

APPLICANT: RPNZ PROPERTIES LTD

CRC051767 – To take and use water from a pond at a rate of 30 L/s for the irrigation of 48 hectares of crops and pasture

[] Location of take – surface water.

Water may only be taken from the Hakataramea River, at or about map reference I40:218-164.

[] Rate of take and annual volume.

Water may be taken at a rate not exceeding 30 litres per second, with a volume not exceeding 12,960 cubic metres in any period of five consecutive days, and 252,000 cubic metres between 1st July and the following 30th June.

[] Hakataramea River “A” permit minimum flow.

Option 1.

For the period September to March inclusive the taking water under this permit shall cease whenever the flows in the Hakataramea River at the SH82 recorder site (map reference I40:112-062) as estimated by the Canterbury Regional Council falls below 500 L/s.

For the period April to August inclusive the taking water under this permit shall cease whenever the flows in the Hakataramea River at the SH82 recorder site (map reference I40:112-062) as estimated by the Canterbury Regional Council falls below 750 L/s.

Option 2.

For the period September to March inclusive the taking of water under this permit shall be subject to the following restrictions:

- (a) When flows are between 1500 L/s and 500 L/s taking shall be reduced by up to 50% of the peak rate of take.
- (b) When flows are below 500L/s taking shall cease.

For the period April to August inclusive the taking of water under this permit shall be subject to the following restrictions:

- (a) When flows are between 1500 L/s and 750 L/s taking shall be reduced by up to 50% of the peak rate of take.
- (b) When flows are below 750L/s taking shall cease.

Flows shall be estimated at the Hakataramea River recorder site (map reference I40:112-062) by the Canterbury Regional Council and expressed in cubic metres per second.

[] Land use and area to be irrigated.

The water taken in condition () shall only be used for irrigation of crop and pasture, as described in the application, on the area of land shown in attached plan "RPNZ Properties Ltd – Area to be Irrigated"

[] Hakataramea valley water quality management.

Nitrates- Nitrogen

[] .1.

- (a) With the exception of the first period ending 30 June during which this consent is first exercised, for each preceding 12 month period ending 30 June:
 - (i) An approved method shall be used to model the nitrate-nitrogen concentration in the soil drainage water below the plant root zone and to prepare a nutrient budget for the subject land for that prior 12 month period;
 - (ii) Records shall be maintained throughout the year of the farm management practices and associated data that will be used as input to the approved method;
 - (iii) Predictions shall be made of the farm management practices that will be used for the following 12 month period to provide input data to the approved method taking regard of the need to reduce nitrate leaching below the plant root zone where possible.
- (b) A record of the predicted and measured input data, the calculations undertaken and the calculated nitrate-nitrogen concentration in the soil drainage water below the plant root zone in accordance with clause (a) shall be:
 - (i) prepared by 31 August each year;
 - (ii) certified as an accurate record by a suitably qualified person;
 - (iii) maintained for the property for the duration of the consent; and
 - (iv) Provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 September each year, or upon request.
- (c) For the purposes of this condition an approved method is
 - (i) 'Overseer' (AgResearch)
 - (ii) The Soil Plant Atmosphere Model (SPASMO- HortResearch)

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

[] .2.

- (a) Fertiliser shall be applied in accordance with a nationally recognized quality assurance program for fertilizer application.
- (b) For the purposes of this condition a quality assurance program is:
 - (i) The New Zealand Fertiliser Manufacturers' Research Association Code of Practise for Fertiliser Use;
 - (ii) The Code of Practise for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07;
 - (iii) Any other method approved by the Canterbury Regional Council.

Nutrient Budget

- [] .3 A nutrient budget is prepared and implemented for all properties receiving water from the Scheme;

Irrigation Infrastructure

- [] 4.1 All new irrigation infrastructures shall be designed and accredited by a qualified professional, and installed in accordance with the accredited design. The design shall take into account the specific requirements of the property's soil types.
- [] 4.2 If a consent holder is using existing irrigation infrastructure they shall obtain an evaluation report prepared by a certified irrigation evaluator. The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation 2005. This report shall be obtained within 3 months of the first exercise of the consent. Any recommendations identified in the report shall implement within 12 months from the date of receipt of the report. A copy of the report shall be given to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.

- []5. If a consent holder is using existing irrigation infrastructure they shall obtain an evaluation report prepared by a certified irrigation evaluator. The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation 2005. This report shall be obtained within 3 months of the first exercise of the consent. Any recommendations identified in the report shall implement within 12 months from the date of receipt of the report. A copy of the report shall be given to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.

Baseline and On-going Monitoring

[]6

Objective and Purposes of the Hakataramea Monitoring Plan

- .1 The objective of all survey and monitoring programmes shall be to obtain a definitive and representative assessment of any effects of the use of water authorised by this consent on the state of the environment of the Hakataramea Valley.
- .2 Without limiting this objective, the purpose of the monitoring plan is to provide information which may be used to determine whether the exercise of this consent is a cause or contributing cause to changes in:
- (a) Periphyton in the Hakataramea River;
 - (b) Macro-invertebrates species in the surface water bodies;
 - (c) Target native fish and salmonids; and the
 - (d) Physical and chemical ground and surface water quality.
- .3 This is a catchment wide survey.
- .4 PROVIDED THAT compliance by this consent holder with one or more parts of this condition shall be deemed to be compliance by the following consent holders of the same part(s):
- RPNZ Properties Ltd CRC reference 051767, 051768 & 051769
 - RG & ZL Pringle CRC reference 050940, 050957
 - Star Holdings Ltd CRC reference 021585, 072756,
 - Hakataramea Station (1990) Ltd CRC reference 040999
 - RW & ME Sutton CRC reference 071114
 - NJ Small CRC reference 051766
 - Haka Valley Irrigation Ltd CRC reference 032177
- .5 PROVIDED ALSO THAT compliance by a Water Quality Group representing all the consent holders who are the subject of this condition shall be deemed to be compliance by the consent holder.

Baseline surveys to be undertaken prior to taking of water for irrigation purposes

- .1 Subject to sub-clause [.6] before the first exercise of this consent the consent holder shall provide to the Regional Council a copy of the a baseline survey plan prepared in accordance with the sampling design specified in Schedule A.
- .2 The baseline surveys shall be undertaken over a period of one year and completed within a period of two years from the date consent was granted.
- .3 The baseline survey plan shall be designed and carried out using standard scientifically accepted methods by suitably qualified personnel with appropriate (recognised) experience in the matters being surveyed.
- .4 Timeframes specified in the Surface Water Baseline Study, Groundwater Baseline Study and the Land Baseline Study shall be co-ordinated by the personnel engaged.
- .5 The surveys may include any matters which the personnel engaged to design and carry out the baseline surveys consider necessary or more desirable and which are in addition to, or instead of, the provisions in Appendix A.
- .6 CRC050940 [RG & ZL Pringle] and CRC 051767, CRC051768 and CRC051769 [RPNZ] may take water under the terms of this consent from the date that consent is granted. However, taking must cease if after two years from the grant of consent the baseline survey has not been completed in accordance with this condition. Taking may only resume once the baseline survey has been completed.

On-Going Monitoring

- .1 Within three months of the completion of all of the baseline surveys the results of each of baseline survey's shall be assessed to determine the location, sampling and frequency of on-going monitoring throughout the exercise of these consents and any analysis that will be undertaken on the basis of the proposed monitoring information in Appendix A
- .2 All monitoring programmes shall be designed and carried out using standard scientifically accepted methods by suitably qualified personnel with appropriate (recognised) experience in the matters being monitored.
- .3 On-going monitoring time intervals shall be re-evaluated and modified as appropriate.
- .4 Appendix A shall be reviewed annually and changed as necessary on the recommendation of the personnel engaged to design and carry out the monitoring programme following monitoring results.
- .5 The consent holder shall provide in advance of implantation to the Regional Council a copy of the annual monitoring plan prepared in accordance with this condition.
- .6 At least once every five for the duration of the consent the consent holder shall undertake an audit of landuse changes in accordance with the Landuse Inventory in Appendix A identifying gross changes.

Reporting of the Baseline Surveys and Annual Monitoring

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

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

Within 3 months of completion of each of the surveys or monitoring reports the consent holder shall provide copies of survey and monitoring reports and results to the Canterbury Regional Council , the Director-General of the Department of Conservation, Te Runanga o Ngai Tahu and Central South Island Fish and Game Council.

Schedule A

The Baseline Study and On-Going Monitoring shall include the following elements:

Land Baseline Study

Daily monitoring of:

- air temperature
 - rainfall
 - wind speed and direction
 - evapo-transpiration (representative of catchment)
 - sunshine hours
- at one control site for at least one year.

Monthly monitoring of:

- soil moisture
- evapo-transpiration
- leachate quality (e.g. N, P)

- at four control sites located on land, which may include but which is not limited to, land which is the subject of this consent. One control site shall be a non-irrigated cropping block. One control site shall be on an existing irrigated cropping block. The remaining two controls sites shall be located on non-irrigated and irrigated grazing blocks.

Land use Inventory

A survey of agricultural and horticultural landuse within the Haketaramea Valley and estimate the area of land used for

- Inventory of land use:
 - Cropping production,
 - Livestock including sheep, beef, deer and dairying
 - Mixed arable and livestock

Advisory Note: This inventory should include changes that occur seasonally on these lands. For example, cropping occurs only in certain parts of the year, and dairying practices can also change seasonally, depending on the farmer.

- Inventory of land use practices:
 - Cropping Methods i.e. harvesting, planting, and fallow times in between.
 - Stock grazing/breeding programs
 - Audit of fertilizer use (nutrient budgets – Overseer/Spasmo)
 - Animal waste management
 - Percentage of streams fenced and area of margins between fence and stream bank
 - Survey of current stock access to stream beds and banks, including routine stock crossing i.e. dairy cows making way to cow shed.

A desktop investigation on catchment wide land classification, specifically:

- Geology
- Land class (e.g. LUC)
- Topography (e.g. steep/shallow)
- Non-agricultural/horticultural land use and estimated areas of these (e.g. forestry, reserve land etc.)

Advisory Note: The purpose of this desktop investigation is provide a summary of those catchment features which may affect the water quality of the Haketaramea River or its tributaries. The catchment feature could either be impacted by land use practices (for example intensive grazing on highly erodible soils) or the catchment feature itself could contribute an effect on the waterway when the land use practice is employed (such as increased runoff when irrigating on steep slopes).

Surface Water Baseline Study

From the control sites at monthly intervals for duration of at least 1 year the surface water quality shall be sampled for:

- Dissolved Inorganic Nitrogen (DIN)
- Dissolved Organic Nitrogen (DON)
- Total Nitrogen (TN)
- Dissolved Reactive Phosphorous (DRP)
- Total Phosphorus (TP)
- Total Suspended Sediment (TSS)
- Conductivity
- pH
- Temperature
- Dissolved Oxygen
- Clarity/Turbidity/Absorbance
- E.coli/F.coli
- Periphyton percentage cover (filaments and mats) and the ratio of dead to living species.

Flow depth and velocity shall be obtained at each site when the sample is collected.

On four occasions during the year, quantitative sampling should be carried out to provide an accurate description of:

- Macro-invertebrate species present (MCI) (%EPT);
- Target native fish and salmonid species (counts, type, presence/absence, tolerances);
- Plant species;
- Stream bed conditions (e.g. degraded/eroded) adjacent to the control sites;
- Riparian margins adjacent to the control sites; and an
- Observation of terrestrial biodiversity in the margins (presence/absence, tolerances).

Control Sites

Three control sites shall be established in the following tributaries:

- Grampian Stream (representative of an up-catchment tributary)
- Deadman Stream (representative of a poor water quality tributary)
- Kirklisten Stream (representative of a tributary with irrigation already occurring?)

Four control sites along the Hakatamea River. One site will be located in the upper reaches of the river, with the three remaining sites located at increasing downstream intervals.

Control site locations shall be surveyed in, and monthly sampling should be taken at, in a way to ensure spatial variations are minimised.

Groundwater Baseline Study

At quarterly intervals for duration of at least 1 year the groundwater quality at each of the seven control sites shall be sampled for:

- Nitrogen
- Phosphorous
- E.coli

The Consent Holder shall establish seven control sites at the following locations:

- Top of the catchment;
- Bottom of the catchment near the confluence of the Hakataramea and Waitaki Rivers;
- Two non-irrigated properties (one up gradient and one down gradient);
- Two existing irrigated properties (one up gradient and one down gradient);
- A gaining Tributary;

The down gradient wells installed at each control site shall be close to the Hakataramea River in a reach that is gaining from groundwater and at a distance approximately 10 m from the river bed.

This consent authorises the taking of groundwater at each of the control sites for the purpose of the baseline survey and on-going monitoring.

Hakataramea Valley Review Condition

[]7. The Canterbury Regional Council may, within a period of one month from receipt of any report referred to in these conditions serve notice of its intention to review the conditions of this consent for the purpose of:

- (a) dealing with any adverse effect on water quality;
- (b) dealing with any adverse effect on target native fish and salmonid
- (c) reviewing the appropriateness of monitoring regimes and monitoring frequencies in Appendix A.
- (d) Dealing with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
- (e) To require the consent holder to adopt the best practicable option to mitigate any adverse effect upon the environment.

Farm Management Plan

[]. 8.

- (a) Prior to exercise of this consent, the consent holder shall prepare and submit to the Canterbury Regional Council a Farm Management Plan.
- (b) The Farm Management Plan shall provide details of the practices and procedures to be put into place manage the environmental effects arising from the use of the water within the irrigated area, in order to ensure compliance with the conditions of consent and to minimise the potential for adverse effects on the environment arising from the exercise of this consent.
- (c) A Farm Management Plan shall be prepared and shall address the following objectives:
 - To achieve technically efficient use of water, minimising runoff and drainage;
 - To minimise contamination of groundwater and surface water, particularly in terms of faecal contamination, nitrogen and phosphorus;
 - To minimise nutrient losses to water while managing soil fertility to optimise pasture and crop productivity;
 - To minimise adverse effects on groundwater and surface water levels;
 - Soil in good physical condition;
 - To minimise adverse effects on water bodies and riparian areas through healthy riparian margins;
 - To safeguard significant indigenous biodiversity and ecosystem values within the Scheme area;
 - To provide information to the consent holder including land use, area irrigated, stock numbers, and fertiliser use.
 - Procedures to ensure the preparation, implementation, regular review, updating of the Farm Management Plan.
- (d) An audit shall be undertaken by an appropriately qualified person to determine compliance by the consent holder with the provisions of the Farm Management Plan. The audit shall take place each year for the first 3 years after taking of water commences under this consent and thereafter at least once every 5 years. A copy of the audit shall be provided to the Canterbury

Regional Council: attention the Compliance and Enforcement Manager.and shall carry out the audit type clause. Shall make recommendations and shall carry out the recommendations

Fencing

[] .9.

Within the irrigated area:

- (a) Permanent fencing shall be erected at a minimum setback distance of 12 metres from the edge of any natural, permanently flowing, surface water feature.
- (b) Where practicable, riparian planting shall be carried out within fenced areas.
- (c) Temporary fencing will be erected when stock are grazing areas of the property where there is access to other waterways, excluded from condition 7(a) above.
- (d) All fencing will be maintained in a good state of repair.

Shelter Belts

[] .10.

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

[] **Fish screen – modified as below:**

- (a) Water shall only be taken when a fish screen with a maximum mesh width and height of 3 millimetres or maximum slot width and height of 2mm is operated and maintained across the intake to ensure that fish and fish fry are prevented from passing through the intake screen;
- (b) The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face; and
- (c) The fish screen shall be designed and installed in general accordance with Fish Screening: good practice guidelines for Canterbury, NIWZ Client Report : CHC2007. 092, October 2007 and will ensure that:

- (i) the majority of the screen surface is oriented parallel to the direction of water flow;
 - (ii) where practicable, the screen is positioned in the water column a minimum of 300 millimetres above the bed of the waterway and a minimum of one screen radius from the surface of the water;
 - (iii) the approach velocity perpendicular to the face of the screen shall not exceed 0.06 metres per second if no self-cleaning mechanism exists, or 0.12 metres per second if a self-cleaning mechanism is operational; and
 - (iv) the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
- (d) The fish screen specified in Condition (Y) shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Condition (Y)(a)-(c)(iv) of this consent is achieved. Prior to the installation of the fish screen, a report containing final design plans and illustrating how the fish screen will meet the required design criteria, and an operation and maintenance plan for the fish screen shall be provided to Environment Canterbury, Attention: RMA Compliance and Enforcement Manager;
- (e) A certificate shall be provided to Environment Canterbury by the designer or supplier of the fish screen to certify that the fish screen has been installed in accordance with the details provided to Environment Canterbury in accordance with Condition (6)(a) of this consent; and (c) The fish screen shall be maintained in good working order. Records shall be kept of all inspections and maintenance, and those records shall be provided to Environment Canterbury upon request.

[] Flow meter – pumped.

- (a) The consent holder shall, before the implementation of the consent:
- (iv) install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent as part of the pump outlet plumbing, or within the mainline distribution system, at a location(s) that will ensure the total take of water is measured; and
 - (v) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes and have the capacity to hold at least one season's data of water taken as specified in clauses (b) (i), or which is telemetered, as specified in clause (b)(ii).

- (b) The water meter and recording device(s) shall be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall:
 - (i) store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which shall be downloaded and stored in a commonly used format and provide to the Council in a form and to a standard specified in writing by the Council; or
 - (ii) be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted.
- (c) The water meter and recording device(s) shall be accessible to the Council at all times for inspection and/or data retrieval.
- (d) The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.
- (e) All practicable measures shall be taken to ensure that the water meter and recording device(s) are at all times fully functional and have an accuracy standard of $\pm 5\%$.

[] Certification.

Within one month of the installation of the measuring or recording device(s) or any subsequent replacement measuring or recording device(s), and at five-yearly intervals thereafter, and at any time when requested by the Council, the consent holder shall provide a certificate to the Council (Attention: RMA Compliance and Enforcement Manager), signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

- (a) each measuring and recording device(s) is installed in accordance with the manufacturers specifications; and
- (b) data from the recording device can be readily accessed and/or retrieved in accordance with the conditions above.

[] Backflow prevention – surface water

- (a) If the irrigation system used to distribute water taken in terms of this permit is used to distribute effluent, fertiliser or any other added contaminant, a backflow preventer manufactured in accordance with AS 2845.1 (1998) or the American Society of Sanitary Engineers standards shall be installed within the pump outlet plumbing or within the mainline, to prevent the backflow of water into the waterway.

- (b) The backflow preventer shall be tested to the standard set out in AS 2845.3 (1993) or an equivalent method within one month of its installation and annually thereafter by a suitably qualified person. A test report shall be provided to the Canterbury Regional Council, attention RMA Compliance and Enforcement Manager within two weeks of each inspection.

[] Efficient use of water.

The consent holder shall take all practicable steps to:

- (i) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity. In this condition field capacity means the soil moisture content in the crop root zone after drainage (1-3 days) after thorough wetting (such as a large rainfall event that exceeds the root zone water holding capacity when the macro pores contain air and micro pores water); and
- (ii) Avoid leakage from pipes and structures; and
- (iii) Avoid the application of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

~~**[] Review.**~~

~~The Canterbury Regional Council may, once per year, on any of the last 5 working days of June serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.~~

[] Lapsing date.

The lapsing date for the purposes of section 125 shall be between 5 years and 5 years three months, date set for each quarter.

[] A 35 year duration is requested.

CRC051768 – To take and use water from two bores adjacent the Hakataramea River at a rate of 26 L/s for the irrigation of 40 hectares of crops and pasture

[] Location of take – groundwater.

Water may be taken only from bore I40/0003, 1,000 millimetres diameter and three metres deep, at or about map reference I40:2077-1569 and bore I40/0159, 800 millimetres diameter and 2.8 metres deep, at or about map reference I40:2101-1568

[] Rate of take and annual volume.

Water may be taken at a rate not exceeding 26 litres per second, with a volume not exceeding 11,232 cubic metres in any period of five consecutive days, and 212,000 cubic metres between 1st July and the following 30th June.

[] **Hakataramea River “A” permit minimum flow.**

Option 1.

For the period September to March inclusive the taking water under this permit shall cease whenever the flows in the Hakataramea River at the SH82 recorder site (map reference I40:112-062) as estimated by the Canterbury Regional Council falls below 500 L/s.

For the period April to August inclusive the taking water under this permit shall cease whenever the flows in the Hakataramea River at the SH82 recorder site (map reference I40:112-062) as estimated by the Canterbury Regional Council falls below 750 L/s.

Option 2.

For the period September to March inclusive the taking of water under this permit shall be subject to the following restrictions:

- (c) When flows are between 1500 L/s and 500 L/s taking shall be reduced by up to 50% of the peak rate of take.
- (d) When flows are below 500L/s taking shall cease.

For the period April to August inclusive the taking of water under this permit shall be subject to the following restrictions:

- (c) When flows are between 1500 L/s and 750 L/s taking shall be reduced by up to 50% of the peak rate of take.
- (d) When flows are below 750L/s taking shall cease.

Flows shall be estimated at the Hakataramea River recorder site (map reference I40:112-062) by the Canterbury Regional Council and expressed in cubic metres per second.

The water taken in condition () shall only be used for irrigation of crop and pasture, as described in the application, on the area of land shown in attached plan “RPNZ Properties Ltd – Area to be Irrigated”

[] Hakataramea valley water quality management.

Nitrates- Nitrogen

[] .1.

- (h) With the exception of the first period ending 30 June during which this consent is first exercised, for each preceding 12 month period ending 30 June:
 - (vi) An approved method shall be used to model the nitrate-nitrogen concentration in the soil drainage water below the plant root zone and to prepare a nutrient budget for the subject land for that prior 12 month period;
 - (vii) Records shall be maintained throughout the year of the farm management practices and associated data that will be used as input to the approved method;
 - (viii) Predictions shall be made of the farm management practices that will be used for the following 12 month period to provide input data to the approved method taking regard of the need to reduce nitrate leaching below the plant root zone where possible.
- (i) A record of the predicted and measured input data, the calculations undertaken and the calculated nitrate-nitrogen concentration in the soil drainage water below the plant root zone in accordance with clause (a) shall be:
 - (v) prepared by 31 August each year;
 - (vi) certified as an accurate record by a suitably qualified person;
 - (vii) maintained for the property for the duration of the consent; and
 - (viii) Provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 September each year, or upon request.
- (j) For the purposes of this condition an approved method is
 - (i) 'Overseer' (AgResearch)
 - (ii) The Soil Plant Atmosphere Model (SPASMO- HortResearch)
 - (iii) Any other method approved by the Canterbury Regional Council.
- (k) For the purposes of this condition, the subject land means the area that is irrigated between 1 July and 30 June of the following year.

- (l) Between the 1st September and 30th November of each year a groundwater sample ('the Sample') will be taken from the shallowest bore on the property to which this consent applies; and
- (m) The Sample shall be analysed by a laboratory that is certified for that method of analysis for nitrate-nitrogen; and
- (n) The results of this analysis shall be provided to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager by the 30th January of each year.

[] .2.

- (c) Fertiliser shall be applied in accordance with a nationally recognized quality assurance program for fertilizer application.
- (d) For the purposes of this condition a quality assurance program is:
 - (i) The New Zealand Fertiliser Manufacturers' Research Association Code of Practise for Fertiliser Use;
 - (ii) The Code of Practise for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07;
 - (iii) Any other method approved by the Canterbury Regional Council.

Nutrient Budget

- [] .3 A nutrient budget is prepared and implemented for all properties receiving water from the Scheme;

Irrigation Infrastructure

[] 4.1 All new irrigation infrastructures shall be designed and accredited by a qualified professional, and installed in accordance with the accredited design. The design shall take into account the specific requirements of the property's soil types.

[] 4.2 If a consent holder is using existing irrigation infrastructure they shall obtain an evaluation report prepared by a certified irrigation evaluator. The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation 2005. This report shall be obtained within 3 months of the first exercise of the consent. Any recommendations identified in the report shall implement within 12 months from the date of receipt of the report. A copy of the report shall be given to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.

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Baseline and On-going Monitoring

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Objective and Purposes of the Hakataramea Monitoring Plan

- .1 The objective of all survey and monitoring programmes shall be to obtain a definitive and representative assessment of any effects of the use of water authorised by this consent on the state of the environment of the Hakataramea Valley.
- .2 Without limiting this objective, the purpose of the monitoring plan is to provide information which may be used to determine whether the exercise of this consent is a cause or contributing cause to changes in:
 - (e) Periphyton in the Hakataramea River;
 - (f) Macro-invertebrates species in the surface water bodies;
 - (g) Target native fish and salmonids; and the
 - (h) Physical and chemical ground and surface water quality.
- .3 This is a catchment wide survey.
- .4 PROVIDED THAT compliance by this consent holder with one or more parts of this condition shall be deemed to be compliance by the following consent holders of the same part(s):
 - RPNZ Properties Ltd CRC reference 051767, 051768 & 051769
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 - RW & ME Sutton CRC reference 071114
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 - Haka Valley Irrigation Ltd CRC reference 032177
- .5 PROVIDED ALSO THAT compliance by a Water Quality Group representing all the consent holders who are the subject of this condition shall be deemed to be compliance by the consent holder.

Baseline surveys to be undertaken prior to taking of water for irrigation purposes

- .1 Subject to sub-clause [.6] before the first exercise of this consent the consent holder shall provide to the Regional Council a copy of the a baseline survey plan prepared in accordance with the sampling design specified in Schedule A.
- .2 The baseline surveys shall be undertaken over a period of one year and completed within a period of two years from the date consent was granted.

- .3 The baseline survey plan shall be designed and carried out using standard scientifically accepted methods by suitably qualified personnel with appropriate (recognised) experience in the matters being surveyed.
- .4 Timeframes specified in the Surface Water Baseline Study, Groundwater Baseline Study and the Land Baseline Study shall be co-ordinated by the personnel engaged.
- .5 The surveys may include any matters which the personnel engaged to design and carry out the baseline surveys consider necessary or more desirable and which are in addition to, or instead of, the provisions in Appendix A.
- .6 CRC050940 [RG & ZL Pringle] and CRC 051767, CRC051768 and CRC051769 [RPNZ] may take water under the terms of this consent from the date that consent is granted. However, taking must cease if after two years from the grant of consent the baseline survey has not been completed in accordance with this condition. Taking may only resume once the baseline survey has been completed.

On-Going Monitoring

- .1 Within three months of the completion of all of the baseline surveys the results of each of baseline survey's shall be assessed to determine the location, sampling and frequency of on-going monitoring throughout the exercise of these consents and any analysis that will be undertaken on the basis of the proposed monitoring information in Appendix A
- .2 All monitoring programmes shall be designed and carried out using standard scientifically accepted methods by suitably qualified personnel with appropriate (recognised) experience in the matters being monitored.
- .3 On-going monitoring time intervals shall be re-evaluated and modified as appropriate.
- .4 Appendix A shall be reviewed annually and changed as necessary on the recommendation of the personnel engaged to design and carry out the monitoring programme following monitoring results.
- .5 The consent holder shall provide in advance of implantation to the Regional Council a copy of the annual monitoring plan prepared in accordance with this condition.
- .6 At least once every five for the duration of the consent the consent holder shall undertake an audit of landuse changes in accordance with the Landuse Inventory in Appendix A identifying gross changes.

Reporting of the Baseline Surveys and Annual Monitoring

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

- (i) Summarise all the data collected as required under the conditions of this consent (including graphical presentation and statistical summations of monitoring data) and analyse the information in terms of compliance of this consent.
- (j) Highlight and discuss any important environmental trends in the results.
- (k) Compare results obtained over the reporting period with the results obtained from previous reporting periods.
- (l) Audit compliance by consent holders and water users with the provisions of their Farm Management Plans in accordance with condition [].
- (m) Report and discuss any operational difficulties, changes or improvements to the Farm Management Plan which would result in a notable variation of water quality.
- (n) List any maintenance works needed, proposed or undertaken to ensure compliance with the conditions of the consent.
- (o) Report detailing any remedial steps to be incorporated by amendment to the Farm Management Plan in response to the results of the baseline survey and monitoring program.
- (p) Report detailing any changes to Appendix A.

Within 3 months of completion of each of the surveys or monitoring reports the consent holder shall provide copies of survey and monitoring reports and results to the Canterbury Regional Council, the Director-General of the Department of Conservation, Te Runanga o Ngai Tahu and Central South Island Fish and Game Council.

Schedule A

The Baseline Study and On-Going Monitoring shall include the following elements:

Land Baseline Study

Daily monitoring of:

- air temperature
 - rainfall
 - wind speed and direction
 - evapo-transpiration (representative of catchment)
 - sunshine hours
- at one control site for at least one year.

Monthly monitoring of:

- soil moisture
- evapo-transpiration
- leachate quality (e.g. N, P)

- at four control sites located on land, which may include but which is not limited to, land which is the subject of this consent. One control site shall be a non-irrigated cropping block. One control site shall be on an existing irrigated cropping block. The remaining two controls sites shall be located on non-irrigated and irrigated grazing blocks.

Land use Inventory

A survey of agricultural and horticultural landuse within the Hakataramea Valley and estimate the area of land used for

- Inventory of land use:
 - Cropping production,
 - Livestock including sheep, beef, deer and dairying
 - Mixed arable and livestock

Advisory Note: This inventory should include changes that occur seasonally on these lands. For example, cropping occurs only in certain parts of the year, and dairying practices can also change seasonally, depending on the farmer.

- Inventory of land use practices:
 - Cropping Methods i.e. harvesting, planting, and fallow times in between.
 - Stock grazing/breeding programs
 - Audit of fertilizer use (nutrient budgets – Overseer/Spasmo)
 - Animal waste management
 - Percentage of streams fenced and area of margins between fence and stream bank
 - Survey of current stock access to stream beds and banks, including routine stock crossing i.e. dairy cows making way to cow shed.

A desktop investigation on catchment wide land classification, specifically:

- Geology
- Land class (e.g. LUC)
- Topography (e.g. steep/shallow)
- Non-agricultural/horticultural land use and estimated areas of these (e.g. forestry, reserve land etc.)

Advisory Note: The purpose of this desktop investigation is provide a summary of those catchment features which may affect the water quality of the Hakataramea River or its tributaries. The catchment feature could either be impacted by land use practices (for example intensive grazing on highly erodible soils) or the catchment feature itself could contribute an effect on the waterway when the land use practice is employed (such as increased runoff when irrigating on steep slopes).

Surface Water Baseline Study

From the control sites at monthly intervals for duration of at least 1 year the surface water quality shall be sampled for:

- Dissolved Inorganic Nitrogen (DIN)
- Dissolved Organic Nitrogen (DON)
- Total Nitrogen (TN)
- Dissolved Reactive Phosphorous (DRP)
- Total Phosphorus (TP)
- Total Suspended Sediment (TSS)
- Conductivity
- pH
- Temperature
- Dissolved Oxygen
- Clarity/Turbidity/Absorbance
- E.coli/F.coli
- Periphyton percentage cover (filaments and mats) and the ratio of dead to living species.

Flow depth and velocity shall be obtained at each site when the sample is collected.

On four occasions during the year, quantitative sampling should be carried out to provide an accurate description of:

- Macro-invertebrate species present (MCI) (%EPT);
- Target native fish and salmonid species (counts, type, presence/absence, tolerances);
- Plant species;
- Stream bed conditions (e.g. degraded/eroded) adjacent to the control sites;
- Riparian margins adjacent to the control sites; and an
- Observation of terrestrial biodiversity in the margins (presence/absence, tolerances).

Control Sites

Three control sites shall be established in the following tributaries:

- Grampian Stream (representative of an up-catchment tributary)
- Deadman Stream (representative of a poor water quality tributary)
- Kirklisten Stream (representative of a tributary with irrigation already occurring?)

Four control sites along the Hakataramea River. One site will be located in the upper reaches of the river, with the three remaining sites located at increasing downstream intervals.

Control site locations shall be surveyed in, and monthly sampling should be taken at, in a way to ensure spatial variations are minimised.

Groundwater Baseline Study

At quarterly intervals for duration of at least 1 year the groundwater quality at each of the seven control sites shall be sampled for:

- Nitrogen
- Phosphorous
- E.coli

The Consent Holder shall establish seven control sites at the following locations:

- Top of the catchment;
- Bottom of the catchment near the confluence of the Hakataramea and Waitaki Rivers;
- Two non-irrigated properties (one up gradient and one down gradient);
- Two existing irrigated properties (one up gradient and one down gradient);
- A gaining Tributary;

The down gradient wells installed at each control site shall be close to the Hakataramea River in a reach that is gaining from groundwater and at a distance approximately 10 m from the river bed.

This consent authorises the taking of groundwater at each of the control sites for the purpose of the baseline survey and on-going monitoring.

Hakataramea Valley Review Condition

[].7. The Canterbury Regional Council may, within a period of one month from receipt of any report referred to in these conditions serve notice of its intention to review the conditions of this consent for the purpose of:

- (f) dealing with any adverse effect on water quality;
- (g) dealing with any adverse effect on target native fish and salmonid
- (h) reviewing the appropriateness of monitoring regimes and monitoring frequencies in Appendix A.
- (i) Dealing with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
- (j) To require the consent holder to adopt the best practicable option to mitigate any adverse effect upon the environment.

Farm Management Plan

[]. 8.

- (e) Prior to exercise of this consent, the consent holder shall prepare and submit to the Canterbury Regional Council a Farm Management Plan.
- (f) The Farm Management Plan shall provide details of the practices and procedures to be put into place manage the environmental effects arising from the use of the water within the irrigated area, in order to ensure compliance with the conditions of consent and to minimise the potential for adverse effects on the environment arising from the exercise of this consent.
- (g) A Farm Management Plan shall be prepared and shall address the following objectives:
- To achieve technically efficient use of water, minimising runoff and drainage;
 - To minimise contamination of groundwater and surface water, particularly in terms of faecal contamination, nitrogen and phosphorus;
 - To minimise nutrient losses to water while managing soil fertility to optimise pasture and crop productivity;
 - To minimise adverse effects on groundwater and surface water levels;
 - Soil in good physical condition;
 - To minimise adverse effects on water bodies and riparian areas through healthy riparian margins;
 - To safeguard significant indigenous biodiversity and ecosystem values within the Scheme area;
 - To provide information to the consent holder including land use, area irrigated, stock numbers, and fertiliser use.
 - Procedures to ensure the preparation, implementation, regular review, updating of the Farm Management Plan.
- (h) An audit shall be undertaken by an appropriately qualified person to determine compliance by the consent holder with the provisions of the Farm Management Plan. The audit shall take place each year for the first 3 years after taking of water commences under this consent and thereafter at least once every 5 years. A copy of the audit shall be provided to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.and shall carry out the audit type clause. Shall make recommendations and shall carry out the recommendations

Fencing

[] .9.

Within the irrigated area:

- (e) Permanent fencing shall be erected at a minimum setback distance of 12 metres from the edge of any natural, permanently flowing, surface water feature.
- (f) Where practicable, riparian planting shall be carried out within fenced areas.
- (g) Temporary fencing will be erected when stock are grazing areas of the property where there is access to other waterways, excluded from condition 7(a) above.
- (h) All fencing will be maintained in a good state of repair.

Shelter Belts

[] .10.

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

[] Straight Length of Pipe

- (a) The consent holder shall, before the implementation of the consent, install an easily accessible straight pipe(s), with no fittings or obstructions on it, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system for the purposes of enabling the Council to attach a water meter to check compliance with Condition ().
- (b) Clause (a) shall not apply where an electromagnetic water meter is installed pursuant to Condition () and certification of this is provided pursuant to Condition ().

[] Flow meter – pumped.

- (b) The consent holder shall, before the implementation of the consent:
 - (i) install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus

five percent as part of the pump outlet plumbing, or within the mainline distribution system, at a location(s) that will ensure the total take of water is measured; and

- (ii) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes and have the capacity to hold at least one season's data of water taken as specified in clauses (b) (i), or which is telemetered, as specified in clause (b)(ii).
- (c) The water meter and recording device(s) shall be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall:
- (i) store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which shall be downloaded and stored in a commonly used format and provide to the Council in a form and to a standard specified in writing by the Council; or
 - (ii) be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted.
- (d) The water meter and recording device(s) shall be accessible to the Council at all times for inspection and/or data retrieval.
- (e) The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.
- (f) All practicable measures shall be taken to ensure that the water meter and recording device(s) are at all times fully functional and have an accuracy standard of $\pm 5\%$.

[] Certification.

Within one month of the installation of the measuring or recording device(s) or any subsequent replacement measuring or recording device(s), and at five-yearly intervals thereafter, and at any time when requested by the Council, the consent holder shall provide a certificate to the Council (Attention: RMA Compliance and Enforcement Manager), signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

- (a) each measuring and recording device(s) is installed in accordance with the manufacturers specifications; and
- (b) data from the recording device can be readily accessed and/or retrieved in accordance with the conditions above.

[] Backflow prevention – groundwater.

- (a) If the irrigation system used to distribute water taken in terms of this permit is used to distribute effluent, fertiliser or any other added contaminant, a backflow preventer manufactured in accordance with AS 2845.1 (1998) or the American Society of Sanitary Engineers standards shall be installed within the pump outlet plumbing or within the mainline, to prevent the backflow of water into the bore.
- (b) The backflow preventer shall be tested to the standard set out in AS 2845.3 (1993) or an equivalent method within one month of its installation and annually thereafter by a suitably qualified person. A test report shall be provided to the Canterbury Regional Council, attention RMA Compliance and Enforcement Manager within two weeks of each inspection.

[] Standing water level.

- (a) Where reasonably required, the taking of water in terms of this permit shall cease for a period of up to 48 hours on notice from the Council, to allow measurement of groundwater levels; and
- (b) The Council will provide not less than seven working days notice of its requirement to measure groundwater levels in accordance with this condition. A consent holder may refuse to allow measurement under this condition if the required notice has not been given.

[] Efficient use of water.

The consent holder shall take all practicable steps to:

- (i) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity. In this condition field capacity means the soil moisture content in the crop root zone after drainage (1-3 days) after thorough wetting (such as a large rainfall event that exceeds the root zone water holding capacity when the macro pores contain air and micro pores water); and
- (ii) Avoid leakage from pipes and structures; and
- (iii) Avoid the application of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

~~[] Review.~~

~~The Canterbury Regional Council may, once per year, on any of the last 5 working days of June serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.~~

[] Lapsing date.

The lapsing date for the purposes of section 125 shall be between 5 years and 5 years three months, date set for each quarter.

[] A 35 year duration is requested.

CRC051769 – To take and use water from three bores adjacent the Hakataramea River at a rate of 20 L/s for the irrigation of 40 hectares of crops and pasture

[] Location of take – groundwater.

Water may be taken only from bore I40/0528, 500 millimetres diameter and 10 metres deep, at or about map reference I40:147-102, bore I40/0440, 500 millimetres diameter and 10 metres deep, at or about map reference I40:144-106 and bore I40/0441, 500 millimetres diameter and 10 metres deep, at or about map reference I40:150-106.

[] Rate of take and annual volume.

Water may be taken at a rate not exceeding 26 litres per second, with a volume not exceeding 11,232 cubic metres in any period of five consecutive days, and 12,069 cubic metres between 1st July and the following 30th June.

[] Hakataramea River “A” permit minimum flow.

Option 1.

For the period September to March inclusive the taking water under this permit shall cease whenever the flows in the Hakataramea River at the SH82 recorder site (map reference I40:112-062) as estimated by the Canterbury Regional Council falls below 500 L/s.

For the period April to August inclusive the taking water under this permit shall cease whenever the flows in the Hakataramea River at the SH82 recorder site (map reference I40:112-062) as estimated by the Canterbury Regional Council falls below 750 L/s.

Option 2.

For the period September to March inclusive the taking of water under this permit shall be subject to the following restrictions:

- (a) When flows are between 1500 L/s and 500 L/s taking shall be reduced by up to 50% of the peak rate of take.
- (b) When flows are below 500L/s taking shall cease.

For the period April to August inclusive the taking of water under this permit shall be subject to the following restrictions:

- (a) When flows are between 1500 L/s and 750 L/s taking shall be reduced by up to 50% of the peak rate of take.

(b) When flows are below 750L/s taking shall cease.

Flows shall be estimated at the Hakataramea River recorder site (map reference I40:112-062) by the Canterbury Regional Council and expressed in cubic metres per second.

[] Land use and area to be irrigated.

The water taken in condition () shall only be used for irrigation of crop and pasture, as described in the application, on the area of land shown in attached plan "RPNZ Properties Ltd – Area to be Irrigated"

[] Hakataramea valley water quality management.

Nitrates- Nitrogen

[] .1.

- (o) With the exception of the first period ending 30 June during which this consent is first exercised, for each preceding 12 month period ending 30 June:
 - (ix) An approved method shall be used to model the nitrate-nitrogen concentration in the soil drainage water below the plant root zone and to prepare a nutrient budget for the subject land for that prior 12 month period;
 - (x) Records shall be maintained throughout the year of the farm management practices and associated data that will be used as input to the approved method;
 - (xi) Predictions shall be made of the farm management practices that will be used for the following 12 month period to provide input data to the approved method taking regard of the need to reduce nitrate leaching below the plant root zone where possible.
- (p) A record of the predicted and measured input data, the calculations undertaken and the calculated nitrate-nitrogen concentration in the soil drainage water below the plant root zone in accordance with clause (a) shall be:
 - (ix) prepared by 31 August each year;
 - (x) certified as an accurate record by a suitably qualified person;
 - (xi) maintained for the property for the duration of the consent; and
 - (xii) Provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 September each year, or upon request.

- (q) For the purposes of this condition an approved method is
 - (i) 'Overseer' (AgResearch)
 - (ii) The Soil Plant Atmosphere Model (SPASMO- HortResearch)
 - (iii) Any other method approved by the Canterbury Regional Council.
- (r) For the purposes of this condition, the subject land means the area that is irrigated between 1 July and 30 June of the following year.
- (s) Between the 1st September and 30th November of each year a groundwater sample ('the Sample') will be taken from the shallowest bore on the property to which this consent applies; and
- (t) The Sample shall be analysed by a laboratory that is certified for that method of analysis for nitrate-nitrogen; and
- (u) The results of this analysis shall be provided to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager by the 30th January of each year.

[] .2.

- (e) Fertiliser shall be applied in accordance with a nationally recognized quality assurance program for fertilizer application.
- (f) For the purposes of this condition a quality assurance program is:
 - (i) The New Zealand Fertiliser Manufacturers' Research Association Code of Practise for Fertiliser Use;
 - (ii) The Code of Practise for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07;
 - (iii) Any other method approved by the Canterbury Regional Council.

Nutrient Budget

- [] .3 A nutrient budget is prepared and implemented for all properties receiving water from the Scheme;

Irrigation Infrastructure

- [] 4.1 All new irrigation infrastructures shall be designed and accredited by a qualified professional, and installed in accordance with the accredited design. The design shall take into account the specific requirements of the property's soil types.
- [] 4.2 If a consent holder is using existing irrigation infrastructure they shall obtain an evaluation report prepared by a certified irrigation evaluator. The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation 2005. This report shall be obtained within 3

months of the first exercise of the consent. Any recommendations identified in the report shall implement within 12 months from the date of receipt of the report. A copy of the report shall be given to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.

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Baseline and On-going Monitoring

[]6

Objective and Purposes of the Hakataramea Monitoring Plan

- .1 The objective of all survey and monitoring programmes shall be to obtain a definitive and representative assessment of any effects of the use of water authorised by this consent on the state of the environment of the Hakataramea Valley.
- .2 Without limiting this objective, the purpose of the monitoring plan is to provide information which may be used to determine whether the exercise of this consent is a cause or contributing cause to changes in:
- (a) Periphyton in the Hakataramea River;
 - (b) Macro-invertebrates species in the surface water bodies;
 - (c) Target native fish and salmonids; and the
 - (d) Physical and chemical ground and surface water quality.
- .3 This is a catchment wide survey.
- .4 PROVIDED THAT compliance by this consent holder with one or more parts of this condition shall be deemed to be compliance by the following consent holders of the same part(s):
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.2 The baseline surveys shall be undertaken over a period of one year and completed within a period of two years from the date consent was granted.

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

.4 Timeframes specified in the Surface Water Baseline Study, Groundwater Baseline Study and the Land Baseline Study shall be co-ordinated by the personnel engaged.

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

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

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

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

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- (r) Highlight and discuss any important environmental trends in the results.
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- (t) Audit compliance by consent holders and water users with the provisions of their Farm Management Plans in accordance with condition [].
- (u) Report and discuss any operational difficulties, changes or improvements to the Farm Management Plan which would result in a notable variation of water quality.
- (v) List any maintenance works needed, proposed or undertaken to ensure compliance with the conditions of the consent.
- (w) Report detailing any remedial steps to be incorporated by amendment to the Farm Management Plan in response to the results of the baseline survey and monitoring program.
- (x) Report detailing any changes to Appendix A.

Within 3 months of completion of each of the surveys or monitoring reports the consent holder shall provide copies of survey and monitoring reports and results to the Canterbury Regional Council , the Director-General of the Department of Conservation, Te Runanga o Ngai Tahu and Central South Island Fish and Game Council.

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- rainfall
 - wind speed and direction
 - evapo-transpiration (representative of catchment)
 - sunshine hours
- at one control site for at least one year.

Monthly monitoring of:

- soil moisture
 - evapo-transpiration
 - leachate quality (e.g. N, P)
- at four control sites located on land, which may include but which is not limited to, land which is the subject of this consent. One control site shall be a non-irrigated cropping block. One control site shall be on an existing irrigated cropping block. The remaining two controls sites shall be located on non-irrigated and irrigated grazing blocks.

Land use Inventory

A survey of agricultural and horticultural landuse within the Hakataramea Valley and estimate the area of land used for

- Inventory of land use:
 - Cropping production,
 - Livestock including sheep, beef, deer and dairying
 - Mixed arable and livestock

Advisory Note: This inventory should include changes that occur seasonally on these lands. For example, cropping occurs only in certain parts of the year, and dairying practices can also change seasonally, depending on the farmer.

- Inventory of land use practices:
 - Cropping Methods i.e. harvesting, planting, and fallow times in between.
 - Stock grazing/breeding programs
 - Audit of fertilizer use (nutrient budgets – Overseer/Spasmo)
 - Animal waste management
 - Percentage of streams fenced and area of margins between fence and stream bank
 - Survey of current stock access to stream beds and banks, including routine stock crossing i.e. dairy cows making way to cow shed.

A desktop investigation on catchment wide land classification, specifically:

- Geology
- Land class (e.g. LUC)
- Topography (e.g. steep/shallow)
- Non-agricultural/horticultural land use and estimated areas of these (e.g. forestry, reserve land etc.)

Advisory Note: The purpose of this desktop investigation is provide a summary of those catchment features which may affect the water quality of the Hakataramea River or its tributaries. The catchment feature could either be impacted by land use practices (for example intensive grazing on highly erodible soils) or the catchment feature itself could contribute an effect on the waterway when the land use practice is employed (such as increased runoff when irrigating on steep slopes).

Surface Water Baseline Study

From the control sites at monthly intervals for duration of at least 1 year the surface water quality shall be sampled for:

- Dissolved Inorganic Nitrogen (DIN)
- Dissolved Organic Nitrogen (DON)
- Total Nitrogen (TN)
- Dissolved Reactive Phosphorous (DRP)
- Total Phosphorus (TP)
- Total Suspended Sediment (TSS)
- Conductivity
- pH
- Temperature
- Dissolved Oxygen
- Clarity/Turbidity/Absorbance
- E.coli/F.coli
- Periphyton percentage cover (filaments and mats) and the ratio of dead to living species.

Flow depth and velocity shall be obtained at each site when the sample is collected.

On four occasions during the year, quantitative sampling should be carried out to provide an accurate description of:

- Macro-invertebrate species present (MCI) (%EPT);
- Target native fish and salmonid species (counts, type, presence/absence, tolerances);
- Plant species;
- Stream bed conditions (e.g. degraded/eroded) adjacent to the control sites;
- Riparian margins adjacent to the control sites; and an
- Observation of terrestrial biodiversity in the margins (presence/absence, tolerances).

Control Sites

Three control sites shall be established in the following tributaries:

- Grampian Stream (representative of an up-catchment tributary)

- Deadman Stream (representative of a poor water quality tributary)
- Kirklisten Stream (representative of a tributary with irrigation already occurring?)

Four control sites along the Hakataramea River. One site will be located in the upper reaches of the river, with the three remaining sites located at increasing downstream intervals.

Control site locations shall be surveyed in, and monthly sampling should be taken at, in a way to ensure spatial variations are minimised.

Groundwater Baseline Study

At quarterly intervals for duration of at least 1 year the groundwater quality at each of the seven control sites shall be sampled for:

- Nitrogen
- Phosphorous
- E.coli

The Consent Holder shall establish seven control sites at the following locations:

- Top of the catchment;
- Bottom of the catchment near the confluence of the Hakataramea and Waitaki Rivers;
- Two non-irrigated properties (one up gradient and one down gradient);
- Two existing irrigated properties (one up gradient and one down gradient);
- A gaining Tributary;

The down gradient wells installed at each control site shall be close to the Hakataramea River in a reach that is gaining from groundwater and at a distance approximately 10 m from the river bed.

This consent authorises the taking of groundwater at each of the control sites for the purpose of the baseline survey and on-going monitoring.

Hakataramea Valley Review Condition

[].7. The Canterbury Regional Council may, within a period of one month from receipt of any report referred to in these conditions serve notice of its intention to review the conditions of this consent for the purpose of:

- (k) dealing with any adverse effect on water quality;
- (l) dealing with any adverse effect on target native fish and salmonid

- (m) reviewing the appropriateness of monitoring regimes and monitoring frequencies in Appendix A.
- (n) Dealing with any adverse effects on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
- (o) To require the consent holder to adopt the best practicable option to mitigate any adverse effect upon the environment.

Farm Management Plan

[]. 8.

- (i) Prior to exercise of this consent, the consent holder shall prepare and submit to the Canterbury Regional Council a Farm Management Plan.
- (j) The Farm Management Plan shall provide details of the practices and procedures to be put into place manage the environmental effects arising from the use of the water within the irrigated area, in order to ensure compliance with the conditions of consent and to minimise the potential for adverse effects on the environment arising from the exercise of this consent.
- (k) A Farm Management Plan shall be prepared and shall address the following objectives:
 - To achieve technically efficient use of water, minimising runoff and drainage;
 - To minimise contamination of groundwater and surface water, particularly in terms of faecal contamination, nitrogen and phosphorus;
 - To minimise nutrient losses to water while managing soil fertility to optimise pasture and crop productivity;
 - To minimise adverse effects on groundwater and surface water levels;
 - Soil in good physical condition;
 - To minimise adverse effects on water bodies and riparian areas through healthy riparian margins;
 - To safeguard significant indigenous biodiversity and ecosystem values within the Scheme area;
 - To provide information to the consent holder including land use, area irrigated, stock numbers, and fertiliser use.

- Procedures to ensure the preparation, implementation, regular review, updating of the Farm Management Plan.
- (l) An audit shall be undertaken by an appropriately qualified person to determine compliance by the consent holder with the provisions of the Farm Management Plan. The audit shall take place each year for the first 3 years after taking of water commences under this consent and thereafter at least once every 5 years. A copy of the audit shall be provided to the Canterbury Regional Council: attention the Compliance and Enforcement Manager. and shall carry out the audit type clause. Shall make recommendations and shall carry out the recommendations

Fencing

[] .9.

Within the irrigated area:

- (i) Permanent fencing shall be erected at a minimum setback distance of 12 metres from the edge of any natural, permanently flowing, surface water feature.
- (j) Where practicable, riparian planting shall be carried out within fenced areas.
- (k) Temporary fencing will be erected when stock are grazing areas of the property where there is access to other waterways, excluded from condition 7(a) above.
- (l) All fencing will be maintained in a good state of repair.

Shelter Belts

[] .10.

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

[] **Straight Length of Pipe**

- (a) The consent holder shall, before the implementation of the consent, install an easily accessible straight pipe(s), with no fittings or obstructions on it, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system for the purposes of

enabling the Council to attach a water meter to check compliance with Condition ().

- (b) Clause (a) shall not apply where an electromagnetic water meter is installed pursuant to Condition () and certification of this is provided pursuant to Condition ().

[] Flow meter – pumped.

- (a) The consent holder shall, before the implementation of the consent:
 - (i) equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent as part of the pump outlet plumbing, or within the mainline distribution system, at a location(s) that will ensure the total take of water is measured; and
 - (ii) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes and have the capacity to hold at least one season's data of water taken as specified in clauses (b) (i), or which is telemetered, as specified in clause (b)(ii).
- (b) The water meter and recording device(s) shall be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall:
 - (i) store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which shall be downloaded and stored in a commonly used format and provide to the Council in a form and to a standard specified in writing by the Council; or
 - (ii) be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted.
- (c) The water meter and recording device(s) shall be accessible to the Council at all times for inspection and/or data retrieval.
- (d) The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.
- (e) All practicable measures shall be taken to ensure that the water meter and recording device(s) are at all times fully functional and have an accuracy standard of $\pm 5\%$.

[] Certification.

Within one month of the installation of the measuring or recording device(s) or any subsequent replacement measuring or recording device(s), and at five-yearly intervals thereafter, and at any time when requested by the Council, the consent holder shall provide a certificate to the Council (Attention: RMA Compliance and Enforcement Manager), signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

- (a) each measuring and recording device(s) is installed in accordance with the manufacturers specifications; and
- (b) data from the recording device can be readily accessed and/or retrieved in accordance with the conditions above.

[] Backflow prevention – groundwater.

- (a) If the irrigation system used to distribute water taken in terms of this permit is used to distribute effluent, fertiliser or any other added contaminant, a backflow preventer manufactured in accordance with AS 2845.1 (1998) or the American Society of Sanitary Engineers standards shall be installed within the pump outlet plumbing or within the mainline, to prevent the backflow of water into the bore.
- (b) The backflow preventer shall be tested to the standard set out in AS 2845.3 (1993) or an equivalent method within one month of its installation and annually thereafter by a suitably qualified person. A test report shall be provided to the Canterbury Regional Council, attention RMA Compliance and Enforcement Manager within two weeks of each inspection.

[] Standing water level.

- (a) Where reasonably required, the taking of water in terms of this permit shall cease for a period of up to 48 hours on notice from the Council, to allow measurement of groundwater levels; and
- (b) The Council will provide not less than seven working days notice of its requirement to measure groundwater levels in accordance with this condition. A consent holder may refuse to allow measurement under this condition if the required notice has not been given.

[] Efficient use of water.

The consent holder shall take all practicable steps to:

- (i) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity. In this condition field capacity means the soil moisture content in the crop root zone after drainage (1-3 days) after thorough wetting (such as a large rainfall event that exceeds the root zone water holding capacity when the macro pores contain air and micro pores water); and

- (ii) Avoid leakage from pipes and structures; and
- (iii) Avoid the application of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

~~[] Review.~~

~~The Canterbury Regional Council may, once per year, on any of the last 5 working days of June serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.~~

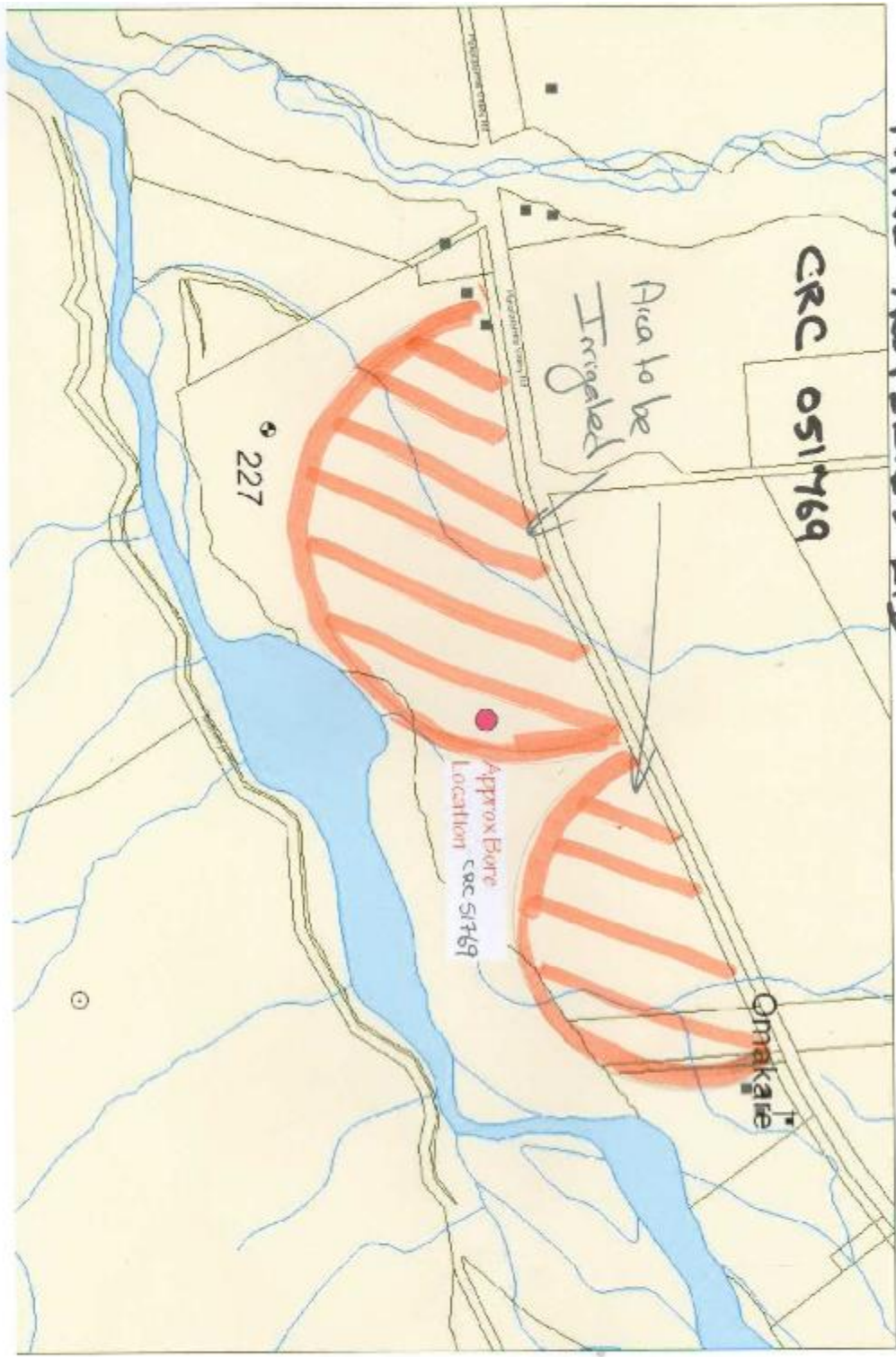
[] Lapsing date.

The lapsing date for the purposes of section 125 shall be between 5 years and 5 years three months, date set for each quarter.

[] A 35 year duration is requested.

RPNZ PROPERTIES LTD

MAP 1A



RRNZ PROPERTIES LTD

MAP 2

CRC 051768
CRC 051767

WATER TAKE /
CRC 051768

WATER TAKE CRC 051767



Irrigated Areas

