of nutrients, sediment and microbial pathogens**.** **(Waterways, wetlands & riparian):** To manage wetland and waterway margins to avoid damage to the bed and margins of a water body, avoid direct input of nutrients and to maximise riparian margin nutrient filtering	**Stock Exclusion -** To exclude all intensively farmed livestock from all flowing waterways (excluding farm and scheme distribution races) **Soil loss -** To minimise soil loss and contamination of waterways **Protection of waterways -** To protect water quality through riparian planting
Biodiversity and Ecosystem Management	To include biodiversity and ecosystem management as an integral part of farm management.	**Significant Vegetation and habitat protection -** Significant recognised[3] indigenous vegetation and significant habitats of indigenous fauna including wetlands are present and are protected **Biodiversity and habitat protection -** Awareness and understanding of local biodiversity issues is encouraged as well as the protection and enhancement of indigenous vegetation and fauna. Recognition of the potential benefits from establishing exotic vegetation is encouraged e.g. the establishment of shelter belts, fodder crops for bees. **New irrigation development -** If new irrigation systems have been established consideration has been undertaken where shelterbelts and other plantings are removed for irrigation development, that these are replaced. **Stock water -** Stock water races are maintained and water quality and habitats are protected.

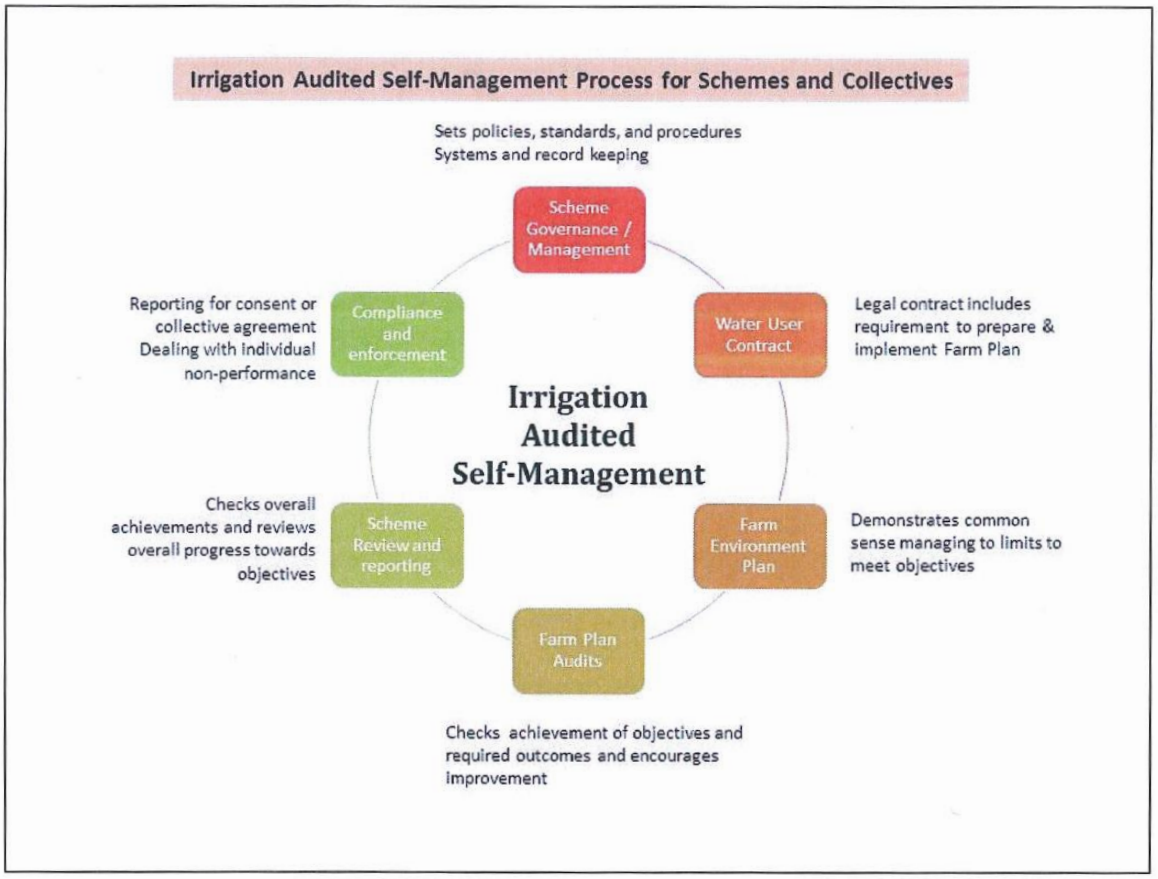
[3] Recognised as significant by either the Ministry for the Environment, Department of Conservation, Regional or District Councils.

3.2 Environmental Management Approaches

3.2.1 Irrigation Audited Self-Management - for Irrigation Schemes

A key goal of RDRML and its stakeholders is to ensure that all activities are carried out with a high standard of environmental care. The focus will be on active management and prevention of problems. RDRML has been operating Audited Self-Management (ASM) systems at a company level for many years and has good experience in operating appropriate processes to meet regulator and other stakeholders' expectations. RDRML now operates a process of Irrigation Audited Self-Management, which has been developed in accordance with the conditions of resource consent CRC121664.1, and follows the process described in Figure 3.

Figure 3: Irrigation Audited Self-Management Process for Schemes and Collectives[4]



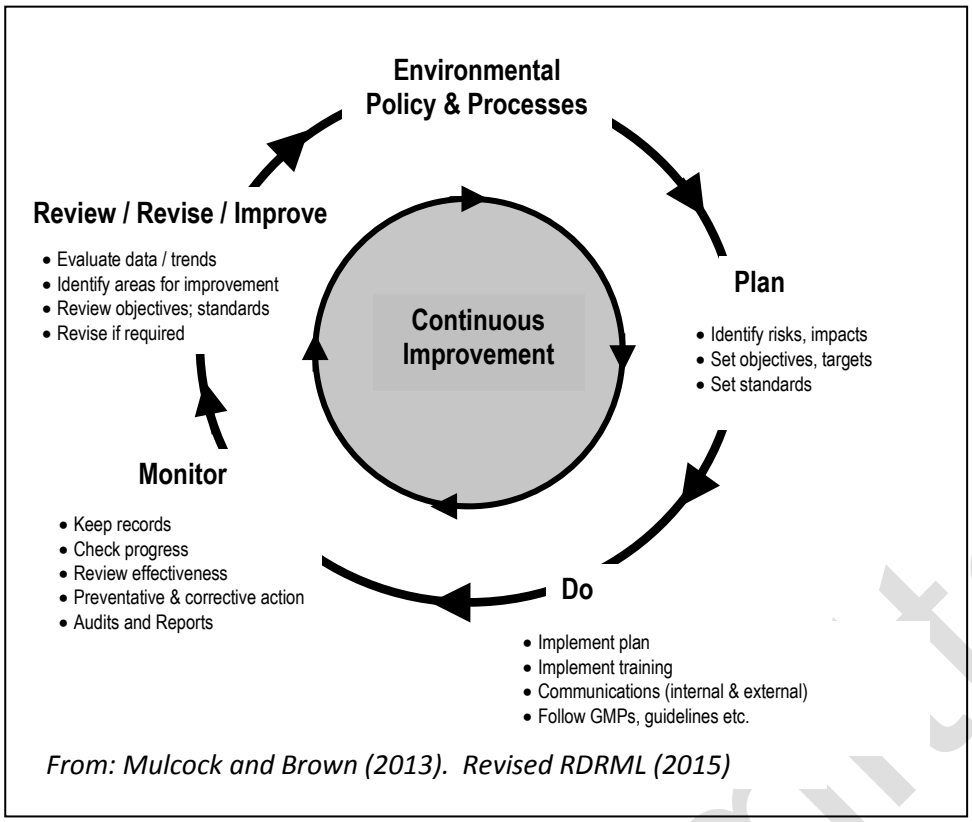
The completion of the FEPs along with the associated policies and strategies described in the EMS and this EMP are all evidence of how this self-management process will work. This will result in efficiencies in terms of meeting regulatory and compliance requirements for the schemes and the individual irrigators. It should result in corresponding benefits for the regulator also.

3.2.2 Plan / Do / Monitor / Review – for On Farm Practices

A continuous improvement cycle, as illustrated in Figure 4, will be used by farmers to plan, implement, monitor, review and revise their on-farm practices and how these are achieving the objectives and targets of the FEP. Record keeping is an important part of this process. The FEPs are dynamic in nature and will be updated over time as policy, information, technology and agreed definitions of good practice change.

[4] C M Mulcock and I Brown (2013) 'Irrigation Audited Self-Management: Managing Water Quality and Quantity within limits' prepared for Irrigation NZ

Figure 4: Continuous Improvement Cycle used by farmers through FEP and auditing processes



4. Environmental Management Activities

4.1 Farm Environment Plans (FEPs)

RDRML has a web-based ASM programme, of which the FEP is the cornerstone. This on-line FEP system has been designed to facilitate both the collection and management of the vast quantities of data associated with an ASM programme of this scale. This online system will also support the FEP auditing process and the associated reporting requirements. Further, a GIS programme is also being used to support data collection, management and presentation.

This ASM system will provide shareholders with viewing and printing access to:

- FEP's
- FEP Agreed Actions Lists
- FEP Farm and Soil Maps

These tools and programmes will provide only viewing and printing access to scheme members for most of the year. For a period each year the system will be open to water users to facilitate the annual data collection, management and reporting required by the nutrient limit and reporting consent conditions. Changes can be made outside of this period by RDRML and the scheme staff. The land owners are encouraged to make contact with the scheme staff to make these changes as necessary. This process serves ensure that the schemes and RDRML are kept up-to-date with on-farm changes as well as building engagement with land owners.

To meet the requirements of resource consent CRC121664.1:

a. As from the 1st of July 2016 all properties operating under resource consent CRC121664.1 have prepared an FEP.
b. Any properties who join an RDR sourced irrigation scheme after this date will be required to prepare an FEP in advance of the irrigation scheme supplying irrigation water.
c. All *Other Managed Area* land bought into the ASM programme will complete an FEP prior to the submission of the annual Compliance report.

All FEPs prepared shall utilise the current RDRML FEP template[5] as approved (in writing) by the Canterbury Regional Council RMA Compliance and Enforcement Manager and approved by Environment Canterbury (ECan) under Canterbury pLWRP Schedule 7.

4.2 Small blocks

There are many small blocks[6] supplied with RDR sourced irrigation water and subject to the terms of CRC121664.1. Given the limited size of these properties and that farming systems on most of these properties are not intensive, the requirements for these blocks is different to those set for larger operations. The requirements and thresholds used are set out below.

4.2.1 Properties with an area of less than 10 ha

RDRML will use the ECan Lifestyle Block Management Plan[7] for properties with an area less than ~~to~~ 10 ha and a nutrient budget will not be required. Proxy nutrient loss values will be determined for these properties by the RDRML Environmental Compliance Manager using the OVERSEER file submitted with resource consent CRC121664.1 application[8]. These values will be developed based on the land use and irrigation type information gathered through the FEP process. These proxy values will be used to support overall RDRML and scheme load reporting requirements, while the FEP will focus on the management of environmental risks by addressing practices.

[5] RDRML Farm Env Plan TEMPLATE August 2014
[6] RDRML has used an irrigated area of less than 50 hectares as the threshold.
[7] http://www.crc.govt.nz/publications/Plans/Lifestyle-block-management-plan-Mar2015.pdf
[8] OVERSEER file "Small Block Proxy 16/17 – under 10 ha"

4.2.2 Properties with an area between 10 and 50 ha, with less than 50 ha irrigation and with less than 20 ha of intensive cattle winter grazing

Properties with an area between 10 and 50 ha with less than 50 ha irrigation **and** with less than 20 ha of intensive cattle winter grazing[9], will complete the approved RDRML FEP but will not be required to provide a budget, instead a proxy nutrient loss value will be determined for these properties. Proxy nutrient loss values will be determined for these properties by the RDRML Environmental Compliance Manager using the OVERSEER file submitted with resource consent CRC180881 application[10].These proxy values will be used to support overall RDRML and nutrient management zone load reporting requirements, while the FEP will focus on the management of environmental risks by addressing practices.

4.2.3 Proxy nutrient loss estimates

For all properties with less than 50 ha of irrigation **and** less than 20 ha of intensive cattle winter grazing proxy nutrient loss estimates will be used for the annual reporting. These proxy nutrient loss values will be determined for these properties by the RDRML Environmental Compliance Manager using the method specified in 4.2.2. The details of these proxy nutrient budgets and the information used to develop them will be made available to ECan as required.

4.2.4 Properties with an irrigated area greater than 50 ha irrigation and/or with more than 20 ha of intensive cattle winter grazing

For completeness, all properties with an irrigated area greater than 50 ha irrigation, or with more than 20 ha of intensive cattle winter grazing, will both complete the full RDRML FEP and provide a nutrient budget to RDRML as necessary.

4.3 Auditing Farm Environment Plans

Auditing provides credibility for the FEP process. It is an independent check that the appropriate systems and practices are in place to manage the environmental risks associated with agricultural land use.

The audit is conducted on-farm and is based on sighting objective evidence in support of how the FEP objectives and targets are being met, and whether the listed management practices and record keeping are being followed.

Objective evidence includes:

- information supplied as records, data, reports and photographs
- actual practice observed during the audit, and
- stated practice, if the stated practice can be reasonably supported by other evidence.

4.3.1 Audit Processes

RDRML will use FEP audit processes and FEP audit templates based on those developed by ECan for use within the Canterbury Region. At the time of writing this EMP the ECan audit resources were under redevelopment, with draft processes available as shown in Figure 6 (Grading and Timing) and Figure 7 (On-Farm).

[9] Intensive winter cattle grazing is defined as the grazing of cattle on in-situ Brassica or root vegetable crops between the 1st of June and the 31st of June

[10] OVERSEER file "Small Block Proxy 16/17"

As required by consent CRC121664.1 RDRML will:

a. The consent holder shall audit all properties (as per the terms of the EMP) that it supplies water to at least once every three years with at least a third of the total number audited each year. The audits shall assess the:
   i. compliance with conditions 4 and 5 of this resource consent; and
   ii. compliance with the obligations and undertakings given in the Farm Environment Plan that applies to the property being audited.
b. The audits required by this condition shall be undertaken by a suitably qualified and experienced auditor.

4.3.2 FEP Audit requirements for properties with an area of less than 10 ha

Properties with an area of less than 10 ha will complete the Lifestyle Block Management Plan[11] rather than the approved ECan RDRML FEP template and will not be subject to FEP auditing. Instead the consent holder and the associated schemes will engage directly with these land owners to promote the adoption of Good Management practices (GMP).

4.3.3 Properties with an area between 10 and 50 ha, with less than 50 ha irrigation and with less than 20 ha of intensive cattle winter grazing

Properties with an area between 10 and 50 ha with less than 50 ha irrigation **and** with less than 20 ha of intensive cattle winter grazing[12], will complete the approved RDRML FEP but will not be required to provide a nutrient budget, instead a proxy nutrient loss value will be determined for these properties. Accordingly, the FEP audit process used for these properties will be modified to address the absence of a nutrient budget for assessment. The consent holder and the associated schemes will engage directly with these land owners to promote the adoption of Good Management practices (GMP).

4.3.4 Audit Results

Within each Management Area in the FEP, the auditor will assess whether the systems as described and observed and the procedures in place, provide a LOW, MEDIUM or HIGH level of confidence that the objectives and targets in the FEP are being achieved. Reasons & evidence for and/or against each assessment are given together with any actions required and the timeframe.

4.3.5 Audit Grade and Audit frequency

The results (H, M or L level of confidence of meeting objectives) for each management area are combined, as shown in Figure 5 below, to determine the Audit Grade (A, B, C or D). This in turn reflects the level of actions required, and contributes to the frequency of audit requirement.

The regime presented in Figure 5 defines the frequency of FEP audits and re-auditing, aside from changes of land ownership. A change of ownership will trigger a re-audit within one year of the sale occurring irrespective of the grade awarded in the previous FEP audit.

[11] http://www.crc.govt.nz/publications/Plans/Lifestyle-block-management-plan-Mar2015.pdf
[12] Intensive winter cattle grazing is defined as the grazing of cattle on in-situ Brassica or root vegetable crops between the 1st of June and the 31st of July.

Figure 5: Explanation of audit grade result

Grading	Grade	Action Required	Frequency of Audit	
All 'HIGH'	A	No, or minor, action required	3 years	The consent CRC180881 requires that RDRML shall audit all properties that it supplies water to at least once every three years with at least a third of the total number audited each year. Properties achieving higher grades will have longer periods between audits than those with lower grades
Mix 'MEDIUM' and 'HIGH', with no 'low' results. On track to achieve objectives	B	**Action required** – low risk	2 years	
Mix 'MEDIUM' and 'HIGH', with no 'low' results. Not on track to achieve objectives	C	**Action required**– moderate risk	1 year	
Any 'LOW' results	D	**Action required – high risk**	6 months	

4.3.6 Farm Audit Reporting

Following each audit the water user will receive, for their property, an audit report containing the audit results, overall grade, any actions required and timeframe and the approximate date for the next audit. The water user is required to complete any actions required within the timeframe specified. Failure to do this will invoke the compliance and enforcement procedures described in this EMP and/or the enforcement processes of individual irrigation schemes.

The annual report describing the results of the EMP, which includes the farm audits that have been conducted each year shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by the last working day of December each year.

Figure 6: Example of a Farm Environment Plan Grading and Timing Audit Process (prepared by ECan October 2014)

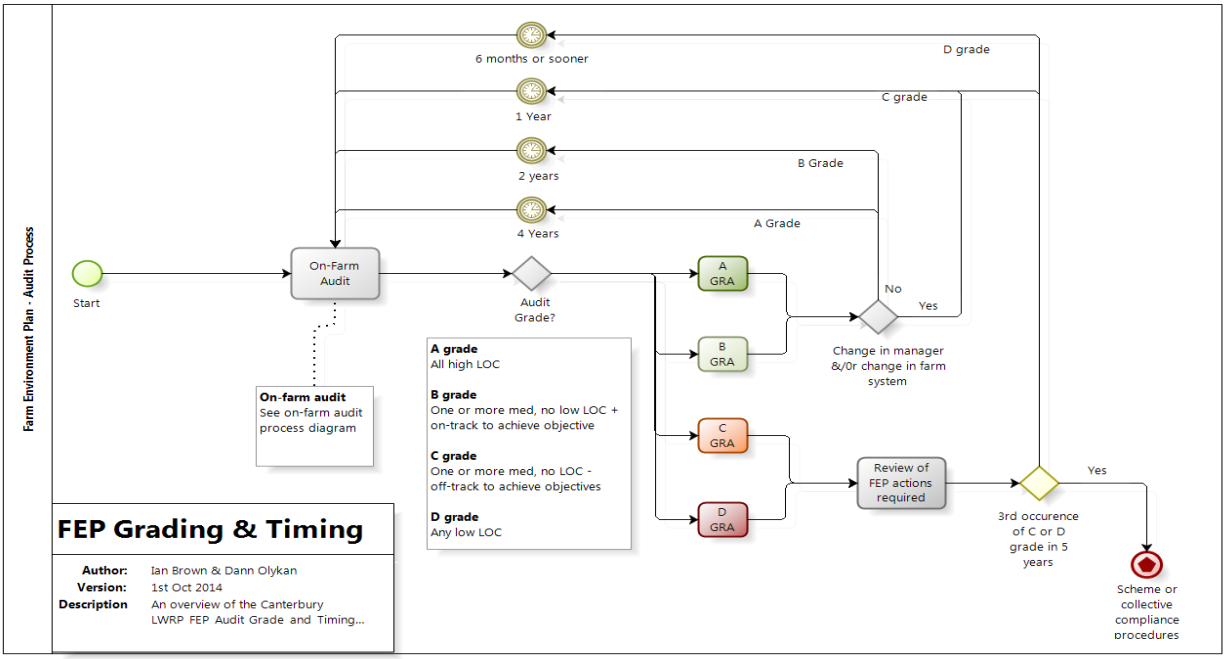
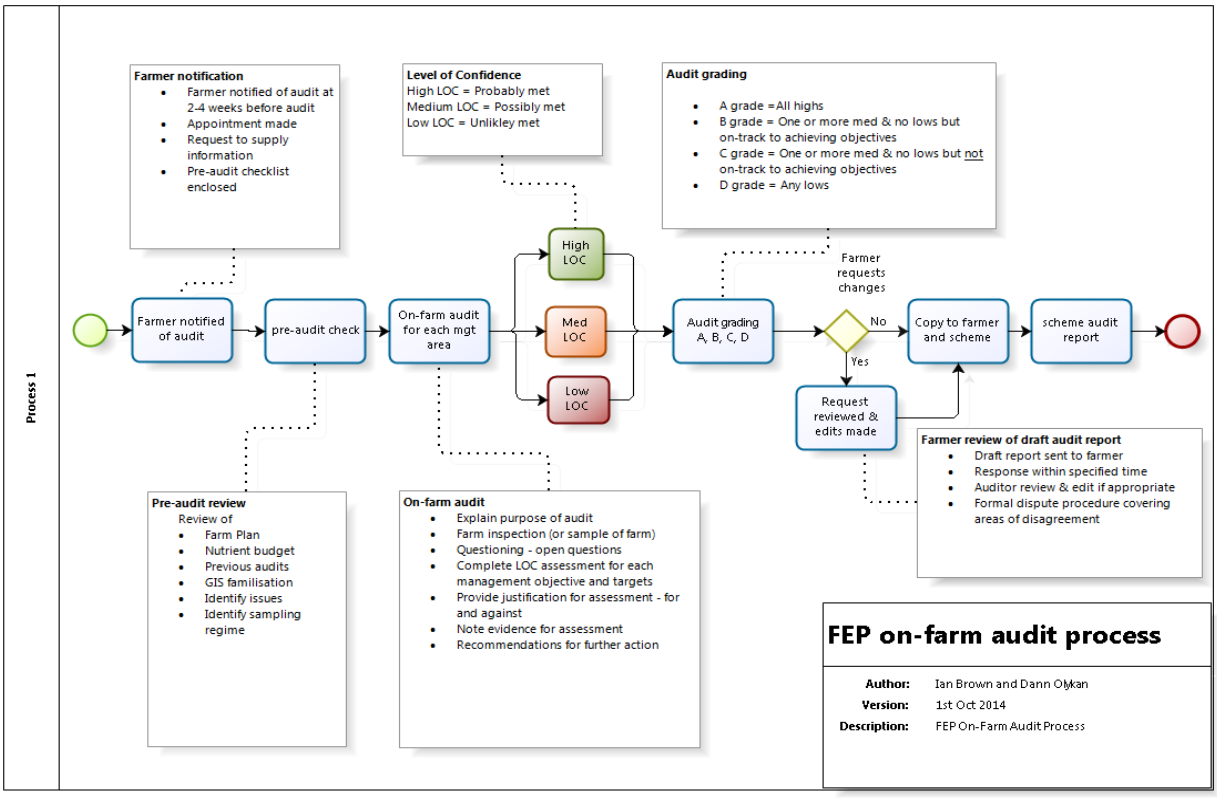


Figure 7: Example of a Farm Environment Plan On-Farm Audit Process (prepared by ECan October 2014)



4.4 Nutrient Limits

RDRML's land use consent CRC121664.1 requires operation within a nutrient limit for Nitrogen (N) discharges. There is a load defined for the *Existing Irrigation Area* overall as well loads for *New Irrigation Area* for each of the three nutrient management zones within the *Expanded Command Area* of CRC121664.1. Individual farm properties within the RDRML ASM programme will report their individual property N losses to RDRML through their FEPs.

4.4.1 Managing and Reporting of Nutrient loads

Through the ASM programme and reporting processes, RDRML will work with the irrigation schemes involved to manage within the nutrient limits. Each of the irrigation schemes will pro-actively communicate with its water users and other participants in the wider ASM programme to keep them fully informed regarding the keeping and provision of records and information as required by consent CRC121664.1:

> The consent holder will ensure, through its associated irrigation schemes, that each water user, that the consent holder supplies water to, maintains detailed records of fertiliser application rates, location and crop type (including winter feed/forage crops), cultivation methods, stock units by reference to type and breed, and all other necessary inputs to the OVERSEER® nutrient budgeting model. The records shall be made available to Canterbury Regional Council on request[13].

The same is required of all *Other Managed Land* reported through the RDRML ASM programme.

RDRML and its stakeholders actively support training and information dissemination to irrigators. Information and technologies to support on-farm management and reductions in nutrient discharges are included in the areas targeted for training and information dissemination.

4.4.2 Nutrient load calculation and recalculation

RDRML will as necessary update the nutrient load calculations for *Existing Irrigation Area*, *New Irrigation Area* and *Other Managed Area* using the following processes.

a. For the *Existing Irrigation Area*, the recalculation[14] will be done by RDRML contracting the author of the original files and methodology[15] used to determine this load for CRC121664 and to have them update the files and the associated methodology (if necessary) to reflect current version of OVERSEER™ and the associated changes in the OVERSEER™ Best Practice Data Input Standards.

b. For the *New Irrigation Area*, this recalculation[16] will be done by RDRML contracting an independent party to update the files and the methodology[17] used to determine this load for CRC121664 and to have the process updated to reflect current version of OVERSEER™ and the associated changes in the OVERSEER™ Best Practice Data Input Standards.

[13] CRC121664.1, Condition 5(c).
[14] CRC121664.1, Condition 7(b)
[15] Condition 7(b)(i) of CRC121664.1 – "For the *Existing Irrigation Areas* the mixture of land uses and management practices modelled shall be consistent with the activities described in the report prepared by Stuart Ford, dated October 2013 and entitled "RDRML Land Use Consent Application: Calculation and Explanation of the proposed Nitrogen and Phosphorous Load and Limits", a copy of which is attached to (as Annexure 3) and forms part of this resource consent"
[16] CRC121664.1, Condition 7(b)
[17] Condition 7(b)(ii) of CRC121664.1 – "For the *New Irrigation Areas* the method used to determine the nutrient limit shall be consistent with the approach used in the report prepared by Macfarlane Rural Business dated 14 December 2013 and entitled "Hinds catchment nutrient and on-farm economic modelling, Final report (version 4), Volume 1 - Main report""

c. This will be done in a version of OVERSEER™ consistent with the version used for reporting. This work will be done by RDRML and the associated schemes as part of each annual compliance report and the details of this process made available to ECan as necessary.

4.5 Determining area covered by CRC121664.1 and this EMP

CRC121664.1 now formally defines three areas; *Existing Irrigation Areas*, *New Irrigation Areas* and *Other Managed Area.* These are defined in condition 1 of CRC121664.1 and repeated below.

4.5.1 Area of Existing Irrigation Area

Existing Irrigation Areas: are the areas of land within the *Existing Command Area*s that had water supply agreements in place with the consent holder (or its agents) and were being irrigated prior to December 2013. This is area is defined as 75,000 ha.

4.5.2 Area of New Irrigation Area

New Irrigation Areas: are any area(s) of land within the *Expanded Command Area* that did not have a water supply agreement in place with the consent holder (or its agents) or were not being irrigated prior to December 2013 but are, or will be, irrigated under this consent. This area is limited to 19,486 ha (94,486 ha minus 75,000 ha).

4.5.3 Area of Other Managed Area

Other Managed Area: are all other areas of land within the *Expanded Command Area* that are managed under the terms of this consent or the associated Environmental Management Plan (EMP). *Other Managed Area* is limited to land which is part of a property that is receiving from an irrigation scheme party to CRC121664.1.

4.5.4 Determining the area of Other Managed Land

Land which is outside of the terms definition of *Existing Irrigation Area* or *New Irrigation Area* will be reported by RDRML and the associated schemes. The area of this category of land will be reported annually using the following methodology:

- For each property including some land classified as *Other Managed Land*, the total area of *Other Managed Land* will be determined and the total presented in the compliance report along with the basis used to make this determination.
- The areas of *Other Managed Land* will be summed and presented for each nutrient management zone.

4.5.5 Determining the area accounted for by Other Irrigation Schemes

Some properties receive water from both RDRML supplied schemes as well as from BCI. The number and area (ha) of properties receiving water from both RDR and BCI as well as the associated allocation of loads and areas used in the compliance reports will be presented in the report.

4.6 Nutrient load reporting

The area of land within the categories of *Existing Irrigation Area, New Irrigation Area* or *Other Managed Area* will be identified as described above. The average annual N losses from these areas

will also be determined and reported by RDRML through the annual compliance report. The methodology to be used is described below.

The following methodologies will be used to determine and report the average annual N losses for land reported through the RDRML ASM programme.

4.6.1 Nutrient load reporting for Existing Irrigation Area and New Irrigation Area

The annual average rate of N loss for *Existing Irrigation Area* and *New Irrigation Area* will be determined by:

a. Compiling the N loads from the properties to undergo FEP audits in the coming season, plus
b. The N loads from the annual NB's to be prepared by all properties involving some *Other Managed Area* land.
c. This average load will be scaled as necessary to accurately determine the overall *Existing Irrigation Area* load as well as the nutrient management zone specific loads for *New Irrigation Area*.
d. A scaling methodology is necessary to ensure that the average N load from the N loss from these properties is fairly comparable with the limits specified in CRC180881 and how these were determined. The methodology used will be presented in the annual compliance report.

The nutrient loss rates collected from each property will be the average annual nutrient losses for the preceding 12 month period most applicable to predominant farming type on each and reported in the current version of OVERSEER™. The farm system information will be gathered soon after the end of the applicable 12 month period of farming activities and nutrient budgets will be prepared using OVERSEER™ based on this information.

4.6.2 Nutrient load reporting for Other Managed Area

The area of Other Managed Area will be determined as specified in section 4.5.4. The N losses from this land during the previous season will be summed and reported for each nutrient management zone. The nitrogen loss from these areas shall not exceed the nitrogen baseline for each nutrient management zone. By May 2019, this average rate of N loss will be compared with the aggregate average rate of N loss for the 2009-13 baseline and reported to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by the last working day of May 2019.

4.6.3 Reporting - Environmental Management Plan

As required by consent CRC121664.1, RDRML will:

a. Prepare an annual report describing the results of the EMP, which includes the audits that have been conducted each year. The report shall include:
    i. A record of the audit compliance grading, being the numbers of A, B, C and D grades from those farms audited in the preceding year;
    ii. The average annual loss of nitrogen for the preceding 12-month period for:
        a. The *Existing Irrigation Areas*; and
        b. The *New Irrigation Areas*.
        c. And in addition to CRC121664.1 requirements, RDRML will also report rates of N loss from *Other Managed Land*.
    iii. The number of properties and the total area being irrigated in accordance with the requirements of the resource consent;
    iv. Any incidence of non-compliance with this EMP or the conditions of the resource consent, and/or with the requirements set out within the individual FEPs;
    v. The actions taken by both RDRML, its associated irrigation schemes and (as necessary) the water user(s) supplied by RDRML to remedy or mitigate a non-compliance that is identified in accordance with (a)(iv) above.
    vi. A summary of number, description and common themes of actions required and any enforcement actions from the auditing.

b. Provide a copy of the annual report to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by the last working day of December each year for the duration of CRC121664.1.
c. Upon request, provide a copy of each FEP and all associated audits to the Canterbury Regional Council, marked for the attention of the RMA Compliance and Enforcement Manager.

4.6.4 Annual area reporting

As part of the annual reporting, areas (ha) for each of the following will be provided;

1. The total area (ha) of *Existing Irrigation Area*.
2. The total area (ha) of *New Irrigation Area* by nutrient management zone
3. The area (ha) of *New Irrigation Area*s' added in the preceding year by nutrient management zone[18]
4. Any additional area (ha) added into the RDRML ASM programme in the preceding year
5. Any area (ha) removed from the RDRML ASM programme in the preceding year
6. Total area (ha) irrigated by RDR sourced water
7. The number of properties irrigated by RDR sourced water
8. Total area (ha) of properties covered by the RDRML ASM programme.
9. The total area (ha) of land meeting the definition of *Other Managed Area.*
10. A spatial definition of each property affected by the *Other Managed Area* scenario.
11. A spatial definition of all land reported through the RDRML ASM programme (when available).

4.6.5 Annual nutrient limit reporting

As part of the annual reporting, nutrient loss figures (kg/ha) for each of the following will be provided;

1. A calculation of the *Existing Irrigation Area* limits for N in the current version of OVERSEER™ in accordance with consent CRC121664.1 condition 7 (Appendix 2)
2. A calculation of the *New Irrigation Area* limits for N for each of the nutrient management zones, in the current version of OVERSEER™ in accordance with consent CRC180881 condition 7 (Appendix 2)
3. The average annual losses of N for the preceding 12 month period for the Existing Irrigation Area' in the current version of OVERSEER™.
4. The average annual losses of N for the preceding 12 month period for the 'New Irrigation Area' in the current version of OVERSEER™ by nutrient management zone

4.6.6 Nutrient Limit reporting and allocation when a property receives water from another irrigation scheme that holds a nutrient discharge consent

Some properties receive water from both RDR and BCI. The number and area (ha) of properties receiving water from both RDR and BCI and the associated allocation of nutrient loads, will be included in the annual compliance report.

To inform its annual reporting RDRML will schedule the annual gathering of farm system information at the conclusion of the relevant farming season. This information will be made available to the parties engaged to prepare the required nutrient budgets. Figure 8 shows an indicative annual calendar of events and the constraints guiding the timing of the reporting process.

[18] This clause would be removed subject to ECan approving the recalculation and subsequent merging of RDRML *New* and *Existing* area N and P loads

Figure 8: Annual calendar of seasonal farming activity and RDRML EMP and FEP requirements

<table>
<tr><td>Nov</td><td>Dec</td><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sept</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td>End of Arable season</td><td></td><td>End of Dairy season</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="5">Updating FEP's and getting info to NB providers</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="4">Preparation of 100 - 150 NB's at off peak times</td><td></td></tr>
<tr><td>Overseer Update</td><td></td><td></td><td></td><td></td><td></td><td>Overseer Update</td><td></td><td></td><td></td><td></td><td></td><td>Overseer Update</td><td></td></tr>
<tr><td></td><td>Report due</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Report due</td></tr>
<tr><td colspan="6">RDRML FEP auditing</td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2">RDRML FEP auditing</td></tr>
</table>

4.7 Training and Information Provider

RDRML and its Stakeholders actively sponsor and support training and information programmes to assist water users improve farm performance and profitability, maximise environmental benefits and minimise adverse effects. They will also be proactive in providing growers with information and research results on new technologies to improve the sustainability of irrigated farming.

RDRML and associated schemes will continue to use a mix of electronic and hard copy communications with water users. The individual scheme web sites, through which the FEPs are available, will be regularly updated.

5. Compliance and Enforcement

RDRML and associated schemes will, aligned to their Audited Self-Management processes, take a pro-active and integrated approach to compliance and enforcement.

5.1 Promotion of water user compliance

RDRML and associated schemes will use educational programmes, technical assistance, reduction in audit requirements for good performance and other methods to promote, support and encourage compliance by water users with sustainable irrigated land use requirements.

5.2 Monitoring of water user compliance

RDRML and associated schemes will monitor compliance using

- Inspections and audits, both internal and independent
- Responding to complaints of breaches or non-compliance.

5.3 Responding to water user compliance breaches

RDRML and associated schemes will respond to breaches using the following process:

- Notification of breach or alleged breach by (e.g. phone call, warning letters, notice of violation, inspections) and make a formal request that compliance be achieved within a defined period
- Entering discussions and providing advice to those not achieving compliance in order to develop a programme to achieve compliance
- Action, where necessary:
    - To compel compliance
    - To impose consequences for breaches (e.g. water restricted/cut off, removal of shares)
    - To correct damages

5.4 Consequences or penalties

RDRML and associated schemes, when imposing consequences or penalties, will take into account:

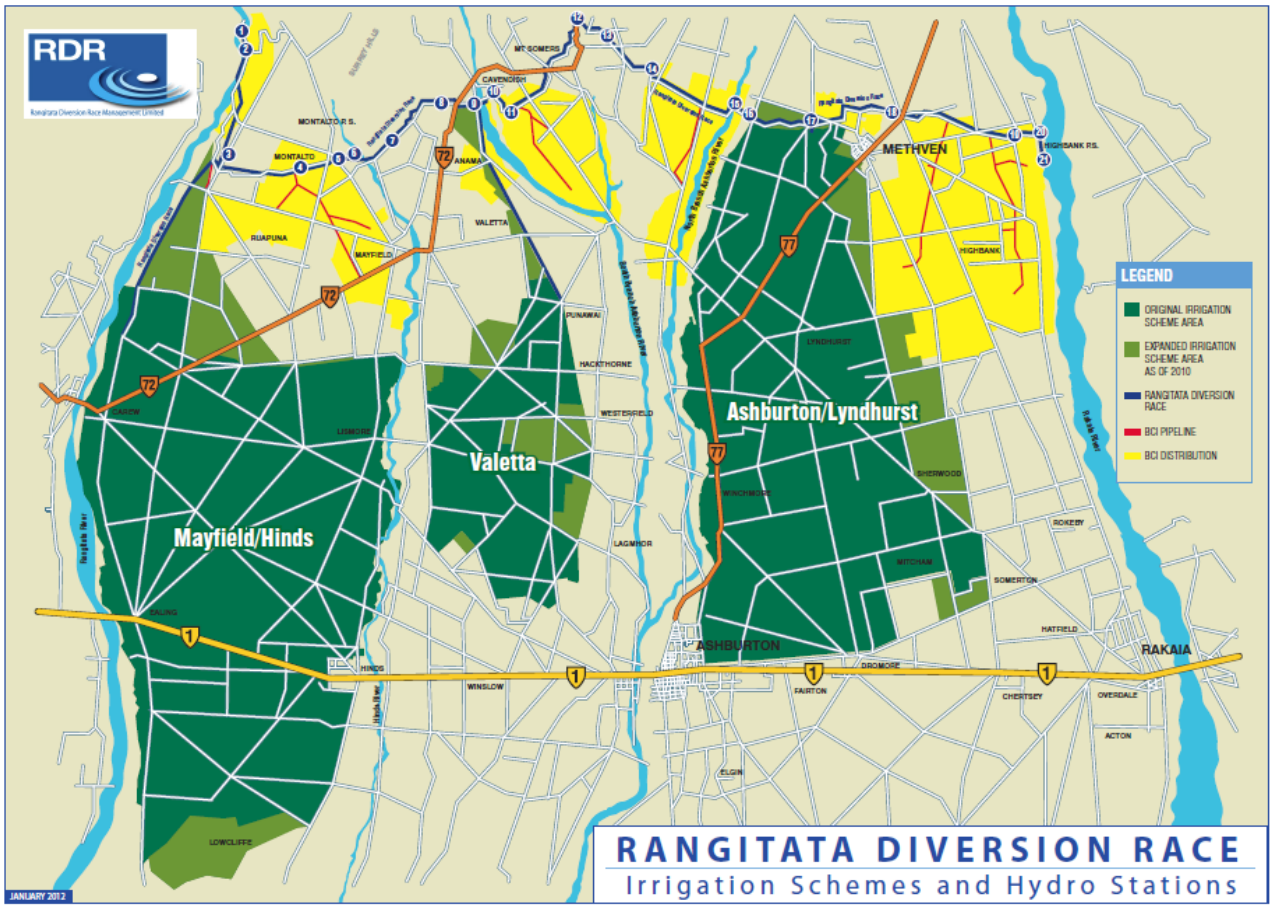
- Seriousness of the non-compliance
- Degree of co-operation
- History of non-compliance

In the case of *Other Managed Area*, meeting the terms and conditions of this EMP and the requirements of CRC121664.1 along with all scheme specific is a requirement of being part of the RDRML ASM programme. In the case of not meeting these requirements, the land owner will have up until the subsequent compliance reporting round to have made the required changes or be removed from the RDRML ASM programme.

5.5 Management of this process

RDRML will work with the schemes wherever poor performance and/or non-compliance is identified. The responsibility to ensure individual shareholder compliance is with the irrigation schemes as they hold the water supply agreements with the individual shareholders. RDRML will work with them to ensure consistency and so that the processes followed and actions taken can be reported as necessary.

Appendix 1: Map of Scheme Area



Appendix 2: Resource Consent CRC121664.1

Proposed Conditions:

	Definitions
1	*Existing Command Area:* are the three (3) areas indicated on plan ~~CRC180881A~~ CRC121664.1A on being coloured brown, orange and green, and labelled Mayfield/Hinds, Valetta and Ashburton/Lyndhurst respectively. The Existing Command Area totals 94,486 ha. *Existing Irrigation Areas:* are the areas of land within the Existing Command Area that had water supply agreements in place with the consent holder (or its agents) and were being irrigated prior to December 2013. *Expanded Command Area:* is the area bounded by the Rakaia River, the Rangitata River, the foothills of Mt Taylor and Mt Hutt and the Pacific Ocean (refer Plan ~~CRC180881A~~CRC121664.1). *New Irrigation Areas:* are any area(s) of land within the Expanded Command Area that did not have a water supply agreement in place with the consent holder (or its agents) or were not being irrigated with water supplied by the consent holder (or its agents) prior to December 2013 but are, or will be, irrigated under this consent. *Other Managed Area:* are all other areas of land within the *Expanded Command Area* that are managed under the terms of this consent or the associated Environmental Management Plan (EMP). *Other Managed Area* is limited to land which is part of a property receiving water from an irrigation scheme party to ~~CRC180881~~CRC121664.1. *Water Supply Consents:* are any, or all, of the existing water permits held by the consent holder being resource consent numbers: CRC011237, CRC011245, CRC134808 and CRC133962 (or their subsequent respective replacements). ~~***Advice note**: It is noted that Plan Change 2 to the Land and Water Regional Plan references resource consent CRC121664. While this change in conditions results in a change to the consent number, as it is a change of conditions there is no change to the scope of the consent or activity authorised. Therefore, the reference to CRC121664 can be read as a reference to this consent.*~~
	Consent Authorisation
2	Where the consent holder is supplying water in accordance with the *Water Supply Consents* this resource consent authorises: a. The use of water for i. Irrigation of up to 94,486 hectares of crops and pasture in the *Expanded Command Area*; and ii. Stockwater; and iii. Hydroelectric power generation

	b. The use of land for farming; and c. The discharge of nutrients to water arising from the use of land for farming authorised in by clause (b) of this condition.
	Irrigation Water Use
3	The use of water for irrigation, land use and discharge specified in condition ~~1~~ 2 of this resource consent shall be limited to a maximum land area of 94,486 hectares located within *Expanded Command Area.*
4	All users of water for irrigation shall take all practicable steps to: a. Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; b. Avoid leakage from pipes and structures; and c. Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
	Farm Environment Plan
5	a. A Farm Environment Plan shall be prepared: i. by the 1st of July 2016 for all properties within the *Existing Irrigation Areas* that have water supplied by the consent holder under the *Water Supply Consents*; ii. in advance of the consent holder supplying water (abstracted under the *Water Supply Consents*) to properties within the *New Irrigation Areas; and* iii. prior to the submission of the annual Compliance report as part of adding *Other Managed Area* into the ASM programme. b. All Farm Environment Plans prepared in accordance with this condition shall: i. utilise the template which is attached to (as Annexure 2) and which forms part of this resource consent; or ii. a subsequent version of the template or alternative template plan where the template has been approved (in writing) by the Canterbury Regional Council RMA Compliance and Enforcement Manager; or iii. properties with an area of less than 10 ha can use the Environment Canterbury Lifestyle Bb~~l~~lock Mm~~a~~anagement Pp~~l~~lan (March 2015 version). c. The consent holder shall ensure that each water user, that the consent holder supplies water to, maintains detailed records of fertiliser application rates, location and crop type (including winter feed/forage crops), cultivation methods, stock units by reference to type and breed, and all other necessary inputs to the OVERSEER(TM) nutrient budgeting model. The records shall be made available to the Canterbury Regional Council on request.
	Environmental Management Plan
6	The consent holder shall prepare and implement an Environmental Management Plan (EMP) within 12 months of the granting of this resource consent. The EMP shall be detailed and described in a report that is prepared by a suitably qualified and experienced person and that report

	shall be submitted to the Canterbury Regional Council. Once the Canterbury Regional Council has certified that the EMP is adequate and is consistent with the obligations set out in this resource consent, the consent holder shall implement it. a. The consent holder shall audit all properties (as per the terms of the EMP) that it supplies water to at least once every three years with at least a third of the total number audited each year. The audits shall assess the: i. compliance with conditions 4 and 5 of this resource consent; and ii. compliance with the obligations and undertakings given in the Farm Environment Plan that applies to the property being audited. b. The audits required by this condition shall be undertaken by a suitably qualified and experienced auditor. c. The consent holder shall prepare an annual report describing the results of the EMP, which includes the audits that have been conducted each year. The report shall include: i. A record of the audit compliance grading; ii. The average annual loss of nitrogen for the preceding 12-month farming season for: a. The *Existing Irrigation Areas*; b. The *New Irrigation Areas; and* c. All *Other Managed Area*. iii. The number of properties and the total area being irrigated in accordance with the requirements of this resource consent; iv. Any incidence of non-compliance with the conditions of this resource consent, and/or with the requirements set out within the individual Farm Environment Plans; v. The actions taken by both the consent holder and (as necessary) the water user(s) supplied by the consent holder to remedy or mitigate a non-compliance that is identified in accordance with (c)(iv) of this condition. d. A copy of the annual report shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by the last working day of December each year. e. A copy of each Farm Environment Plan and all associated audits shall be provided to the Canterbury Regional Council, marked for the attention of the RMA Compliance and Enforcement Manager upon request.
	Nutrient Limits
7	a. The combined average annual amount of Nitrogen ('N') lost to water as calculated from the individual Farm Environment Plans prepared in accordance with the conditions of this this resource consent, shall not exceed the following totals (derived using version 6.0.3 of the OVERSEER(TM) modelling software): i. 6088 tonnes of N from the land within the *Existing Irrigation Areas* as shown on Plan CRC121664.1A; and

	ii. 263 tonnes of N from the land within the *New Irrigation Areas* located within Zone 1 as shown on ~~p~~Plan ~~CRC180881B~~CRC121664.11B. iii. 52 tonnes of N from the land within the *New Irrigation Areas* located within Zone 2 as shown on ~~p~~Plan ~~CRC180881B~~CRC121664.1B. iv. 211 tonnes of N from the land within the *New Irrigation Areas* located within Zone 3 as shown on ~~plan~~ Plan ~~CRC180881B~~CRC121664.1B. b. The consent holder may derive the N limits for the land that is the subject of this resource consent using a subsequent version of the OVERSEER(TM) modelling software, or an alternative model where the alternative model has been approved in writing by the Canterbury Regional Council RMA Compliance and Enforcement Manager. When deriving N limits, the consent holder shall calculate the loses using the following parameters: i. For the *Existing Irrigation Areas* the mixture of land uses and management practices modelled shall be consistent with the activities described in the report prepared by Stuart Ford, dated October 2013 and entitled "RDRML Land Use Consent Application: Calculation and Explanation of the proposed Nitrogen and Phosphorous Load and Limits", a copy of which is attached to (as Annexure 3) and forms part of this resource consent; and ii. For the *New Irrigation Areas* the method used to determine the nutrient limit shall be consistent with the approach used in the report prepared by Macfarlane Rural Business dated 14 December 2013 and entitled "Hinds catchment nutrient and on-farm economic modelling, Final report (version 4), Volume 1 - Main report" c. Where alternative N limits have been calculated in accordance with (b) of this condition they (along with the supporting information) shall be submitted to an appropriately qualified independent person for certification. The person shall only issue the certificate if satisfied that the new limits have been derived using the parameters listed in (b)(i) and (b)(ii) of this condition. Once the limits have been certified, they shall apply to all land use and discharge activities authorised by this resource consent and those set out in (a) in this condition shall cease to have effect. d. A report, setting out any alternative limits that have been derived in accordance with (b) of this condition and certified in accordance with (c), shall be provided to the Canterbury Regional Council (marked for the attention of the RMA Compliance and Enforcement Manager) within five working days of the alternative limits being certified.
	Review
8	The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of: i. Dealing with any adverse effect on the environment which may arise from the exercise of this consent; or ii. Reviewing the effectiveness of the conditions in avoiding, remedying or mitigating adverse effects on the environment from the exercise of this consent; or

	iii. Reviewing the need to monitor the activities that are authorised by this resource consent (including the type and frequency of the monitoring that is undertaken by the consent holder); or iv. Reviewing the N limits that apply to the discharge, in order to provide for sustainable management of the watercourses and water bodies including groundwater) within the New Irrigation Areas and/or the Existing Irrigation Areas.