IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of the submissions and further submissions by Rangitata Diversion Race Management Limited to Variation 2 to the Proposed Canterbury Land and Water Regional Plan

STATEMENT OF EVIDENCE OF BENEDICT RODNEY CURRY

1 INTRODUCTION

1.1 My name is Benedict Rodney Curry. I am the Chief Executive Officer of Rangitata Diversion Race Management Limited ('**RDRML'** or **'the Company**'), and I have been employed in this role for over seven years.

1.2 I am a community member of the Ashburton Zone Committee[1] and have been since its establishment in September 2010. I have also been extensively involved with the formulation of the Ashburton Zone Implementation Programme ('**the Ashburton ZIP**') and the subsequent ZIP Addendum, that Variation 2 is based upon. The Ashburton ZIP and ZIP Addendum seek to endorse the goals and actions of the Canterbury Water Management Strategy ('**the CWMS**') within the Ashburton District and links with other zone programmes throughout Canterbury.

1.3 I am also the representative from the Ashburton Zone Committee to the Regional Water Management Committee, which considers and advises Environment Canterbury on regional issues of environmental restoration and repair, land use impacts on water quality, and water storage, distribution and efficiency options. In addition to this, I am a member of the Regional Infrastructure Sub-committee and Regional Infrastructure Working Group.

1.4 This evidence is in support of the submissions and further submissions lodged by RDRML to Variation 2 to the Proposed Canterbury Land and Water Regional Plan ('**the pL&WRP**').

1.5 I confirm that I am familiar with Variation 2 and that I am authorised to present this evidence on behalf of RDRML.

2 ROLES AND RESPONSIBILITIES

2.1 My duties include managing the operation and strategic development of the Rangitata Diversion Race ('**the race'** or '**RDR**') and its infrastructure. This involves the economic and efficient management of the race for the delivery of water to each of the four

[1] For the benefit of the Committee, the boundaries of this zone are the Rakaia River in the north, and the Rangitata River to the south, and from the Main Divide to the sea.

irrigation schemes it serves, as well as the Ashburton District Council for stock water and to Trustpower Limited ('**Trustpower**') for hydro-electricity generation.

3 SUMMARY OF EVIDENCE

3.1 My evidence will cover:

a. An overview of the RDR and associated infrastructure, highlighting the Company's infrastructure within the Hinds Plains Catchment;

b. An overview of RDRML's existing consents and future aspirations.

c. The Company's recently granted short-term resource consent[2], the process undertaken to obtain the same, and approach to nutrient management.

d. The background to the Ashburton ZIP Addendum and RDRML's involvement in nutrient management issues in the Hinds Plains Catchment;

e. The Company's key concerns with Variations 2; and;

f. A conclusion.

4 OVERVIEW OF THE RDR AND ITS ASSOCIATED INFRASTRUCTURE

4.1 RDRML is a water supply company responsible for the (i) delivery of water to its shareholders and contracted customers, and (ii) maintenance, control and management of the RDR and its associated structures. The 67 kilometre long race, which is located wholly in the Ashburton District, provides water to:

a. The Mayfield Hinds Irrigation Scheme, which currently irrigates 36,000 hectares but has a contractual maximum of 44,900 hectares of land;

b. The Valetta Irrigation Scheme, which currently irrigates 11,000 hectares but has a contractual maximum of 13,245 hectares of land;

c. The Ashburton Lyndhurst Irrigation Scheme, which currently irrigates 28,000 hectares but has a contractual maximum of 36,341 hectares of land;

d. The Montalto Hydroelectric Power Station, which has an installed generation capacity of 1.8MW;

e. The Highbank Hydroelectric Power Station, which has an installed generation capacity of 25.5MW;

f. The Ashburton District Council for stock water purposes; and

g. Barrhill Chertsey Irrigation Limited ('**BCI**') which has an agreement in place whereby the RDR facilitates the supply of water to BCI shareholders. BCI consents authorise up to 40,000 hectares of land that can be irrigated within Mid-Canterbury.

[2] Record Number CRC121664

4.2 RDRML has recently[3] been granted a short-term land use resource consent[4], which sets out nutrient discharge limits and allows expansion of its existing command area by approximately 20,000 hectares (as detailed in 4.1 (a)-(c) above) through water use efficiency within the RDR and its shareholders. This is discussed further within section 6 of my evidence.

4.3 With respect to the RDR, the race takes water from the Rangitata and South Ashburton Rivers at a maximum rate of 35.4 cubic metres per second, and delivers it to the District's stockwater network, two power stations and to the four irrigation schemes. The RDR is the largest race that supplies water for irrigation in New Zealand. Its supply of water to the two hydroelectric power stations enhances the efficiency of its operation.

4.4 In this regard, the rural economy in Canterbury is reliant upon water being provided, or conveyed to irrigation, hydroelectric power generation schemes and rural based industries. The use of water clearly generates significant social and economic benefits and the RDR, as a conveyance company, plays a very important role in providing for the social and economic well-being of the Canterbury regional economy. The RDR is a vital link in supplying irrigation to (currently) approximately 90,000 hectares across 500 farms and a potential maximum of 135,000 hectares of farmland in the Canterbury Region and in doing so it makes the farming of the area significantly more productive which in turn has a major economic benefit for the Canterbury Region.

4.5 Operationally, the RDR is unique given that it plays a dual role in abstracting and conveying water. That is, it is not an end user of this water, but simply a conveyance infrastructure to supply water for irrigation, stockwater and power generation. Reflecting this, during the period of September to May priority is given to meeting irrigation needs. Any water surplus to those needs is retained in-race and used for power generation. For the remaining winter months, May to September, the irrigation schemes are shut down and all water is used solely for power generation purposes. Importantly, a key function of the RDR is to ensure that water is available all year round for stockwater supply and forms a cornerstone of the Company's responsibilities to its shareholders (including the Ashburton District Council owned Ashburton Stockwater Supply system).

4.6 A significant proportion of the RDR and associated infrastructure is located within the Hinds Plains area; this includes, but is not limited to the Rangitata intake, the Mayfield Hinds and Valetta turnouts, the Surrey Hills siphon, the South Hinds siphon and checkgate, the Sandtrap, the Bio Acoustic Fish Fence, Montalto power station (owned by Trustpower) and some 15 bridges. A map and schematic plan, which shows the layout of the RDR, is attached within **Appendix One** to my evidence. The majority of this infrastructure dates from the original construction but it has been augmented by investment from the 1980s onwards to enhance and optimise the performance of the canal.

5 OVERVIEW OF THE RDRML'S EXISTING CONSENTS AND FUTURE ASPIRATIONS

5.1 The RDR was a 'dream in the minds of pioneering farmers in Mid-Canterbury', when the 750,000 acre plain was first farmed in the mid 19th Century. In this respect,

[3] As of the 26th of May 2014.
[4] Which expires of the 26th of May 2019.

development in the area in which the RDR is both located and irrigates was fraught with water problems. Water races were needed to supply stock on light soils, and water courses, to drain heavy swamp lands.

5.2 Work began on the RDR in April 1937 and was completed in November 1944, with the Race water first used to generate power at the Highbank Hydroelectric Power Station in June 1945. Since 1945, there have been a number of modifications to refine the efficiency of the race. Indeed, the Montalto Hydroelectric Power Station was built in 1982 and started producing electricity that same year. The Sandtrap was designed and built around the same time, the purpose for this being to remove much of the suspended sediment from the water by reducing the velocity of flow. Further, a behavioural fish exclusion screen, called a 'Bio Acoustic Fish Fence' was installed two kilometres downstream of the Rangitata River Intake structure in 2007. A new remote control system to enhance the operation of inflows and outflows that cost over one million dollars was installed in 2010. Prior to this, in October 1990, the Government transferred the ownership of the RDR to the RDRML, with resource consents associated with the RDR subsequently renewed with Environment Canterbury in 2008, a process which took approximately nine years to complete.

5.3 At present, the RDRML holds some 31 resource consents associated with the Race. These include consents for land use, water and discharge (both to air and water) permits. A Schedule of all of the resource consents associated with the RDR is attached to my evidence within **Appendix Two**. The consents allow the RDRML to undertake a number of activities including:

a. Works in the beds of the various rivers along the RDR and surrounding infrastructure;

b. The taking of water for stockwater supply;

c. Discharge of water and contaminants to the various rivers along the RDR and from the RDR sandtrap to the Rangitata River, from the intake structure to the South Ashburton River, to the fish bypass channel, and from the hydroelectric power generation schemes;

d. The damming, diverting, taking and using of water for irrigation, stockwater and electricity generation purposes;

e. The emergency spilling of water;

f. The diversion of water for reasons such as enabling riverbed protection works and maintenance, and operating a fish pass;

g. The construction of a gallery intake structure on the South Branch of the Ashburton River;

h. The use of water over a maximum area of 94,486 hectares with an associated nutrient discharge limit for Nitrogen and Phosphorous; and

i. The taking of water as part of a water swap with another irrigation scheme on the southern bank of the Rangitata River.

5.4 With respect to future aspirations, the Company is currently assessing the feasibility of the 'Klondyke Proposal'. This is a proposal for a large water storage facility to be situated close to the existing intake of the Rangitata River. Storage of water has been

a key strategic issue for RDRML for many years as the canal is a run-of-river system that has a lower level of supply reliability when the rivers are at low levels. This normally coincides with high demand. While the project is in an early phase, with consultation only having recently commenced, it is anticipated that the storage facility (which may take between 24 and 36 months to construct), if progressed, would likely:

a. Be able to impound, in the order of 30,000,000 cubic metres of water;

b. Would extend over approximately 200 hectares of land that principally supports agricultural endeavour (as opposed to being located in an existing watercourse);

c. Require approximately 6,000,000 cubic metres of earthworks and earth embankments that are over 120 metres thick at their base and some 27 metres high;

d. Require a synthetic lining, given the porous nature of the soils underlying the Proposal;

e. Be able to support some additional hydroelectric power generation capacity; and

f. Contain a spillway capable of discharging back to the Rangitata River.

5.5 If implemented, the Klondyke Proposal will improve the irrigation reliability of those already taking water from the RDR. In addition, it could supply sufficient water to enable further irrigation in Mid-Canterbury as well as enable the Company's take from the Rangitata River to be refocused, such that users in South Canterbury could be supplied with water. The Klondyke Proposal is a key component of the CWMS infrastructure network and has received central government grants during its feasibility work to date. A key component of the feasibility work is the potential environmental benefits through providing storage capacity for Managed Aquifer Recharge ('**MAR**') and Targeted Stream Augmentation ('**TSA**').

6 RDRML's RECENTLY GRANTED RESOURCE CONSENT (CRC121664), THE PROCESS UNDERTAKEN TO OBTAIN THE SAME AND APPROACH TO NUTRIENT MANAGEMENT

6.1 RDRML holds consents to take and use water to irrigate land in the vicinity of the established Mayfield Hinds, Valetta and Ashburton Lyndhurst Irrigation Schemes (with these consents also authorising the use of water for stockwater purposes and to generate electricity at Montalto and Highbank Power Stations). In this regard the irrigation schemes have the ability to irrigate 44,900 (Mayfield Hinds), 13,245 (Valetta) and 36,341 (Ashburton Lyndhurst) hectares of land each respectively, or 94,486 hectares altogether, as per resource consent CRC121664. At the time of applying for this consent the Company was irrigating in the order of 75,000 hectares of land altogether. However due to improvements in efficiency resulting from the conversion from border-dyke to spray irrigation, and piping of water rather than conveyance through open channels, the area irrigated was anticipated to increase to 94,486 hectares over time. In February 2012 RDRML applied for resource consent to irrigate the same area of land (being 94,486 hectares) over an expanded command area, providing the Company with greater certainty and flexibility, and enabling its other uses for stockwater and hydroelectricity generation over the expanded area. Currently two of the three RDR Irrigation Schemes have intensified approximately

4,000 ha under resource consent CRC121664, and developed plans to provide irrigation water via piping to a further 8,500 hectares in the Hinds catchment.

6.2 The Company was aware of the water quantity and quality limit regime stipulated within the National Policy Statement for Freshwater Management and anticipated policies within the pL&WRP, and as a consequence applied to have a nutrient limit within the resource consent.

6.3 The resource consent application took more than two years to progress, due to uncertainty surrounding water quality issues, and it was a difficult and frustrating process for both the Company and the Council. One of the (many) uncertainties was the calculation of the Nitrogen loss below the root zone. This was not peculiar to the RDRML consent application but was the subject of national debate. The RDRML consent was granted in May 2014.

6.4 This new consent (CRC121664), brings with it a number of requirements. The resource consent, attached to my evidence within **Appendix Three** sets out the conditions which the Company must comply with. In short, Condition 5 requires that Farm Environment Plans ('**FEPs**') are established for all properties within the existing irrigation areas by the 1st of July 2016, and within new irrigation areas, prior to the RDRML supplying water to the same. Further, the consent requires that the Company is to implement an Environmental Management Plan ('**EMP**') within 12 months of the consent being granted. The consent also sets a number of nutrient limits.

6.5 The management of the nutrient aspects of the consent is in itself a new challenge for RDRML. Previously the Company had been primarily concerned with the management of water quantity, which as it is measureable, is comparatively simple. The management of water quality to the receiving environment via a widely varied soil landscape, differing rainfall areas, diverse irrigation and land uses is complex and poorly understood. In an effort to comply with the conditions within the resource consent, RDRML has spent considerable resources in hiring new staff (including a full time Environmental Compliance Manager) and contractors to help navigate a sensible path through this process. Unfortunately the arcane nature of water quality limit setting processes has not helped the management of this process. I have seen this firsthand within the work of the Ashburton Zone and Regional committees. It is clearly understood by the Company that a reduction of nutrient loss below the root zone must be reduced, however the process, management and most critically, the time allowed, must be consistent and appropriate. The Council, aware of the uncertainties regarding the management of consent, initiated a pilot audit programme with RDRML for the five year consent duration. The aim of the pilot programme is to monitor and if necessary adjust the management regimes, in order to achieve a workable process that can be implemented with other land use consents in Canterbury.

6.6 As noted above, **R**DRML takes its responsibilities regarding nutrient management very seriously and has been proactive in voluntarily adopting an Audited Self-Management Programme ('**ASM**') as part of the on-going operation of the irrigation schemes, as attested to by Ms Cumberworth within her evidence. This approach was advanced prior to the pL&WRP provisions being notified and reflects the Company's stance on managing nutrient discharges associated with its irrigation schemes and on behalf of the RDRML shareholders.

6.7 RDRML has developed a web-based ASM programme, the cornerstone of which will be all of the FEPs required in accordance with the new resource consent (CRC121664). These FEPs will be developed and audited by the RDRML as the consent holder (including punitive non-compliance measures such as the withdrawal of water supply), whilst providing for external audit in addition, in order to allow the Council visibility and reassurance that the ASM programme is robust and transparent.

6.8 Since the granting of the consent the RDRML has established an RDRML ASM Group, comprised of representatives of the Company and each of the irrigation schemes involved, which meets regularly to assist the successful implementation of the ASM programme.

6.9 The RDRML had a FEP template approved with the granting of the consent. This template has since been altered so that it is compliant with the current requirements of Schedule 7 of the pL&WRP. An online tool, attached to the existing database system, used by the RDR supplied irrigation schemes has been devised and radically upgraded to facilitate both the collection and management of the vast quantities of data associated with an ASM programme of this scale. Further, a GIS programme has also been acquired to support data collection, management and presentation.

6.10 The FEP programme comprises of two key components, Part 1 - which identifies and details the FEP areas, prior to Part 2 - which includes the Mapping / Risk Management associated with the same. The ASM Group has identified 450 FEP areas, with maps for each of these areas having been entered into the GIS programme to support the risk identification and further mapping requirements associated with the next stage of the FEP programme. I note that the ASM Group is well underway with the FEP programme, and on-track to ensuring that all 450 FEPs associated with the RDR are completed by July 2016.

7 THE ASHBURTON ZIP ADDENDUM AND RDRML'S INVOLVEMENT IN NUTRIENT MANAGEMENT ISSUES IN THE HINDS CATCHMENT

7.1 As noted in section 1.2 of my evidence, I am a member of the Ashburton Zone Committee, and have been since its establishment in September 2010. I was also extensively involved with the formulation of the Ashburton ZIP, which seeks to implement the goals and actions of the CWMS within the Ashburton District and links with other zone programmes throughout Canterbury.

7.2 With respect to the Ashburton ZIP Addendum, the Ashburton Zone Committee worked with the community to develop water quality and quantity limits for the Hinds Plains Area. These limits were included in the ZIP Addendum, with the intention of being incorporated in the pL&WRP. The ZIP Addendum was the result of months of intense discussion on water related issues in the Hinds Catchment. At the time that the ZIP Addendum was endorsed by Council in March 2014, the Ashburton Zone Committee acknowledged that water quality objectives, set at the regional and national levels, were not being achieved in the Hinds Catchment.

7.3 The key goals of the Ashburton ZIP are to provide for a healthy regional economy, ensuring healthy waterways and communities as well as improved cultural values and use. In order to achieve these goals the ZIP Addendum contemplated providing for

new irrigation and also reducing nitrate levels in spring-fed waterways and the Hinds River by 2040 as well as maintaining the water quality and quantity of hill-fed country streams.

7.4 Within the introduction[5] to the ZIP Addendum it is noted that the Ashburton Zone Committee recognised that there were a number of uncertainties, such as the accuracy of the Overseer model, consensus on what constitutes good management and its economic impacts and effectiveness and the cost and effectiveness of MAR, however in order to move forward, both the knowledge and technology gaps would need to be bridged if the 2040 targets were to be reached. In this respect, the introduction to the ZIP Addendum goes further to note that as new information becomes available it will be important to incorporate new understandings, innovation and technology into the approach utilised by Council. Since the ZIP Addendum was published there has been significant debate around not only the validity of the target loads (3,400 tonnes of Nitrogen) but also the approaches to achieving such a goal. From my position as a member of the Zone Committee I realise that the case put forward by Council is probably best described as the best knowledge available at the time. However in the 12+ months since, the levels of understanding and changes to Overseer modelling have not been incorporated into the planning approach in Variation 2, leading to a very confused and contested situation. Whilst there is general acceptance that the targets are valid and ultimately achievable, there is little or no consensus on the approach and in particular the timescale for change. I note that the wide variety of change anticipated tends towards the need for a unified approach, such as that set out within the RDRML's Nutrient Budget Preparation Protocol, as attached to the Company's submission within Annexure E.

8 THE RDRML'S KEY CONCERNS WITH VARIATION 2

8.1 The RDRML is concerned with ensuring the provisions advanced within Variation 2 of the pL&WRP appropriately provide for the RDR and its associated irrigation schemes which make up a large proportion of the catchment. As such, the RDRML made a number of submissions to Vari**ati**on 2 to the pL&WRP. This section of my evidence sets of the key concerns that remain with respect to RDRML's submissions. I note that all of RDRML's submissions are discussed in detail by Mr Bryce, within his expert planning brief. I note that RDRML endorses Mr Bryce's evidence.

8.2 Having taken advice on the mechanisms and targets imposed by Variation 2, and indeed, having engaged experts to look further at these measures since the Company's submissions and further submissions were lodged to the same, the RDRML questions the practicality of a number of these measures.

8.3 In this respect, while noting that reducing the nitrogen losses from farming activities in the Lower Hinds/Hekeao Plains Area ('**the Hinds Plains**') by 45 percent, by 2035 may be achievable, advice to the Company is that this may not be practical or appropriate, given that it may make several types and 'scales' of farming activities uneconomic in the Plains. As such, the RDRML considers that a better approach would be to set a percentage reduction or an actual reduction target that is achievable and will not unacceptably affect profitability.

[5] Refer to page 4 of the Ashburton ZIP Addendum – Hinds Plains Area, March 2014.

8.4 Further, the Company questions the nitrogen loss reduction figures, noting that advice provided to the Company has indicated that the nitrogen loss figures employed in Variation 2 have been derived using sub-optimal methodology and are therefore unlikely to reflect the nitrogen that is being lost to the soils and groundwater that exists below the root zone. Indeed, Mr Ford notes, at section 28 of his evidence, that he considers that the method adopted in the Council's report would lead the Hinds Catchment to an inaccurate estimation of the total amount of nitrogen leached, due to an inaccurate estimation of the land use mix, underestimation of the amount of Nitrogen leached, and due to the modelling practices used.

8.5 In addition, advice to the RDRML is that the methodology over estimates the effectiveness of the nitrogen loss mitigation tools that are presently available and which seem likely to be available in the future. Thus as a result of the apparent uncertainty associated with the nitrogen loss figures provided within Variation 2 the Company asserted in its submission that prior to setting a definitive percentage reduction figure, and associated timeframe for the achievement of the same, a comprehensive and detailed investigation needed to be undertaken. Annexure A to the RDRML's submission set out a proposed methodology for the same.

8.6 Given the uncertainties associated with the achievement of the nitrogen reduction figures and timeframes as presented throughout Variation 2, the Company considers that these should be presented as targets to be revisited or recalculated as the methodology for calculating the same improves or becomes more certain. This is discussed further at section 8.19 of my evidence.

8.7 I note that Mr Ford considers the nitrogen loss figures and mechanisms for achieving the same in his evidence within some detail, setting out those figures, timeframes and mechanisms that he considers to be more achievable and appropriate. The RDRML supports the evidence presented by Mr Ford.

8.8 Dairy and dairy farming activities have been singled out within Variation 2 as activities that need to reduce their Nitrogen losses beyond the reductions that will be felt by good management practices. Based on advice to the Company, the RDRML noted in its submission that not only will this approach not achieve the target reduction that is presently sought, but it is inequitable and does not recognise the contribution made by all agricultural and horticultural activities to Nitrogen losses.

8.9 Mr Ford has considered nitrogen loss percentages in some detail further to the lodgement of the RDRML's submission to Variation 2. We understand his advice to be that in addition to all activities operating at good management practice by 2017, dairy and dairy support activities could further reduce their nitrogen loss rates by 30 and 20 percent respectively (as opposed to 45 and 25 percent respectively) by 2035 based on baseline land uses. Mr Ford considers that this would be both achievable and affordable for farmers. Further, Mr Ford notes within his evidence, that it would be very difficult to achieve the Councils aim of achieving a 45 percent reduction in Nitrogen loss by dairy farms and 25 percent reduction in those of dairy support operations, without incurring significant financial and social implications, such as bankruptcy. As such the RDRML supports the evidence presented by Mr Ford as it relates to nitrogen loss reductions for dairy and dairy farm activities. Overall, we understand this to require a 30 percent reduction in Nitrogen losses from dairy activities and a 20 percent reduction in Nitrogen losses from dairy support by 2035. In

addition, beyond 2035, we understand a further 10 percent reduction will be spread out to 2055. Further, we understand that this will provide for a total 40 percent reduction in total Nitrogen leaching with incremental reductions spread out over 40 years.

8.10 The Company understands that the proposed protection levels for aquatic species are appropriate, while noting that the annual average concentration of nitrogen in groundwater sought by Variation 2 is derived using New Zealand Drinking Water Standards. Advice to the RDRML is that this is a pragmatic target, based on what the Council believes can be achieved. Given that the achievement of this level requires in part at least, a reduction in the nitrogen losses from the root zone of the soil, the Company is of the opinion that requiring its achievement by 2035 is likely to be unrealistic and will result in an array of unacceptable social and economic effects. As such, the Company sought that a comprehensive and detailed investigation (such as that set out within Annexure A of its submission) should be employed to ensure the appropriate timeframe for the achievement of the target is applied.

8.11 Since lodging its submission advice to the RDRML is that in order to achieve a target of 3,400 tonnes of total load within the Hinds Plains catchment, while maintaining the social and economic wellbeing of the community, which is reliant on the agricultural industry, the timeframe for achieving this target should be extended to 2055. In this respect we understand that the Council's proposal to achieve a target of 3,400 tonnes of total load within the Plains Catchment by 2035 would cause major social and economic harm within the catchment. I note that Mr Ford addresses this further within his evidence, concluding that a 2055 timeframe is more realistic.

8.12 While the RDRML supports TSA and MAR in principle, the Company noted within its submission that both will need to be carefully evaluated (particularly MAR) and tested before it is possible to determine if they will provide the degree of assistance needed to reduce the target annual average groundwater concentration of nitrate-N to the 6.9 milligrams per litre requirement.

8.13 The Company noted in particular that It was not obvious where the water needed for TSA and MAR would come from, particularly when the surface water bodies / courses which might supply the TSA / MAR water are said to be fully allocated.

8.14 RDRML understands that while it may be possible to reallocate water from existing users, this option is not certain. A preliminary review of the existing 'take' / abstraction resource consents suggests that insufficient surface water is available to achieve the 4 to 5 cubic metres per second (or '**cumecs**') needed to support MAR at the level that will, or is likely to, achieve the 6.9 milligrams of nitrogen per litre target.

8.15 A further alternative could be to source water from a water storage reservoir(s), but the Company considers that this outcome seems unlikely unless new water storage proposals are advanced through the design, resource consent, building permit and construction processes. The sources of the water needed for MAR and TSA should, in the Company's opinion, be acknowledged as being linked to the implementation of these mechanisms, and, thus, need to be enabled by Variation 2.

8.16 Advice to the Company is that the level of MAR anticipated has the potential to raise groundwater levels, particularly in low-lying areas, and areas in close proximity to the

coast. This could, in turn, result in adverse environmental outcomes, which are likely to include constraining the farming activities that may be undertaken on the land that sits above the elevated groundwater levels.

8.17 Further the Company noted within its submission that the promotion of MAR suggests that water race distribution networks should be maintained, as they are a very effective means of widely distributing the groundwater recharge waters. This would seem to run contrary to the outcomes that are sought by Variation 2, where irrigation waters are conveyed under pressure (and thus in pipe networks) to enable spray irrigation.

8.18 Given these concerns, the RDRML noted within its submission that when referring to the average annual groundwater concentration of 6.9 milligrams of nitrogen per litre, Variation 2 must be clear that it is a target, and not a limit. Further, the Company noted that it would be inappropriate for that concentration to be set as a limit. If this were not the case, it seems likely that the implementation of further nitrogen loss mitigation would be required, were MAR to be found to be unsuccessful, or to cause unacceptable effects on groundwater tables. The Company noted that if this outcome were to occur, the most appropriate response would be for the Council to revisit the matters addressed in Variation 2 and to complete a new section 32 analysis in light of the same.

8.19 Overall, with respect to targets, I note that Mr Bryce discusses the importance of utilising the same, and restates the definition provided within the Company's primary submission, within section 8 of his evidence. In this section Mr Bryce concludes that given the level of uncertainty relating to whether a 3,400 tonne Nitrogen reduction load per year can be achieved, the definition of 'target' set out within the relief of RDRML should be adopted, as this clearly reflects the fact that this is an aspirational target. Further, he notes that Variation 2 must provide appropriate timeframes in order to ensure that the targets expressed within the Variation are attainable. RDRML supports this approach.

8.20 Finally, RDRML supports the ability to switch takes of surface water or hydraulically connected surface water to deep groundwater enabled in Variation 2. While supporting the ability for existing abstractors to voluntarily make this change, the Company noted that the Council has reduced the Mayfield-Hinds groundwater allocation from 148 million cubic metres per year to 122.25 million cubic metres per year, which combined with the prevailing rule framework under the pLWRP means that this process may be frustrated. I note that Mr Bryce discussed the Rule framework associated with the same within his evidence and recommends amendments to address this issue.

8.21 The RDRML has a number of submissions to Variation 2, while I have provided an overview, regarding key submissions points of concern within my evidence, those experts presenting evidence in support of the RDRML will provide further detail regarding research and analysis undertaken, subsequent to the lodgement of the RDRML's primary submission.

9 CONCLUSION

9.1 It is evident that RDRML takes Variation 2 to the pL&WRP seriously and, as a result, has engaged a number of experts to undertake research and provide advice and analysis regarding the various submission points of interest to the Company. The Company seeks the follow amendments to be provided for to address the key concerns that the RDRML has with Variation 2 and includes:

a. That the preamble be amended to replace the references to '45 percent' and '2035' and be replaced with 30 percent for dairy farms, 20 percent for dairy support and in a number of instances, 2055 respectively.

b. That new text is added to ensure that it is clear that the percentage reduction or actual reduction, the timeframe for that reduction, and the achievement of 3,400 tonnes of Nitrogen per year are targets (goals), and not limits;

c. That text is added to make it plain that the 3,400 tonnes of Nitrogen per year target will be revisited and, potentially, modified, as the methodology for calculating this load improves / becomes more certain;

d. Delete the references to the 45 percent and 25 percent reductions that need to be achieved by 'dairying' and 'dairy support' activities, and replace these with 30 percent and 20 percent reduction requirements respectively.

e. Insert an appropriate timeframe for the achievement of the average annual concentration of 6.9 milligrams of Nitrogen per litre in the groundwater, having appropriate regard to the outcomes of the comprehensive and detailed assessment undertaken.

f. Recognise that water storage proposals could provide a source of water for MAR, and that this should be seen as a potential positive effect of such proposals;

g. Make it plain that the average annual groundwater concentration of 6.9 milligrams of Nitrogen per litre is a target, and not a limit; and

h. Define the term 'target' so that it is clear that when used in Variation 2 it is referring to an aspiration goal(s), and is not a limit(s).

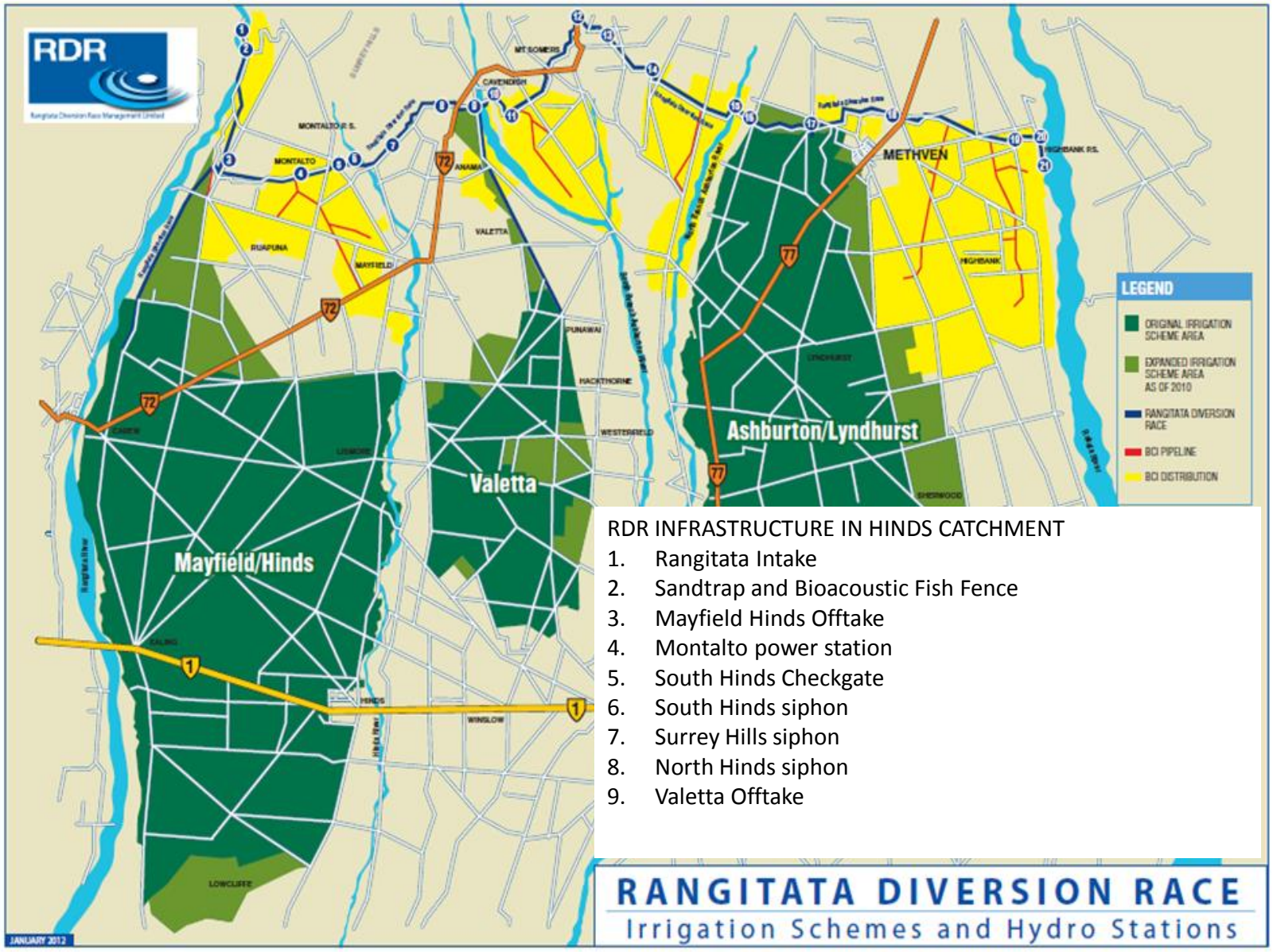
i. Address issues to enable the switching from surface water or hydraulically connected groundwater to deep groundwater.

9.2 In conclusion, I thank the Commissioners for their consideration of this statement of evidence and indeed the issues raised by Rangitata Diversion Race Management Limited in its submissions and further submissions to Variation 2 to the pL&WRP.

Benedict Rodney Curry

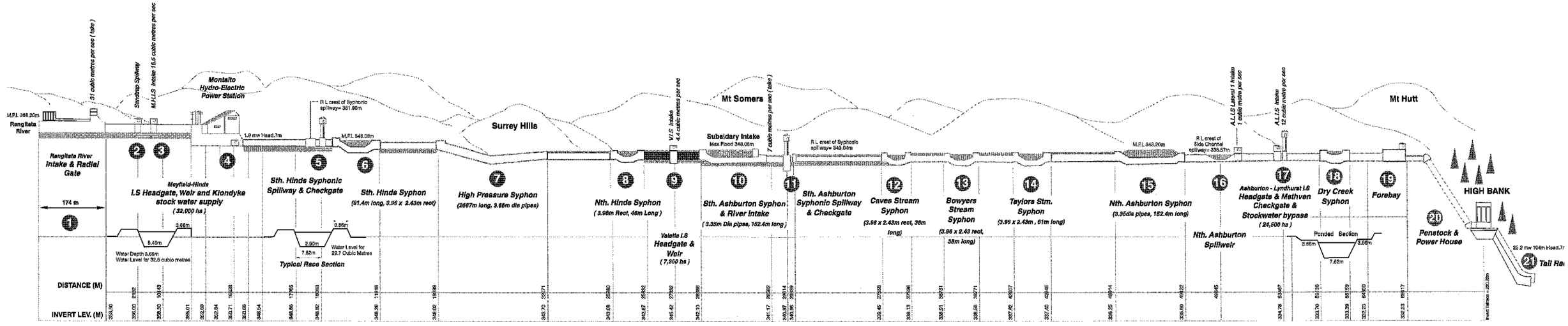
15th of May 2015

APPENDIX ONE: FIGURE ONE – RANGITATA DIVERSION RACE SCHEME LOCATION DIAGRAM



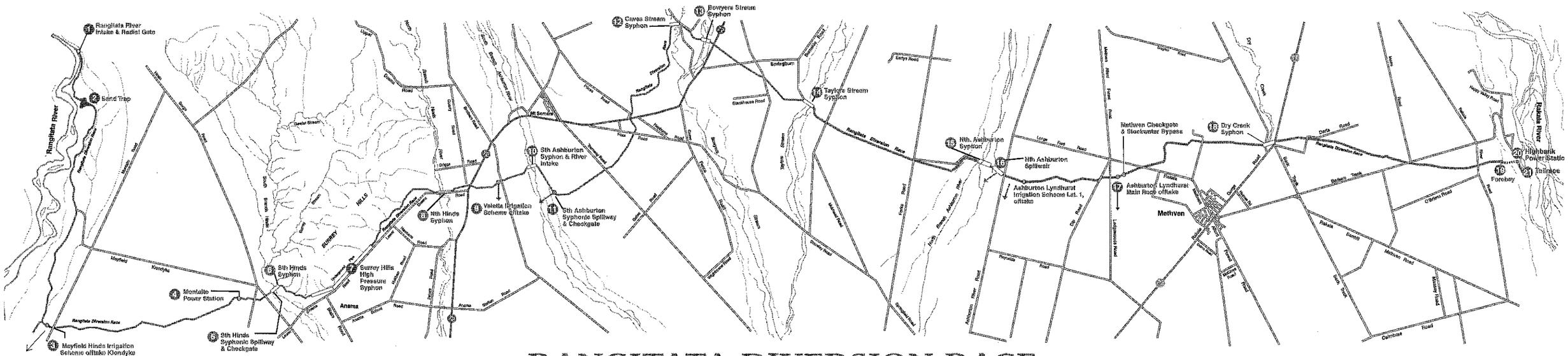
RDR INFRASTRUCTURE IN HINDS CATCHMENT

1. Rangitata Intake
2. Sandtrap and Bioacoustic Fish Fence
3. Mayfield Hinds Offtake
4. Montalto power station
5. South Hinds Checkgate
6. South Hinds siphon
7. Surrey Hills siphon
8. North Hinds siphon
9. Valetta Offtake



RANGITATA DIVERSION RACE

LOCALITY PLAN & DIAGRAMMATIC ELEVATION



RANGITATA DIVERSION RACE

SCHEME LOCATION DIAGRAM

APPENDIX TWO: SCHEDULE OF RESOURCE CONSENTS HELD BY THE RANGITATA DIVERSION RACE MANAGEMENT LIMITED

1	CRC011237	Issued - Active	Rangitata Diversion Race Management Limited	Dam Surface Water, Take Surface Water
2	CRC011239	Issued - Active	Rangitata Diversion Race Management Limited	Deposit Substance, Disturb or Excavate Bed, Structure
3	CRC011240	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
4	CRC011241	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
5	CRC011242	Issued - Active	Rangitata Diversion Race Management Limited	Disturb or Excavate Bed
6	CRC011243	Issued - Active	Rangitata Diversion Race Management Limited	Disturb or Excavate Bed
7	CRC011244	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
8	CRC011245	Issued - Active	Rangitata Diversion Race Management Limited	Dam Surface Water, Take Surface Water
9	CRC011246	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
10	CRC011247	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
11	CRC011248	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
12	CRC011249	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
13	CRC011251	Issued - Active	Rangitata Diversion Race Management Limited	Deposit Substance, Disturb or Excavate Bed
14	CRC011252	Issued - Active	Rangitata Diversion Race Management Limited	Take Surface Water
15	CRC011253	Issued - Active	Rangitata Diversion Race Management Limited	Disturb or Excavate Bed
16	CRC011254	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
17	CRC011255	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
18	CRC011450	Issued - Active	Rangitata Diversion Race Management Limited	Divert Surface Water
19	CRC051179	Issued - Active	Rangitata Diversion Race Management Limited	Divert Surface Water
20	CRC051180	Issued -	Rangitata Diversion Race	To Water - Contam or Water

		Active	Management Limited	
21	CRC070275	Issued - Active	Rangitata Diversion Race Management Limited	Structure
22	CRC080840	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
23	CRC080926	Issued - Active	Rangitata Diversion Race Management Limited	Dam Surface Water
24	CRC082583	Issued - Active	Rangitata Diversion Race Management Limited	Divert Surface Water
25	CRC110224	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
26	CRC121664	Issued - Active	Rangitata Diversion Race Management Limited	Use Surface Water
27	CRC134808	Issued - Inactive	Rangitata Diversion Race Management Limited	Take Surface Water
28	CRC961754.1	Issued - Active	Rangitata Diversion Race Management Limited	Deposit Substance, Disturb or Excavate Bed, Structure
29	CRC961755	Issued - Active	Rangitata Diversion Race Management Limited	Take Surface Water
30	CRC961756	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water
31	CRC992194	Issued - Active	Rangitata Diversion Race Management Limited	To Water - Contam or Water

APPENDIX THREE: RESOURCE CONSENT CRC121664

26 May 2014

Rangitata Diversion Race
Management Limited
Attn To: Ben Curry
PO Box 61
Ashburton 7740

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Customer Services
P. 03 353 9007 or 0800 324 636

PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

Dear Sir/Madam

NOTICE OF RESOURCE CONSENT DECISION(S)

RECORD NO: CRC121664
NAME: Rangitata Diversion Race Management Limited

The decision of Environment Canterbury is to grant your application(s) on the terms and conditions specified in the attached resource consent document(s). Your resource consent(s) commences from the date of this letter advising you of the decision. The reasons for the decision are:

1. Any adverse effects on the environment as a result of the proposed activity will be minor.
2. There are no persons considered to be adversely affected by this proposal.

For some activities a report is prepared, with officer recommendations, to provide information to the decision makers. If you require a copy of the report please contact our Customer Services section.

If you do not agree with the consent authority decision, you may object to the whole or any part. Notice of any objection must be in writing and lodged with Environment Canterbury within 15 working days of receipt of this decision.

Alternatively you may appeal to the Environment Court, PO Box 2069, Christchurch. The notice of appeal must be lodged with the Court within 15 working days of receipt of this decision, with a copy forwarded to Environment Canterbury within the same timeframe. If you appeal this decision, the commencement date will then be the date on which the decision on the appeal is determined. If you are in any doubt about the correct procedures, you should seek legal advice.

You can find online information about your consent document at http://ecan.govt.nz/publications/General/YourConsentDocumentBooklet09.pdf and also information regarding the monitoring of your consent at http://ecan.govt.nz/publications/General/monitoring-your-consent-booklet.pdf. These booklets contain important information about your consent and answers some commonly asked questions about what will happen next in the life of your resource consent. There is an Annual Compliance Monitoring Charge associated with every consent. For details of this, please refer to page 10 of the "Monitoring Your Consent' booklet.

Our Ref: CO6C/33056
Your Customer No: EC114929
Contact: Customer Services

Environment Canterbury takes every measure to improve both applications and processes, and we appreciate your feedback as an important component in ensuring this occurs. You can complete a consents survey on-line at http://www.ecan.govt.nz/services/resource-consents/pages/surveys.aspx. Alternatively, you can call our Customer Services Section on 0800 EC INFO who will be happy to complete the survey with you.

Charges, set in accordance with section 36 of the Resource Management Act 1991, shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under section 35 of the Act.

Thank you for helping us make Canterbury a great place to live.

For all queries please contact our Customer Services Section by telephoning (03) 353 9007, 0800 ECINFO (0800 324 636), or email ecinfo@ecan.govt.nz quoting your CRC number above.

Yours sincerely

CONSENTS PLANNING SECTION

RESOURCE CONSENT CRC121664

Pursuant to Section 104 of the Resource Management Act 1991

The Canterbury Regional Council (known as Environment Canterbury)

GRANTS TO:	Rangitata Diversion Race Management Limited
A WATER PERMIT:	to use surface water
COMMENCEMENT DATE:	26 May 2014
EXPIRY DATE:	26 May 2019
LOCATION:	Ashburton District, ASHBURTON

SUBJECT TO THE FOLLOWING CONDITIONS:

Definitions

1 *Existing Command Area:* are the three (3) areas indicated on plan CRC121664A 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 was 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 CRC121664A).

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 was not being irrigated prior to December 2013 but are, or will be, irrigated under this consent.

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).

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 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*; and
ii. in advance of the consent holder supplying water (abstracted under the *Water Supply Consents*) to properties within the *New Irrigation Areas*.
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.
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.

b. The consent holder 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. 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.
c. The audits required by this condition shall be undertaken by a suitably qualified and experienced auditor.
d. 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 and phosphorus for the preceding 12-month period (being from the 1st of August until the 31st of July) for:
        a. The *Existing Irrigation Areas*; and
        b. The *New Irrigation Areas*.
    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.
e. A copy of the annual report shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by the 30th of September each year.
f. 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') and Phosphorus ('P') 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 and 82.5 tonnes of P from the land within the *Existing Irrigation Areas* as ; and
    ii. 263 tonnes of N and 6.82 tonnes of P from the land within the *New Irrigation Areas* located within Zone 1 as shown on plan CRC121664B.
    iii. 52 tonnes of N and 1.36 tonnes of P from the land within the *New Irrigation Areas* located within Zone 2 as shown on plan CRC121664B.
    iv. 211 tonnes of N and 5.46 tonnes of P from the land within the *New Irrigation Areas* located within Zone 3 as shown on plan CRC121664B.
b. The consent holder may derive the N and P 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 and P 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 and P 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

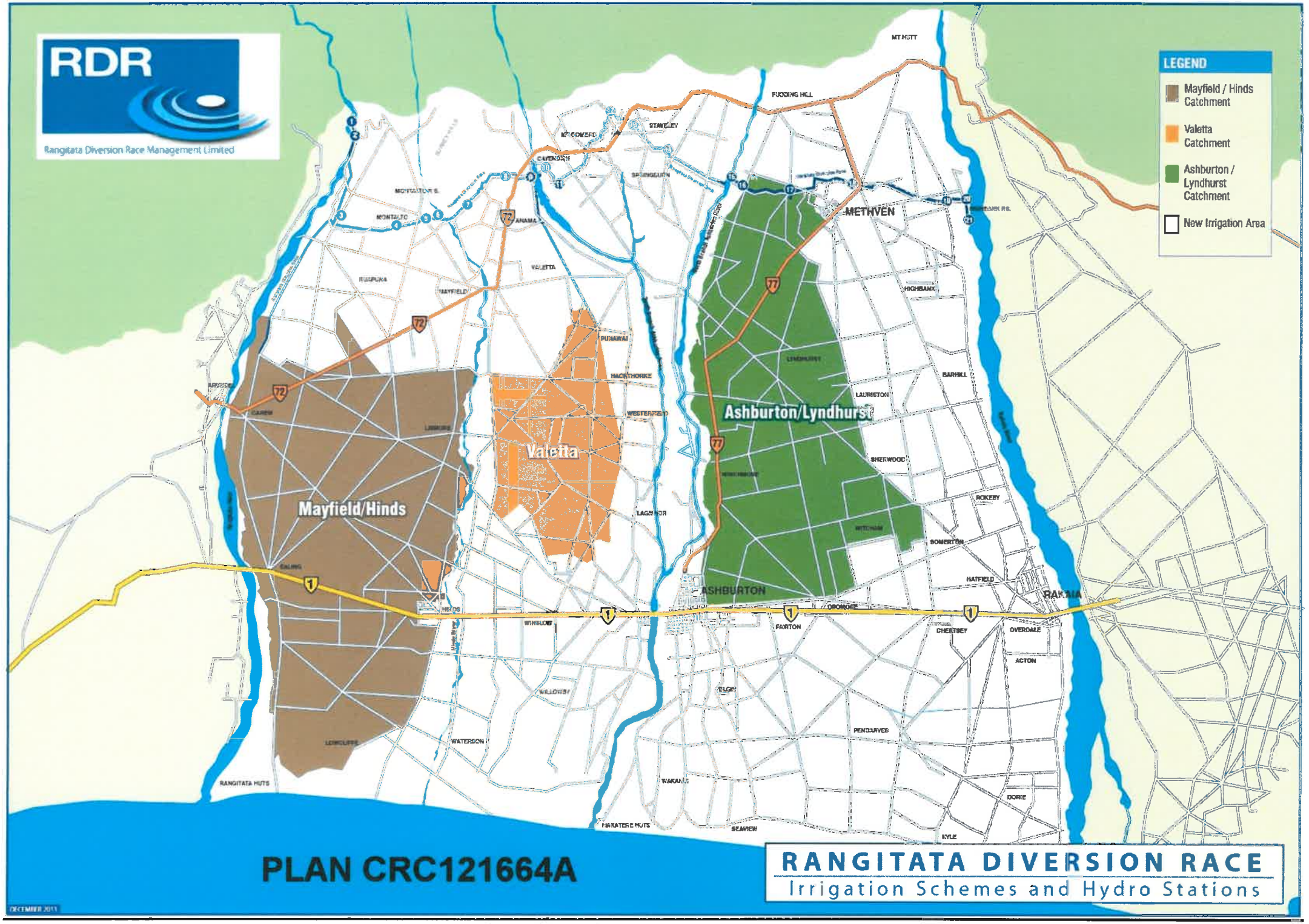
ii. Reviewing the effectiveness of the conditions in avoiding, remedying or mitigating adverse effects on the environment from the exercise of this consent; or

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 and P 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.

Issued at Christchurch on 26 May 2014

Canterbury Regional Council

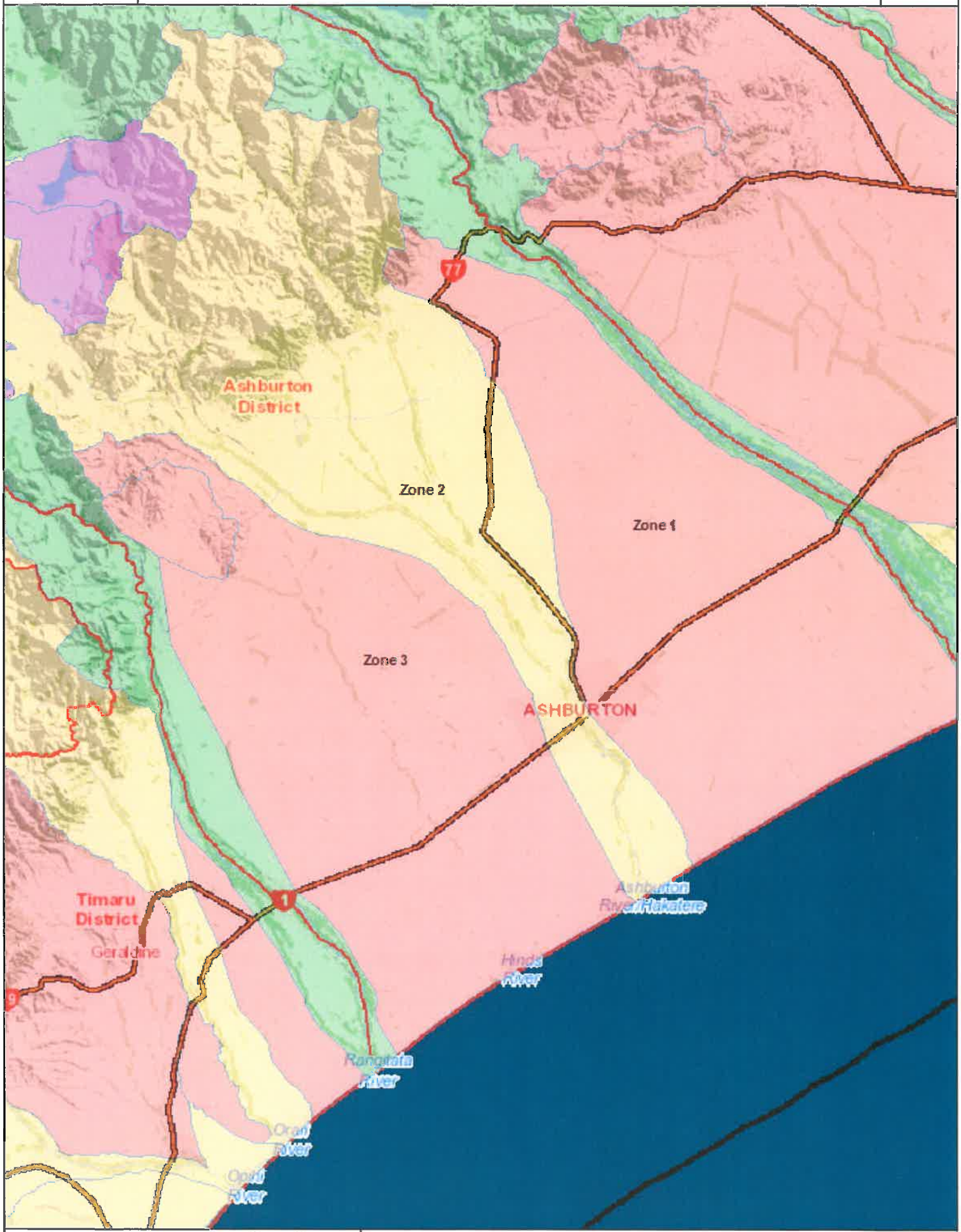

RDR
Rangitata Diversion Race Management Limited
LEGEND
Mayfield / Hinds Catchment
Valetta Catchment
Ashburton / Lyndhurst Catchment
New Irrigation Area
Mayfield/Hinds
Valetta
Ashburton/Lyndhurst
METHVEN
ASHBURTON
PLAN CRC121664A
RANGITATA DIVERSION RACE
Irrigation Schemes and Hydro Stations
DECEMBER 2011

canterbury maps

Plan CRC121664B RDRML nutrient allocation zones

Data sourced from our Canterbury Map Partners at Environment Canterbury

N



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Scale: 1:423,280

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Map created by hamishl on 2:19:59 p.m.