

APPLICANT: RG & ZL PRINGLE

CRC050957 – To divert water at a rate of 40 L/s from Peters Stream, and use 35 L/s for the irrigation of 120 hectares of crops and pasture

[] Location of take – surface water

Water may only be taken from Peters Stream at or about map reference NZMS 260 139: 260-337.

[] Rate of take and annual volume

- (a) Subject to all other conditions water may be diverted from Peters Stream at a rate not exceeding 40 litres per second.
- (b) Water may be taken for irrigation purposes from the diversion channel at a rate not exceeding 35 litres per second, with a volume not exceeding 3, 024 cubic metres per day and in combination with CRC050940, 528, 000 volume cubic metres between 1st July and the following 30th June.

[] Hakataramea River Minimum Flow (Water Harvesting)

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) estimated by the Canterbury Regional Council falls below 4.5 cumecs.

[] Hakataramea 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.

2.2

- (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

- .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.

[])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.
- e) List any maintenance works needed, proposed or undertaken to ensure compliance with the conditions of the consent.
- f) 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.
- g) 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 land use 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.

Farm Management Plan

[].6

- (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.

Fencing

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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 [] above.
- (d) All fencing will be maintained in a good state of repair.

Shelter Belts

[] .8

- (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.

[] Land use and area to be irrigated

The water taken in condition [] shall only be used for irrigation of crops and pasture for the grazing of sheep, beef cattle, deer and non-milking dairy cows, as described in the application, on the area of land shown in attached plan CRC050957.

[] Fish screen

- (a) Water shall only be taken when a fish screen with a maximum mesh size of 3.8 millimetres is operated and maintained across the suction pipe to ensure that fish and fish fry are prevented from passing through the screen;
- (b) 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 – diversion

- (a) The consent holder shall, prior to exercising this consent, install a water level measuring device in a location that will enable the determination of the continuous rate of flow and volume of water being diverted to within an accuracy of 10 percent.
- (b) The measuring device shall, as far as is practicable, be installed at a site likely to retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions.
- (c) The flow at the measuring site shall be gauged at least every three months whilst this consent is being exercised, and at any other time when required as determined by a site inspection, to be carried out at least once every month.
- (d) Gaugings and site inspections shall be carried out in accordance with the following manuals: Hydrologists Field Manual (NIWA 1991) and Procedure for Rating a Flow Station (NIWA 1993) or any equivalent publication.
- (e) The level of water in the race, and times of abstraction, shall be recorded by electronic means, at not greater than fifteen minute intervals in a tamper-proof recording device such as a data-logger, kept for that purpose. The recorded data shall not be changed or deleted by any person, unless twelve months have passed since the date of recording.
- (f) The measuring and recording devices described in clauses (a) and (e) shall be available for inspection at all times by the Canterbury Regional Council.
- (g) All data from the recording device described in clause (e), and the corresponding relationship between the water level and flow, shall be provided

to the Canterbury Regional Council on request, and shall be accessible and available for downloading at all times by the Canterbury Regional Council.

- (h) Within one month of the commencement of this consent, at two-yearly intervals thereafter, and at any other time when requested by Canterbury Regional Council, the consent holder shall calibrate the measuring device and provide to the Canterbury Regional Council:
- (i) a certificate signed by a suitably qualified person certifying the current accuracy of the measuring and recording devices, and also certifying that data from the recording device described in clause (e) can be readily accessed in accordance with clause (f); and
- (ii) supporting information containing details of the calibration test.

[] 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:

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

[]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, 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.

[] 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>.

CRC050940 – To take and use water from three ponds at a rate of 14 L/s for the irrigation of 120 hectares of crops and pasture

[] Location of take – surface water

Water may only be taken from waterholes located at or about map reference NZMS 260 253-346, I39: 255-341 and I39: 256-338.

[] Rate of take and annual volume

Water may be taken at a rate not exceeding 14 litres per second, with a volume not exceeding 8, 467 cubic metres in any period of seven consecutive days, and in combination with CRC050957, 528, 000 cubic metres between 1st July and the following 30th June.

[] Hakataramea River 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.

[] Hakataramea 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.

2.2

- (b) 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:
- iv. The New Zealand Fertiliser Manufacturers' Research Association Code of Practise for Fertiliser Use;
 - v. The Code of Practise for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07;
 - vi. Any other method approved by the Canterbury Regional Council.

Nutrient Budget

- 2.3 A nutrient budget is prepared and implemented for all properties receiving water from the Scheme;

Irrigation Infrastructure

[].4

- .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.

[]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.
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- 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.
- e) List any maintenance works needed, proposed or undertaken to ensure compliance with the conditions of the consent.
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- g) Report detailing any changes to Appendix A.

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Schedule A

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

Land Baseline Study

Daily monitoring of:

- air temperature
- rainfall
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- evapo-transpiration (representative of catchment)
- sunshine hours

- at one control site for at least one year.

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- soil moisture
- evapo-transpiration
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- 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.

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- 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.

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 - Cropping Methods i.e. harvesting, planting, and fallow times in between.
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- Geology
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Advisory Note:

The purpose of this desktop investigation is provide a summary of those catchment features which may affect the water quality of the Hukataramea 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)
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- Conductivity
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- 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.

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- 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.

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- Nitrogen
- Phosphorous
- E.coli

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- Bottom of the catchment near the confluence of the Hakataramea and Waitaki Rivers;
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This consent authorises the taking of groundwater at each of the control sites for the purpose of the baseline survey and on-going monitoring.

Farm Management Plan

[].6

- (b) Prior to exercise of this consent, the consent holder shall prepare and submit to the Canterbury Regional Council a Farm Management Plan.
- (e) 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.
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 - 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.
- (g) 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.

Fencing

7.7

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 7.7(a) above.
- (h) All fencing will be maintained in a good state of repair.

Shelter Belts

7.8

- (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.

7.9 Land use and area to be irrigated

The water taken in condition [] shall only be used for irrigation of crops and pasture for the grazing of sheep, beef cattle, deer and non-milking dairy cows, as described in the application, on the area of land shown in attached plan CRC050940.

[] Fish screen

(a) Water shall only be taken when a fish screen with a maximum mesh size of 3.8 millimetres is operated and maintained across the suction pipe to ensure that fish and fish fry are prevented from passing through the screen;

(b) 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:

(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).

(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:

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

[] 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, 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.

[] **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>.

CRC050960 – To install and maintain a culvert diversion from Peters Stream into a diversion channel

1. Works are to install and maintain a culvert diversion from Peters Stream into a diversion channel, as shown on the attached plans “Pringle – Area to be irrigated”.
2. The culvert installed will be a minimum diameter of 300 mm.
3. The Canterbury Regional Council Compliance Monitoring Officer will be notified at least 48 hours prior to the commencement of the works.
4. Prior to commencing the works, a copy of this resource consent shall be give to all persons undertaking activities authorized by this consent.

Ecological values

5. Works in flowing water shall not be undertaken during the period 1 April to 30 September inclusive to avoid fish spawning.
6. Works shall not occur within 100 metres of birds nesting or rearing their young.

Construction Works

7. In carrying out any in-river construction works the consent holder shall:
 - (a) Keep the affected working area to a practicable minimum and ensure that all plant and machinery working in the river is cleaned so as to be free of weeds or pest plants or seeds prior to entering the water;
 - (b) Ensure that any reinstatement of works after floods are, as far as practicable, on the recession of the flood, while the river flow is still naturally turbid;

(c) Ensure that all disturbed vegetation, soil or other material is deposited, stockpiled or contained to prevent the movement of the material so that it does not result in:

- i. The diversion, damming or blockage of any river or stream;
- ii. The passage of fish being impeded;
- iii. The destruction of any significant habitat in a waterbody;
- iv. Flooding or erosion.

(d) Ensure that consented structures in the bed or banks of the river are stabilized and/or armoured to prevent scouring and erosion.

(e) Ensure that the installation of in-river structures and associated river disturbances are implemented under the supervision of persons with appropriate experience in in-river civil engineering construction works.

Oil and Fuel

8.

a) All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery.

(b) There shall be no storage of fuel or refueling of vehicles and machinery within 20 metres of the bed of a river.

(c) Fuel shall be stored securely or removed from site overnight.

Cultural

9. In the event that any Koiwi tangata (human bones) or taonga (treasured artifacts) are discovered, works shall cease immediately and
- (a) Advise the Canterbury Regional Council;
 - (b) Advise Nga Runanga; and
 - (c) Cease earthmoving operations in the affected area until the area containing the Koiwi Tangata or taonga has been demarcated and a representative of Nga Runanga and the archaeologists have certified that earthmoving may recommence.

10. 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.

11. 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>.

