

CONDITIONS FOR ASHBURTON LYNDHURST APPLICANTS

Watson CRC054424 To take and use water

- 1 Water may be taken only from bores:
 - (a) L37/0754, of diameter 300 millimetres and 80 metres deep, at map reference NZMS 260 L37:23153-02840, and
 - (b) L37/1423, of diameter 300 millimetres and 70 metres deep, at map reference NZMS 260 L37:2360-0150.
- 2 (a) Water may be taken at a rate not exceeding:
 - (i) 91 litres per second from bore L37/0754
 - (ii) 40 litres per second from bore L37/1423
 - (iii) a combined rate from both bores not exceeding 131 litres per second

(b) The combined volume of water taken from both bores may not exceed 101,866 cubic metres in any period of 9 consecutive days and 951,180 cubic metres between 1st July and the following 30th June.
- 3 Water shall only be used for irrigation of crops and pasture for grazing stock, excluding milking dairy cows, on the area of land shown in attached plan CRC054424, which forms part of this consent.
- 4 Resource consent CRC001193 shall be surrendered before the first exercise of this consent.
- 5 The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
- 6 The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's

data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).

- (b) The recording device(s) shall:
- i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
- 7 The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
- 8 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
- (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 6.
- 9 The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.

- (a) The standing water level, relative to ground level, in bores L37/0754 and I37/1423 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

11 Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

12 Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for irrigation, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.

- (d) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC054424.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

13 The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and

- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
- 14 The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
- 15 The lapsing date for the purposes of section 125 shall be 31 March 2016.

Expiry date 3 March 2035

Moriarty and Biggs CRC060398 To take and use water

1. Water may be taken only from bores:
 - (a) L37/1409, diameter 300 millimetres and 160 metres deep, at map reference NZMS 260 L37:2221-1078,
 - (b) L37/1934, diameter 300 millimetres and 160 metres deep, at map reference NZMS 260 L37:2186-1107.
2.
 - (a) Water may be taken at a rate not exceeding:
 - (i) 60 litres per second from bore L37/1409, and
 - (ii) 52 litres per second from bore L37/1934.
 - (b) The combined volume of water taken from both bores shall not exceed
 - (iii) 116,112 cubic metres in any period of 12 consecutive days; and
 - (iv) 972,630 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for irrigation of crops and pasture for grazing stock, excluding milking dairy cows, on the area of land shown in attached plan CRC060398, which forms part of this consent.

Well interference and aquifer testing

4. No water shall be taken in terms of this permit, unless the consent holder can provide analysis, in accordance with the methodology in conditions 5 to 7 below, to the satisfaction of the RMA Compliance and Enforcement Manager of the Canterbury Regional Council, demonstrating that there will not be an adverse effect on bores with an existing authorisation that are located within 2,000 metres of the production bore(s)
5. (a) The consent holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the production bore(s) in accordance with condition 5(b)-(d) below.
 - (b) The consent holder shall submit the proposed aquifer test methodology, which shall be in accordance with Canterbury Regional Council Technical Report R08/25 and condition 5(c) and (d) below, to the RMA Compliance and Enforcement Manager of the Canterbury Regional Council at least ten working days before the aquifer test is undertaken. The aquifer test shall be undertaken as far as is practicable in accordance with the methodology submitted.
 - (c) The minimum duration of the pumping component aquifer test shall be three days and a longer duration may be required depending on hydrogeological conditions. Hydrogeological conditions in this instance include the existence of steady state leakage for a period of 24 hours except where it may be agreed with the Canterbury Regional Council that a shorter duration test result is appropriate for well interference assessment.
 - (d) The aquifer test shall:

- (i) Where appropriate, monitor the water level in the production bore;
 - (ii) Monitor water level in at least one observation bore screened at a similar depth to the production bore and located within 2,000 m of the production bore(s); and
 - (iii) Monitor the water levels following the cessation of pumping in the wells determined in the test design for the period of time required for 95 percent recovery of the pumping induced drawdown.
 - (e) Where there are no appropriate observation bores at a similar depth to, and within 2,000 metres of, the production bore(s), an alternative methodology may be agreed with the Canterbury Regional Council to obtain aquifer parameters appropriate to use for the well interference assessment.
6. (a) Using data obtained from the aquifer testing undertaken in accordance with condition 5, the consent holder shall arrange for a suitably qualified person to undertake an assessment predicting the direct cumulative interference effect in bores with an existing authorisation and within 2,000 metres of the production bore(s) to determine whether there is an adverse effect.
- (b) All data (including raw and corrected electronic data), results and analysis of the test data and the assessment (outlined in (a)) shall be forwarded to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager). If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is not satisfied the aquifer test results are adequate to undertake the required analysis or that the assessment carried out is not an accurate estimate of the effects he or she will notify the consent holder in writing, within one month of receipt of the data and analysis if a repeat analysis or repeat of the test must be carried out. (Such a requirement may only be on reasonable grounds).
7. (a) If the analysis of the well interference assessment undertaken in accordance with condition 6(a) shows that there will be an adverse effect on bores with an existing authorisation and within 2,000 metres of the production bore(s), the consent holder may submit:
- (i) Details of any changes proposed by the consent holder to avoid, remedy or mitigate any adverse effect on bores with an existing authorisation and
 - (ii) A well interference assessment that demonstrates that the proposed mitigation measures outlined in (a)(i) are adequate to ensure that the exercise of this consent will not cause an adverse effect on any bores with an existing authorisation and within 2,000 metres of the production bore(s).
- (b) If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is satisfied that the alternative mitigation will avoid, remedy or mitigate the adverse effect, and is within the scope of the resource consent application and that the exercise of the consent incorporating the proposed changes does not cause adverse effects on any other person, he or she may authorise in writing the taking of water under this water permit. This mitigation then forms part of this consent.
8. For the purposes of conditions 4 – 7:

(a) “adverse effect” on a bore is defined as a direct drawdown effect greater than 0.1 metres where the direct cumulative interference effect on the affected bore is greater than 20 percent of the available drawdown. An adverse effect shall not occur for a particular bore where:

(i) the bore owner and (if associated with that bore) water permit holder with an existing authorisation has given written approval to the taking of water, including any changes in accordance with condition 7(a)(i); or

(ii) the authorised yield of the well will not be affected. This provision applies only to (a) wells used solely for stockwater or domestic potable supply, for which a self-induced drawdown of three metres, or greater if local hydrogeological data suggests otherwise, may be assumed; and (b) wells subject to a resource consent to take water, where the drawdown at the consented yield has been reliably determined by means of direct measurement or undertaking an aquifer test.

(b) “direct cumulative interference effect” is defined as the combined interference of abstractions from all bores (including the subject bore(s)) which have a notifiable date earlier than the notifiable date of this consent:

(i) that are authorised to take groundwater for abstractive purposes via a resource consent (but excluding those that are authorised to take groundwater through an operative permitted activity rule); and

(ii) that are located within 2000 metres of the production bore, and have a calculated interference effect on that bore of more than 0.1 metres, when abstracting at either the authorised rate of abstraction over 150 days to deliver their seasonal volume, or pumping at the authorised maximum instantaneous rate over seven continuous days, whichever is the greater.

(c) “available drawdown” is defined as the drawdown available at a groundwater level that is exceeded 80% of the time for the period of proposed water use, taking into account individual pump and bore installation details.

(d) “existing authorisation” includes bores:

(i) where the associated water permit has a notifiable date earlier than the notifiable date of this consent; and

(ii) bores used for the taking of groundwater for which there are existing water permits, either through an operative permitted activity rule or a resource consent for the taking of groundwater for any abstractive use; and

(iii) bores used for purposes for which no permit to take groundwater is required, but which are intended to be used for water level observations and/or water quality monitoring.

9. Saltwater intrusion

(a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and

- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
 - (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.
10. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
11. The consent holder shall before the first exercise of this consent:
- a.
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - b. The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
- 12. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
- 13. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - a. The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - b. Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 11.
- 14. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
- 15.
 - a. The standing water level, relative to ground level, in bore L37/1409 or L37/1934 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
 - b. All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.
- 16. Backflow prevention

a. The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:

- i. a reduced pressure zone (RPZ) backflow preventer; OR
- ii. an air gap backflow preventer

is installed within the pump outlet plumbing.

b. The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).

c. The backflow preventer must be installed downstream of the water meter.

d. The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.

e.

- i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
- ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

f.

- iii. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- iv. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

g. A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

17. Farm environmental management plan

- a. The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- b. With the exception of the first period ending 30 June during which this consent is exercised for irrigation, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- c. A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- d. (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;

(ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- e. Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- f. Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.

- g. A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- h. For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC060398.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

18. The consent holder shall take all practicable steps to:

- a. Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- b. Avoid leakage from pipes and structures; and
- c. Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

19. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

20. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Grice CRC061526 To take and use groundwater

1. Water may be taken only from bore L37/1034, of diameter 300 millimetres and 70 metres deep, at map reference NZMS 260 L37:2639-9818.
2. Water may be taken at a rate not exceeding 87 litres per second, with a volume not exceeding 52,618 cubic metres in any period of seven consecutive days and 879,692 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for irrigation of crops and pasture for grazing stock, excluding milking dairy cows, on the area of land shown in attached plan CRC061526, which forms part of this consent.
4. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
5. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
6. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
7. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
- (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (5).
8. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
- 9.
- (a) The standing water level, relative to ground level, in bore L37/1034 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
 - (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.
- 10.
- (a) Prior to first exercise of this consent:

- i. the consent holder shall arrange for a suitably qualified person to measure the maximum rate at which water is able to be taken from bore L37/1034, 300 millimetres diameter and 70 metres deep; and
 - ii. the rate measured together with a certificate signed by the suitably qualified person shall be provided to the Canterbury Regional Council within 20 working days of the measurement.
- (b) Water may only be taken from bore L37/1034 at a maximum of 87 litres per second, or the rate provided to the Canterbury Regional Council in accordance with clause (a), whichever is the lesser.

Well interference and aquifer testing

11. No water shall be taken in terms of this permit, unless the consent holder can provide analysis, in accordance with the methodology in conditions 12 to 14 below, to the satisfaction of the RMA Compliance and Enforcement Manager of the Canterbury Regional Council, demonstrating that there will not be an adverse effect on bores with an existing authorisation that are located within 2,000 metres of the production bore(s).
12. (a) The consent holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the production bore(s) in accordance with condition 12(b)-(d) below.
 - (b) The consent holder shall submit the proposed aquifer test methodology, which shall be in accordance with Canterbury Regional Council Technical Report R08/25 and condition 12(c) and (d) below, to the RMA Compliance and Enforcement Manager of the Canterbury Regional Council at least ten working days before the aquifer test is undertaken. The aquifer test shall be undertaken as far as is practicable in accordance with the methodology submitted.
 - (c) The minimum duration of the pumping component aquifer test shall be three days and a longer duration may be required depending on hydrogeological conditions. Hydrogeological conditions in this instance include the existence of steady state leakage for a period of 24 hours except where it may be agreed with the Canterbury Regional Council that a shorter duration test result is appropriate for well interference assessment.
 - (d) The aquifer test shall:
 - (i) Where appropriate, monitor the water level in the production bore;
 - (ii) Monitor the water level in at least bore L37/0204, subject to suitable access being available. If suitable access is not available, monitor the water level in at least one observation bore screened at a similar depth to the production bore and located within 2,000 m of the production bore(s); and
 - (iii) Monitor the water levels following the cessation of pumping in the wells determined in the test design for the period of time required for 95 percent recovery of the pumping induced drawdown.
 - (e) Where there are no appropriate observation bores at a similar depth to, and within 2,000 metres of, the production bore(s), an alternative methodology may be agreed with the Canterbury Regional Council to obtain aquifer parameters appropriate to use for the well interference assessment.

13. (a) Using data obtained from the aquifer testing undertaken in accordance with condition 12, the consent holder shall arrange for a suitably qualified person to undertake an assessment predicting the direct cumulative interference effect in bores with an existing authorisation and within 2,000 metres of the production bore(s) to determine whether there is an adverse effect.

(b) All data (including raw and corrected electronic data), results and analysis of the test data and the assessment (outlined in (a)) shall be forwarded to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager). If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is not satisfied the aquifer test results are adequate to undertake the required analysis or that the assessment carried out is not an accurate estimate of the effects he or she will notify the consent holder in writing, within one month of receipt of the data and analysis if a repeat analysis or repeat of the test must be carried out. (Such a requirement may only be on reasonable grounds).

14. (a) If the analysis of the well interference assessment undertaken in accordance with condition 13(a) shows that there will be an adverse effect on bores with an existing authorisation and within 2,000 metres of the production bore(s), the consent holder may submit:

(i) Details of any changes proposed by the consent holder to avoid, remedy or mitigate any adverse effect on bores with an existing authorisation and

(ii) A well interference assessment that demonstrates that the proposed mitigation measures outlined in (a)(i) are adequate to ensure that the exercise of this consent will not cause an adverse effect on any bores with an existing authorisation and within 2,000 metres of the production bore(s).

(b) If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is satisfied that the alternative mitigation will avoid, remedy or mitigate the adverse effect, and is within the scope of the resource consent application and that the exercise of the consent incorporating the proposed changes does not cause adverse effects on any other person, he or she may authorise in writing the taking of water under this water permit. This mitigation then forms part of this consent.

15. For the purposes of conditions 11 – 14:

(a) “adverse effect” on a bore is defined as a direct drawdown effect greater than 0.1 metres where the direct cumulative interference effect on the affected bore is greater than 20 percent of the available drawdown. An adverse effect shall not occur for a particular bore where the bore owner and (if associated with that bore) water permit holder with an existing authorisation has given written approval to the taking of water, including any changes in accordance with condition 14(a)(i).

(b) “direct cumulative interference effect” is defined as the combined interference of abstractions from all bores (including the subject bore(s)) which have a notifiable date earlier than the notifiable date of this consent:

(i) that are authorised to take groundwater for abstractive purposes via a resource consent (but excluding those that are authorised to take groundwater through an operative permitted activity rule); and

- (ii) that are located within 2000 metres of the production bore, and have a calculated interference effect on that bore of more than 0.1 metres, when abstracting at either the authorised rate of abstraction over 150 days to deliver their seasonal volume, or pumping at the authorised maximum instantaneous rate over seven continuous days, whichever is the greater.
- (c) “available drawdown” is defined as the drawdown available at a groundwater level that is exceeded 80% of the time for the period of proposed water use, taking into account individual pump and bore installation details.
- (d) “existing authorisation” includes bores:
 - (i) where the associated water permit has a notifiable date earlier than the notifiable date of this consent; and
 - (ii) bores used for the taking of groundwater for which there are existing water permits, either through an operative permitted activity rule or a resource consent for the taking of groundwater for any abstractive use; and
 - (iii) bores used for purposes for which no permit to take groundwater is required, but which are intended to be used for water level observations and/or water quality monitoring.

16. Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide “Fertigation, Backflow Preventers” E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

(f)

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

17. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June.
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;

- iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
- i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC061526.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

18. Saltwater intrusion

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

19. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and
- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

20. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

21. The lapsing date for the purposes of section 125 shall be 31 March 2016.

PA Farms CRC062197 To take and use water

1. Water may be taken only from bore L37/1462, of diameter 300 millimetres and 110 metres deep, at map reference NZMS 260 L37:1602-0819.
2. Water may be taken at a rate not exceeding 36.5 litres per second, with a volume not exceeding 30,240 cubic metres in any period of 10 consecutive days and 251,000 cubic metres between 1st July and the following 30th June.
3.
 - (a) Water shall only be used for irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC062197, which forms part of this consent.
 - (b) Water taken under this permit may be used only as a secondary supply to water supplied for irrigation by the Ashburton Lyndhurst Irrigation Scheme, at times when insufficient water is available from the scheme to fully irrigate the subject land.
4. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
5. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or

- iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
6. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
7. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 5.
8. A report shall be submitted to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, by 31 August each year and shall include the rates and volumes at which water was taken and used during the previous 12 month period 1 July to the following 30 June, on the area of land shown in attached plan CRC062197, under:
 - (a) this consent or any subsequent variation thereof, and
 - (b) the Ashburton Lyndhurst Irrigation Scheme.
9. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
10.
 - (a) The standing water level, relative to ground level, in bore L37/1462 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;

- ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

11. Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:

- i. a reduced pressure zone (RPZ) backflow preventer; OR
- ii. an air gap backflow preventer

is installed within the pump outlet plumbing.

- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.

(e)

- i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
- ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

(f)

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and

Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

12. Farm environmental management plan

(a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:

- i. ensure water is used in a technically efficient manner;
- ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below
- iii. ensure appropriate management of ALIS water and water taken under this permit to ensure that ALIS water is used as the primary source of water for irrigation of this property.
- iv. With the exception of the first period ending 30 June during which this consent is exercised for irrigation, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;

(b) A record of the input data, the calculations and associated results from clause (b) shall be:

- i. kept and maintained by the consent holder;
- ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
- iii. maintained for the property for the duration of the consent;
- iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.

- (c) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (d) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (e) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (f) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (g) For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC062197.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

13. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
14. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
15. The lapsing date for the purposes of section 125 shall be 31 March 2016.

AgResearch CRC062717 To take and use groundwater

1. Water may be taken only from bore L36/2085, of diameter 300 millimetres and 120 metres deep, at map reference NZMS 260 L36:1318-1286.
2. Water may be taken at a rate not exceeding 60 litres per second, with a volume not exceeding 431,000 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for storage and irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC062717, which forms part of this consent.
4. Water taken for irrigation under this permit may be used only as a secondary supply to water supplied for irrigation by the Ashburton Lyndhurst Irrigation Scheme, at times when insufficient water is available from the scheme to fully irrigate the subject land.
5. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
6. The consent holder shall before the first exercise of this consent:

(a)

- i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).

(b) The recording device(s) shall:

- i. 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
- ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
- iii. shall 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

Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
7. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
8. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (6).
9. A report shall be submitted to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, by 31 August each year and shall include the rates and volumes at which water was taken and used during the previous 12 month period 1 July to the following 30 June, on the area of land shown in attached plan CRC062717, under:
 - (a) this consent or any subsequent variation thereof, and
 - (b) the Ashburton Lyndhurst Irrigation Scheme.
10. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
11. The depth at which water is drawn into the production bore(s) shall be no less than 100 metres below ground level.
12.
 - (a) The standing water level, relative to ground level, in bore L36/2085 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;

- ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

13. Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)
 - i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
 - ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and

Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

14. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below;
 - iii. ensure appropriate management of ALIS water and water taken under this permit to ensure that ALIS water is used as the primary source of water for irrigation of this property.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.

- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
- i. an 'approved method' is:
 1. 'OVERSEER' (AgResearch);
 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC062717.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 1. timing and rate of irrigation applications;
 2. timing and rate of all nitrogen fertiliser applications;
 3. timing and rate of nitrification inhibitor applications;
 4. stocking rates (number and type of animals) on a monthly basis;
 5. timing of cultivation activities and crops/pasture planted.

15. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
16. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
17. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Doig CRC063622 To take and use water

1. Water may be taken only from bores:
 - (a) L37/1501, of diameter 300 millimetres and 150 metres deep, at map reference NZMS 260 L37:2369-0619,
 - (b) L37/1491, of diameter 300 millimetres and 150 metres deep, at map reference NZMS 260 L37:2333-0844.
2. Water may be taken at a rate not exceeding:
 - (a) 60.5 litres per second from bore L37/1501,
 - (b) 75.5 litres per second from bore L37/1491,

with a combined volume not exceeding 1,327,500 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for irrigation of crops and pasture for grazing stock on the area of land shown in attached plan CRC063622, which forms part of this consent.

Well interference and aquifer testing

4. No water shall be taken in terms of this permit, unless the consent holder can provide analysis, in accordance with the methodology in conditions 5 to 7 below, to the satisfaction of the RMA Compliance and Enforcement Manager of the Canterbury Regional Council, demonstrating that there will not be an adverse effect on bores with an existing authorisation that are located within 2,000 metres of the production bore(s).
5. (a) The consent holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the production bore(s) in accordance with conditions 5(b)-(d) below, except that if either production bore has been used as an observation bore in an aquifer test, or if an aquifer test has been carried out in close proximity of either production bore, aquifer parameters appropriate to use in the well interference assessment may be agreed with the Canterbury Regional Council without the need for a further aquifer test.
 - (b) The consent holder shall submit the proposed aquifer test methodology, which shall be in accordance with Canterbury Regional Council Technical Report R08/25 and conditions 5(c) and (d) below, to the RMA Compliance and Enforcement Manager of the Canterbury Regional Council at least ten working days before the aquifer test is undertaken. The aquifer test shall be undertaken as far as is practicable in accordance with the methodology submitted.
 - (c) The minimum duration of the pumping component aquifer test shall be three days and a longer duration may be required depending on hydrogeological conditions. Hydrogeological conditions in this instance include the existence of steady state leakage for a period of 24 hours except where it may be agreed with the Canterbury Regional Council that a shorter duration test result is appropriate for well interference assessment.
 - (d) The aquifer test shall:
 - (i) Where appropriate, monitor the water level in the production bore;

(ii) Monitor water level in bores L36/1338 and L36/1340, subject to suitable access being available. If suitable access is not available, monitor the water level in at least one observation bore screened at a similar depth to the production bore and located within 2,000 m of the production bore(s); and

(iii) Monitor the water levels following the cessation of pumping in the wells determined in the test design for the period of time required for 95 percent recovery of the pumping induced drawdown.

(e) Where there are no appropriate observation bores at a similar depth to, and within 2,000 metres of, the production bore(s), an alternative methodology may be agreed with the Canterbury Regional Council to obtain aquifer parameters appropriate to use for the well interference assessment.

6. (a) Using data obtained from the aquifer testing undertaken in accordance with condition 5, the consent holder shall arrange for a suitably qualified person to undertake an assessment predicting the direct cumulative interference effect in bores with an existing authorisation and within 2,000 metres of the production bore(s) to determine whether there is an adverse effect.

(b) All data (including raw and corrected electronic data), results and analysis of the test data and the assessment (outlined in (a)) shall be forwarded to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager). If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is not satisfied the aquifer test results are adequate to undertake the required analysis or that the assessment carried out is not an accurate estimate of the effects he or she will notify the consent holder in writing, within one month of receipt of the data and analysis if a repeat analysis or repeat of the test must be carried out. (Such a requirement may only be on reasonable grounds).

7. (a) If the analysis of the well interference assessment undertaken in accordance with condition 6(a) shows that there will be an adverse effect on bores with an existing authorisation and within 2,000 metres of the production bore(s), the consent holder may submit:

(i) Details of any changes proposed by the consent holder to avoid, remedy or mitigate any adverse effect on bores with an existing authorisation and

(ii) A well interference assessment that demonstrates that the proposed mitigation measures outlined in (a)(i) are adequate to ensure that the exercise of this consent will not cause an adverse effect on any bores with an existing authorisation and within 2,000 metres of the production bore(s).

(b) If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is satisfied that the alternative mitigation will avoid, remedy or mitigate the adverse effect, and is within the scope of the resource consent application and that the exercise of the consent incorporating the proposed changes does not cause adverse effects on any other person, he or she may authorise in writing the taking of water under this water permit. This mitigation then forms part of this consent.

8. For the purposes of conditions 4 – 7:

(a) “adverse effect” on a bore is defined as a direct drawdown effect greater than 0.1 metres where the direct cumulative interference effect on the affected bore is greater than

20 percent of the available drawdown. An adverse effect shall not occur for a particular bore where:

(i) the bore owner and (if associated with that bore) water permit holder with an existing authorisation has given written approval to the taking of water, including any changes in accordance with condition 7(a)(i); or

(ii) the authorised yield of the well will not be affected. This provision applies only to (a) wells used solely for stockwater or domestic potable supply, for which a self-induced drawdown of three metres, or greater if local hydrogeological data suggests otherwise, may be assumed; and (b) wells subject to a resource consent to take water, where the drawdown at the consented yield has been reliably determined by means of direct measurement or undertaking an aquifer test.

(b) “direct cumulative interference effect” is defined as the combined interference of abstractions from all bores (including the subject bore(s)) which have a notifiable date earlier than the notifiable date of this consent:

(i) that are authorised to take groundwater for abstractive purposes via a resource consent (but excluding those that are authorised to take groundwater through an operative permitted activity rule); and

(ii) that are located within 2000 metres of the production bore, and have a calculated interference effect on that bore of more than 0.1 metres, when abstracting at either the authorised rate of abstraction over 150 days to deliver their seasonal volume, or pumping at the authorised maximum instantaneous rate over seven continuous days, whichever is the greater.

(c) “available drawdown” is defined as the drawdown available at a groundwater level that is exceeded 80% of the time for the period of proposed water use, taking into account individual pump and bore installation details.

(d) “existing authorisation” includes bores:

(i) where the associated water permit has a notifiable date earlier than the notifiable date of this consent; and

(ii) bores used for the taking of groundwater for which there are existing water permits, either through an operative permitted activity rule or a resource consent for the taking of groundwater for any abstractive use; and

(iii) bores used for purposes for which no permit to take groundwater is required, but which are intended to be used for water level observations and/or water quality monitoring.

9. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.

10. The consent holder shall before the first exercise of this consent:

a.

- i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - b. The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
- 11. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
- 12. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

- a. The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - b. Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 10.
13. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.

14.

- a. The standing water level, relative to ground level, in bore L37/1501 or L37/1491 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- b. All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

15.

- a. The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- b. The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- c. The backflow preventer must be installed downstream of the water meter.
- d. The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- e.
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified

Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;

- ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

f.

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

g. A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

16. Saltwater intrusion

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

17. Farm environmental management plan

- a. The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- b. With the exception of the first period ending 30 June during which this consent is exercised for irrigation, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- c. A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- d.
 - (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
 - (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- e. Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- f. Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- g. A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.

- h. For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC063622.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

18. The consent holder shall take all practicable steps to:

- a. Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- b. Avoid leakage from pipes and structures; and
- c. Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

19. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

20. The lapsing date for the purposes of section 125 shall be 31 March 2016.

1. Water may be taken only from bore L36/2193, of diameter 300 millimetres and 114 metres deep, at map reference NZMS 260 L36:12053-10072.
2. Water may be taken at a rate not exceeding 46.4 litres per second, with a volume not exceeding 4,009 cubic metres per day and 213,000 cubic metres between 1st July and the following 30th June.
3. Water taken for irrigation under this permit may be used only as a secondary supply to water supplied for irrigation by the Ashburton Lyndhurst Irrigation Scheme, at times when insufficient water is available from the scheme to fully irrigate the subject land.
4. Water shall only be used for:
 - (a) Storage in a storage pond located at or about map reference NZMS 260 L36:1200-1084 and in accordance with conditions of consent CRC084270; and
 - (b) irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC063645, which forms part of this consent.
5. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
6. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury

Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or

- iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
7. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
8. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 6.
9. A report shall be submitted to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, by 31 August each year and shall include the rates and volumes at which water was taken and used during the previous 12 month period 1 July to the following 30 June, on the area of land shown in attached plan CRC063645, under:
 - (a) this consent or any subsequent variation thereof, and
 - (b) the Ashburton Lyndhurst Irrigation Scheme.
10. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
11.
 - (a) The standing water level, relative to ground level, in bore L36/2193 shall be measured as follows:

- i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

12.

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)
 - i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;

- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- iii. the most recent test report required under (e)(ii); OR
- iv. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

13. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation of dairy pasture, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below; and
 - iii. ensure appropriate management of ALIS water and water taken under this permit to ensure that ALIS water is used as the primary source of water for irrigation of this property.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.

- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
- i. an 'approved method' is:
 1. 'OVERSEER' (AgResearch);
 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC063645.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 1. timing and rate of irrigation applications;
 2. timing and rate of all nitrogen fertiliser applications;
 3. timing and rate of nitrification inhibitor applications;
 4. stocking rates (number and type of animals) on a monthly basis;
 5. timing of cultivation activities and crops/pasture planted.

14. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
15. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
16. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Nico (No. 30) CRC063647 To take and use water

1. Water may be taken only from bore L36/2083, of diameter 250 millimetres and 111.06 metres deep, at map reference NZMS 260 L36:1047-1083.
2. Water may be taken at a rate not exceeding 58.4 litres per second, with a volume not exceeding 15,137 cubic metres in any period of 3 consecutive days and 310,000 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for:
 - (a) Storage in a storage pond located at or about map reference NZMS 260 L36:1091-1108 and in accordance with conditions of consent CRC084168; and
 - (b) irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC063647, which forms part of this consent.
4. Water taken for irrigation may be used only as a secondary supply to water supplied for irrigation by the Ashburton Lyndhurst Irrigation Scheme, at times when insufficient water is available from the scheme to fully irrigate the subject land.
5. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
6. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download

and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or

- iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
7. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
 8. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 6.
 9. A report shall be submitted to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, by 31 August each year and shall include the rates and volumes at which water was taken and used during the previous 12 month period 1 July to the following 30 June, on the area of land shown in attached plan CRC063647, under:
 - (c) this consent or any subsequent variation thereof, and
 - (d) the Ashburton Lyndhurst Irrigation Scheme.
 10. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
 - 11.

- (a) The standing water level, relative to ground level, in bore L36/2083 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

12. Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

13. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation of dairy pasture, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below;
 - iii. ensure appropriate management of ALIS water and water taken under this permit to ensure that ALIS water is used as the primary source of water for irrigation of this property.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;

- iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
- i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC063647.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

14. The consent holder shall take all practicable steps to:
 - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
15. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
16. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Kingsbury CRC064166 To take and use groundwater

1. Water may be taken only from bore L37/1559, of diameter 300 millimetres and 45 metres deep, at map reference NZMS 260 L37:18875-91970.
2. Water may be taken at a rate not exceeding 60 litres per second, with a volume not exceeding 38,880 cubic metres in any period of nine consecutive days and 362,750 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for irrigation of crops and pasture for grazing stock, excluding milking dairy cows, on the area of land shown in attached plan CRC064166, which forms part of this consent.
4. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
5. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
6. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
7. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
- (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (5).
8. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
- 9.
- (a) The standing water level, relative to ground level, in bore L37/1559 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
 - (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

Well interference assessment

10. No water shall be taken in terms of this permit, unless the consent holder can provide analysis, in accordance with the methodology in conditions 11 to 13 below, to the

satisfaction of the RMA Compliance and Enforcement Manager of the Canterbury Regional Council, demonstrating that there will not be an adverse effect on bores with an existing authorisation that are located within 2,000 metres of the production bore(s), EXCEPT THAT if written approval is obtained from the owner(s) of bore L37/0695 then conditions 10 to 14 do not apply.

11. (a) The consent holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the production bore(s) in accordance with condition 11(b)-(d) below.

(b) The consent holder shall submit the proposed aquifer test methodology, which shall be in accordance with Canterbury Regional Council Technical Report R08/25 and condition 11(c) and (d) below, to the RMA Compliance and Enforcement Manager of the Canterbury Regional Council at least ten working days before the aquifer test is undertaken. The aquifer test shall be undertaken as far as is practicable in accordance with the methodology submitted.

(c) The minimum duration of the pumping component aquifer test shall be three days and a longer duration may be required depending on hydrogeological conditions. Hydrogeological conditions in this instance include the existence of steady state leakage for a period of 24 hours except where it may be agreed with the Canterbury Regional Council that a shorter duration test result is appropriate for well interference assessment.

(d) The aquifer test shall:

(i) Where appropriate, monitor the water level in the production bore;

(ii) Monitor water level in at least one observation bore screened at a similar depth to the production bore and located within 2,000 m of the production bore(s); and

(iii) Monitor the water levels following the cessation of pumping in the wells determined in the test design for the period of time required for 95 percent recovery of the pumping induced drawdown.

(e) Where there are no appropriate observation bores at a similar depth to, and within 2,000 metres of, the production bore(s), an alternative methodology may be agreed with the Canterbury Regional Council to obtain aquifer parameters appropriate to use for the well interference assessment.

12. (a) Using data obtained from the aquifer testing undertaken in accordance with condition 11, the consent holder shall arrange for a suitably qualified person to undertake an assessment predicting the direct cumulative interference effect in bores with an existing authorisation and within 2,000 metres of the production bore(s) to determine whether there is an adverse effect.

(b) All data (including raw and corrected electronic data), results and analysis of the test data and the assessment (outlined in (a)) shall be forwarded to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager). If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is not satisfied the aquifer test results are adequate to undertake the required analysis or that the assessment carried out is not an accurate estimate of the effects he or she will notify the consent holder in writing, within one month of receipt of the data and analysis if a

repeat analysis or repeat of the test must be carried out. (Such a requirement may only be on reasonable grounds).

13. (a) If the analysis of the well interference assessment undertaken in accordance with condition 12(a) shows that there will be an adverse effect on bores with an existing authorisation and within 2,000 metres of the production bore(s), the consent holder may submit:

(i) Details of any changes proposed by the consent holder to avoid, remedy or mitigate any adverse effect on bores with an existing authorisation and

(ii) A well interference assessment that demonstrates that the proposed mitigation measures outlined in (a)(i) are adequate to ensure that the exercise of this consent will not cause an adverse effect on any bores with an existing authorisation and within 2,000 metres of the production bore(s).

(b) If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is satisfied that the alternative mitigation will avoid, remedy or mitigate the adverse effect, and is within the scope of the resource consent application and that the exercise of the consent incorporating the proposed changes does not cause adverse effects on any other person, he or she may authorise in writing the taking of water under this water permit. This mitigation then forms part of this consent.

14. For the purposes of conditions 10 – 13:

(a) “adverse effect” on a bore is defined as a direct drawdown effect greater than 0.1 metres where the direct cumulative interference effect on the affected bore is greater than 20 percent of the available drawdown. An adverse effect shall not occur for a particular bore where:

(i) the bore owner and (if associated with that bore) water permit holder with an existing authorisation has given written approval to the taking of water, including any changes in accordance with condition 13(a)(i); or

(ii) the authorised yield of the well will not be affected. This provision applies only to (a) wells used solely for stockwater or domestic potable supply, for which a self-induced drawdown of three metres, or greater if local hydrogeological data suggests otherwise, may be assumed; and (b) wells subject to a resource consent to take water, where the drawdown at the consented yield has been reliably determined by means of direct measurement or undertaking an aquifer test.

(b) “direct cumulative interference effect” is defined as the combined interference of abstractions from all bores (including the subject bore(s)) which have a notifiable date earlier than the notifiable date of this consent:

(i) that are authorised to take groundwater for abstractive purposes via a resource consent (but excluding those that are authorised to take groundwater through an operative permitted activity rule); and

(ii) that are located within 2000 metres of the production bore, and have a calculated interference effect on that bore of more than 0.1 metres, when abstracting at either the authorised rate of abstraction over 150 days to deliver

their seasonal volume, or pumping at the authorised maximum instantaneous rate over seven continuous days, whichever is the greater.

(c) “available drawdown” is defined as the drawdown available at a groundwater level that is exceeded 80% of the time for the period of proposed water use, taking into account individual pump and bore installation details.

(d) “existing authorisation” includes bores:

(i) where the associated water permit has a notifiable date earlier than the notifiable date of this consent; and

(ii) bores used for the taking of groundwater for which there are existing water permits, either through an operative permitted activity rule or a resource consent for the taking of groundwater for any abstractive use; and

(iii) bores used for purposes for which no permit to take groundwater is required, but which are intended to be used for water level observations and/or water quality monitoring.

15. Backflow prevention

(a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:

(i) a reduced pressure zone (RPZ) backflow preventer; OR

(ii) an air gap backflow preventer

(iii) is installed within the pump outlet plumbing.

(b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide “Fertigation, Backflow Preventers” E05/30 (June 2009).

(c) The backflow preventer must be installed downstream of the water meter.

(d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.

(e)

i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;

ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)
 - i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
 - ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

16. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;

- iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
- i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC064166.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

17. Saltwater intrusion:

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

18. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and
- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

19. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

20. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Letham Farms CRC070080 To take and use groundwater

1. Water may be taken only from bore L36/2200, of diameter 300 millimetres and 89.6 metres deep, at map reference NZMS 260 L36:1153-1455.
2. Water may be taken at a rate not exceeding 75 litres per second, with a volume not exceeding 45,360 cubic metres in any period of seven consecutive days and 605,000 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for storage and irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC070080, which forms part of this consent.
4. The combined maximum rate at which water is taken from bore L36/2200, in combination with consent CRC080023 and any subsequent variations thereof, shall not exceed 75 litres per second.
5. Water taken for irrigation may be used only as a secondary supply to water supplied for irrigation by the Ashburton Lyndhurst Irrigation Scheme, at times when insufficient water is available from the scheme to fully irrigate the subject land.
6. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
7. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - iii. 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
 - iv. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury

Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or

- v. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
8. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
9. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (7).
10. A report shall be submitted to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, by 31 August each year and shall include the rates and volumes at which water was taken and used during the previous 12 month period 1 July to the following 30 June, on the area of land shown in attached plan CRC070080, under:
 - (a) this consent or any subsequent variation thereof, and
 - (b) the Ashburton Lyndhurst Irrigation Scheme.
11. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
12.
 - (a) The standing water level, relative to ground level, in bore L36/2200 shall be measured as follows:

- i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

13. Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)
 - i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;

- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

14. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below;
 - iii. ensure appropriate management of ALIS water and water taken under this permit to ensure that ALIS water is used as the primary source of water for irrigation of this property.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.

- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (d) (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC070080.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

15. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
16. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
17. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Talleys CRC073728 To take and use water

1. Water may be taken only from bore L37/1617, of diameter 300 millimetres and 110 metres deep, at map reference NZMS 260 L37:1710-0241.
2. Water may be taken at a rate not exceeding 115 litres per second, with a volume not exceeding 9,936 cubic metres per day and 850,850 cubic metres between 1st July and the following 30th June.
3. The depth at which water is drawn into the production bore(s) shall be no less than 90 metres below ground level.
4.
 - (a) The volume of water applied to the area of land subject to this consent between 1st July and the following 30th June shall not exceed 850,850 cubic metres, less the volume applied to the same area under consent(s) CRC054047.1 and any subsequent variations thereof over the same period.
 - (b) This consent shall only be exercised when the consent holder has installed a measuring device, to the satisfaction of all metering conditions of this resource consent, to accurately measure the volume of water applied to the area of land subject to this consent under consent CRC054047.1 and any subsequent variations thereof, such that compliance with condition 4(a) may be determined.
5. Water shall only be used for irrigation of crops and pasture for grazing stock, excluding milking dairy cows, on the area of land shown in attached plan CRC073728, which forms part of this consent.
6. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
7. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:

- i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
8. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 7.
9. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
10. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
 - (a) The standing water level, relative to ground level, in bore L37/1617 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;

- ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

11.

- (a) Prior to first exercise of this consent:
- i. the consent holder shall arrange for a suitably qualified person to measure the maximum rate at which water is able to be taken from bore L37/1617, 300 millimetres diameter and 110 metres deep; and
 - ii. the rate measured together with a certificate signed by the suitably qualified person shall be provided to the Canterbury Regional Council within 20 working days of the measurement.
- (b) Water may only be taken from bore L37/1617 at a maximum of 115 litres per second, or the rate provided to the Canterbury Regional Council in accordance with clause (a), whichever is the lesser.

Well interference and aquifer testing

12. No water shall be taken in terms of this permit, unless the consent holder can provide analysis, in accordance with the methodology in conditions 13 to 15 below, to the satisfaction of the RMA Compliance and Enforcement Manager of the Canterbury Regional Council, demonstrating that there will not be an adverse effect on bores with an existing authorisation that are located within 2,000 metres of the production bore(s).
13. (a) The consent holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the production bore(s) in accordance with condition 13(b)-(d) below.
- (b) The consent holder shall submit the proposed aquifer test methodology, which shall be in accordance with Canterbury Regional Council Technical Report R08/25 and condition 13(c) and (d) below, to the RMA Compliance and Enforcement Manager of the Canterbury Regional Council at least ten working days before the aquifer test is undertaken. The aquifer test shall be undertaken as far as is practicable in accordance with the methodology submitted.
- (c) The minimum duration of the pumping component aquifer test shall be three days and a longer duration may be required depending on hydrogeological conditions. Hydrogeological conditions in this instance include the existence of steady state leakage for a period of 24 hours except where it may be agreed with the Canterbury Regional Council that a shorter duration test result is appropriate for well interference assessment.
- (d) The aquifer test shall:

- (i) Where appropriate, monitor the water level in the production bore;
 - (ii) Monitor water level in at least one observation bore screened at a similar depth to the production bore and located within 2,000 m of the production bore(s); and
 - (iii) Monitor the water levels following the cessation of pumping in the wells determined in the test design for the period of time required for 95 percent recovery of the pumping induced drawdown.
- (e) Where there are no appropriate observation bores at a similar depth to, and within 2,000 metres of, the production bore(s), an alternative methodology may be agreed with the Canterbury Regional Council to obtain aquifer parameters appropriate to use for the well interference assessment.
14. (a) Using data obtained from the aquifer testing undertaken in accordance with condition 13, the consent holder shall arrange for a suitably qualified person to undertake an assessment predicting the direct cumulative interference effect in bores with an existing authorisation and within 2,000 metres of the production bore(s) to determine whether there is an adverse effect.
- (b) All data (including raw and corrected electronic data), results and analysis of the test data and the assessment (outlined in (a)) shall be forwarded to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager). If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is not satisfied the aquifer test results are adequate to undertake the required analysis or that the assessment carried out is not an accurate estimate of the effects he or she will notify the consent holder in writing, within one month of receipt of the data and analysis if a repeat analysis or repeat of the test must be carried out. (Such a requirement may only be on reasonable grounds).
15. (a) If the analysis of the well interference assessment undertaken in accordance with condition 14(a) shows that there will be an adverse effect on bores with an existing authorisation and within 2,000 metres of the production bore(s), the consent holder may submit:
- (i) Details of any changes proposed by the consent holder to avoid, remedy or mitigate any adverse effect on bores with an existing authorisation and
 - (ii) A well interference assessment that demonstrates that the proposed mitigation measures outlined in (a)(i) are adequate to ensure that the exercise of this consent will not cause an adverse effect on any bores with an existing authorisation and within 2,000 metres of the production bore(s).
- (b) If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is satisfied that the alternative mitigation will avoid, remedy or mitigate the adverse effect, and is within the scope of the resource consent application and that the exercise of the consent incorporating the proposed changes does not cause adverse effects on any other person, he or she may authorise in writing the taking of water under this water permit. This mitigation then forms part of this consent.
16. For the purposes of conditions 12 – 15

(a) “adverse effect” on a bore is defined as a direct drawdown effect greater than 0.1 metres where the direct cumulative interference effect on the affected bore is greater than 20 percent of the available drawdown. An adverse effect shall not occur for a particular bore where:

(i) the bore owner and (if associated with that bore) water permit holder with an existing authorisation has given written approval to the taking of water, including any changes in accordance with condition 15(a)(i); or

(ii) the authorised yield of the well will not be affected. This provision applies only to (a) wells used solely for stockwater or domestic potable supply, for which a self-induced drawdown of three metres, or greater if local hydrogeological data suggests otherwise, may be assumed; and (b) wells subject to a resource consent to take water, where the drawdown at the consented yield has been reliably determined by means of direct measurement or undertaking an aquifer test.

(b) “direct cumulative interference effect” is defined as the combined interference of abstractions from all bores (including the subject bore(s)) which have a notifiable date earlier than the notifiable date of this consent:

(i) that are authorised to take groundwater for abstractive purposes via a resource consent (but excluding those that are authorised to take groundwater through an operative permitted activity rule); and

(ii) that are located within 2000 metres of the production bore, and have a calculated interference effect on that bore of more than 0.1 metres, when abstracting at either the authorised rate of abstraction over 150 days to deliver their seasonal volume, or pumping at the authorised maximum instantaneous rate over seven continuous days, whichever is the greater.

(c) “available drawdown” is defined as the drawdown available at a groundwater level that is exceeded 80% of the time for the period of proposed water use, taking into account individual pump and bore installation details.

(d) “existing authorisation” includes bores:

(i) where the associated water permit has a notifiable date earlier than the notifiable date of this consent; and

(ii) bores used for the taking of groundwater for which there are existing water permits, either through an operative permitted activity rule or a resource consent for the taking of groundwater for any abstractive use; and

(iii) bores used for purposes for which no permit to take groundwater is required, but which are intended to be used for water level observations and/or water quality monitoring.

17. Backflow prevention

(a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:

- i. a reduced pressure zone (RPZ) backflow preventer; OR
- ii. an air gap backflow preventer

is installed within the pump outlet plumbing.

- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)
 - i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
 - ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

18. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for irrigation, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;

(ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:

- i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
- ii. the 'subject land' means the area identified in attached plan CRC073728.
- iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
- iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

19. Saltwater intrusion:

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

20. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and
- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

21. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.
22. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Mitchell CRC073805 To take and use water

1. Water may be taken only from bore:
 - (a) L37/1630, of diameter 300 millimetres and 120 metres deep, at map reference NZMS 260 L37:2306-9735, and
 - (b) L37/1631, of diameter 300 millimetres and 120 metres deep, at map reference NZMS 260 L37:2280-9704.
2. Water may be taken at a rate not exceeding:
 - (c) 79 litres per second from bore L37/1630 and
 - (d) 79 litres per second from bore L37/1631,

with a combined rate not exceeding 79 litres per second, and with a combined volume not exceeding 6,826 cubic metres per day and with a combined volume not exceeding 646,838 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for irrigation of crops and pasture for grazing stock on the area of land shown in attached plan CRC073805, which forms part of this consent.
4. The combined average application rate for water taken and used under both this consent and consent CRC972684 shall not exceed five millimetres per day within the 217 hectare area identified in attached plan CRC073805A.
5. The depth at which water is drawn into the production bore(s) shall be no less than 55 metres below ground level.
6. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
7. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:

- i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
8. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
9. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
 - (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 7.
10. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
11.
 - (a) The standing water level, relative to ground level, in bore L37/1630 or L37/1631 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;

- ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

12.

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventeris installed within the pump outlet plumbing.
- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)
 - i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
 - ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

- (f)
 - i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
 - ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and

Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

13. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for irrigation, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;
- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;

(ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.

- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC073805 and that is irrigated by this consent.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

14. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and

- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

15. Saltwater intrusion

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

16. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

17. The lapsing date for the purposes of section 125 shall be 31 March 2016.

1. Water may be taken only from bore L37/1711, of diameter 300 millimetres and 70 metres deep, at map reference NZMS 260 L37:2732-9682.
2. Water may be taken at a rate not exceeding 25 litres per second, with a volume not exceeding 15,061 cubic metres in any period of seven consecutive days and 250,856 cubic metres between 1st July and the following 30th June.
3. Water shall only be used for irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC092417, which forms part of this consent.
4. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.
5. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
6. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
7. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
- (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition (5).
8. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.
- 9.
- (a) The standing water level, relative to ground level, in bore L37/1711 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
 - (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.
- 10.
- (a) Prior to first exercise of this consent:

- i. the consent holder shall arrange for a suitably qualified person to measure the maximum rate at which water is able to be taken from bore L37/1034, 300 millimetres diameter and 70 metres deep; and
 - ii. the rate measured together with a certificate signed by the suitably qualified person shall be provided to the Canterbury Regional Council within 20 working days of the measurement.
- (b) Water may only be taken from bore L37/1034 at a maximum of 87 litres per second, or the rate provided to the Canterbury Regional Council in accordance with clause (a), whichever is the lesser.

Well interference and aquifer testing

- 11. No water shall be taken in terms of this permit, unless the consent holder can provide analysis, in accordance with the methodology in conditions 12 to 14 below, to the satisfaction of the RMA Compliance and Enforcement Manager of the Canterbury Regional Council, demonstrating that there will not be an adverse effect on bores with an existing authorisation that are located within 2,000 metres of the production bore(s).
- 12. (a) The consent holder shall arrange for a suitably qualified person to undertake a constant rate discharge aquifer test in the production bore(s) in accordance with condition 12(b)-(d) below.
 - (b) The consent holder shall submit the proposed aquifer test methodology, which shall be in accordance with Canterbury Regional Council Technical Report R08/25 and conditions 12(c) and (d) below, to the RMA Compliance and Enforcement Manager of the Canterbury Regional Council at least ten working days before the aquifer test is undertaken. The aquifer test shall be undertaken as far as is practicable in accordance with the methodology submitted.
 - (c) The minimum duration of the pumping component aquifer test shall be three days and a longer duration may be required depending on hydrogeological conditions. Hydrogeological conditions in this instance include the existence of steady state leakage for a period of 24 hours except where it may be agreed with the Canterbury Regional Council that a shorter duration test result is appropriate for well interference assessment.
 - (d) The aquifer test shall:
 - (i) Where appropriate, monitor the water level in the production bore; and
 - (ii) Monitor the water level in one or more of the following bores: L37/0591, L37/0204, L37/1047 or L37/0020 subject to suitable access being available. If suitable access is not available, monitor the water level in at least one observation bore screened at a similar depth to the production bore and located within 2,000 m of the production bore(s); and
 - (iii) Monitor the water levels following the cessation of pumping in the wells determined in the test design for the period of time required for 95 percent recovery of the pumping induced drawdown.
 - (e) Where there are no appropriate observation bores at a similar depth to, and within 2,000 metres of, the production bore(s), an alternative methodology may be agreed

with the Canterbury Regional Council to obtain aquifer parameters appropriate to use for the well interference assessment.

13. (a) Using data obtained from the aquifer testing undertaken in accordance with condition 12, the consent holder shall arrange for a suitably qualified person to undertake an assessment predicting the direct cumulative interference effect in bores with an existing authorisation and within 2,000 metres of the production bore(s) to determine whether there is an adverse effect.

(b) All data (including raw and corrected electronic data), results and analysis of the test data and the assessment (outlined in (a)) shall be forwarded to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager). If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is not satisfied the aquifer test results are adequate to undertake the required analysis or that the assessment carried out is not an accurate estimate of the effects he or she will notify the consent holder in writing, within one month of receipt of the data and analysis if a repeat analysis or repeat of the test must be carried out. (Such a requirement may only be on reasonable grounds).

14. (a) If the analysis of the well interference assessment undertaken in accordance with condition 13(a) shows that there will be an adverse effect on bores with an existing authorisation and within 2,000 metres of the production bore(s), the consent holder may submit:

(i) Details of any changes proposed by the consent holder to avoid, remedy or mitigate any adverse effect on bores with an existing authorisation and

(ii) A well interference assessment that demonstrates that the proposed mitigation measures outlined in (a)(i) are adequate to ensure that the exercise of this consent will not cause an adverse effect on any bores with an existing authorisation and within 2,000 metres of the production bore(s).

(b) If the RMA Compliance and Enforcement Manager of the Canterbury Regional Council is satisfied that the alternative mitigation will avoid, remedy or mitigate the adverse effect, and is within the scope of the resource consent application and that the exercise of the consent incorporating the proposed changes does not cause adverse effects on any other person, he or she may authorise in writing the taking of water under this water permit. This mitigation then forms part of this consent.

15. For the purposes of conditions 11 – 14:

(a) “adverse effect” on a bore is defined as a direct drawdown effect greater than 0.1 metres where the direct cumulative interference effect on the affected bore is greater than 20 percent of the available drawdown. An adverse effect shall not occur for a particular bore where:

(i) the bore owner and (if associated with that bore) water permit holder with an existing authorisation has given written approval to the taking of water, including any changes in accordance with condition 14(a)(i); or

(ii) the authorised yield of the well will not be affected. This provision applies only to (a) wells used solely for stockwater or domestic potable supply, for which a self-induced drawdown of three metres, or greater if local hydrogeological data suggests otherwise, may be assumed; and (b) wells subject to a resource consent to take water, where the drawdown at the consented yield has been

reliably determined by means of direct measurement or undertaking an aquifer test.

(b) “direct cumulative interference effect” is defined as the combined interference of abstractions from all bores (including the subject bore(s)) which have a notifiable date earlier than the notifiable date of this consent:

(i) that are authorised to take groundwater for abstractive purposes via a resource consent (but excluding those that are authorised to take groundwater through an operative permitted activity rule); and

(ii) that are located within 2000 metres of the production bore, and have a calculated interference effect on that bore of more than 0.1 metres, when abstracting at either the authorised rate of abstraction over 150 days to deliver their seasonal volume, or pumping at the authorised maximum instantaneous rate over seven continuous days, whichever is the greater.

(c) “available drawdown” is defined as the drawdown available at a groundwater level that is exceeded 80% of the time for the period of proposed water use, taking into account individual pump and bore installation details.

(d) “existing authorisation” includes bores:

(i) where the associated water permit has a notifiable date earlier than the notifiable date of this consent; and

(ii) bores used for the taking of groundwater for which there are existing water permits, either through an operative permitted activity rule or a resource consent for the taking of groundwater for any abstractive use; and

(iii) bores used for purposes for which no permit to take groundwater is required, but which are intended to be used for water level observations and/or water quality monitoring.

16. Backflow prevention

(a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:

i. a reduced pressure zone (RPZ) backflow preventer; OR

ii. an air gap backflow preventer

is installed within the pump outlet plumbing.

(b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide “Fertigation, Backflow Preventers” E05/30 (June 2009).

(c) The backflow preventer must be installed downstream of the water meter.

(d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.

(e)

- i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
- ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

(f)

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

17. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;

- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
 - i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.

- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;

- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.

- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.

- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.

- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.

- (h) For the purposes of this condition:
 - i. an 'approved method' is:
 - 1. 'OVERSEER' (AgResearch);
 - 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 - 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC092417.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.

- iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:
 - 1. timing and rate of irrigation applications;
 - 2. timing and rate of all nitrogen fertiliser applications;
 - 3. timing and rate of nitrification inhibitor applications;
 - 4. stocking rates (number and type of animals) on a monthly basis;
 - 5. timing of cultivation activities and crops/pasture planted.

18. Saltwater intrusion:

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

19. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and
- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

20. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

21. The lapsing date for the purposes of section 125 shall be 31 March 2016.

Gould CRC103498 To take and use water

1. Water may be taken only from bores:
 - (a) L37/1568, of diameter 300 millimetres and 163.77 metres deep, at map reference NZMS 260 L37:20324-09865, and
 - (b) L37/0853, of diameter 300 millimetres and 196 metres deep, at map reference NZMS 260 L37:20440-09889.
2.
 - (a) The combined rate at which water may be taken under this consent and consent CRC012348.2 and any subsequent variations thereof, shall not exceed:
 - (i) 60 litres per second from bore L37/1568, and
 - (ii) 75 litres per second from bore L37/0853.
 - (b) The combined volume of water that may be taken under this consent and consent CRC012348.2 and any subsequent variations thereof, shall not exceed 81,648 cubic metres in any period of seven consecutive days.
 - (c) The combined volume of water that may be taken under this consent and consent CRC012348.2 and any subsequent variations thereof, between 1st July and the following 30th June, shall not exceed:
 - (i) 524,445 cubic metres from bore L37/1568, and
 - (ii) 655,555 cubic metres from bore L37/0853.
3.
 - (a) This consent shall only be exercised when the consent holder has installed a measuring device, to the satisfaction of all metering conditions of this resource consent, to accurately measure the rate and volume of water taken under consent(s) CRC012348.2 and/or any subsequent variation such that compliance with Condition 2 may be determined.
 - (b) A report shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 31 August each year and shall include the rates and volumes at which water was taken and used under this consent and consent(s) CRC012348.2 and any subsequent variations thereof, in the previous 12 months from 1 July to the following 30 June.
4. Water shall only be used for irrigation of crops and pasture for grazing stock, including milking dairy cows, on the area of land shown in attached plan CRC103498, which forms part of this consent.
5. The consent holder shall, before the first exercise of this consent, install an easily accessible straight pipe(s), with no fittings or obstructions that may create turbulent flow conditions, 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.

6. The consent holder shall before the first exercise of this consent:
 - (a)
 - i. install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an electronic recording device, which will measure the rate and the volume of water taken 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(s) that shall time stamp a pulse from the flow meter at least once every 60 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (b)(i) and (b)(ii), or which is telemetered, as specified in clause (b)(iii).
 - (b) The recording device(s) shall:
 - i. 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
 - ii. store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store in a commonly used format and provide to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or
 - iii. shall 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 Canterbury Regional 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 Canterbury Regional 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 fully functional at all times.
7. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
8. 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 Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, Attention:

RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:

- (a) The measuring and recording device(s) has been installed in accordance with the manufacturer's specifications; and
 - (b) Data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 6.
9. The taking of water in terms of this permit shall cease for a period of up to 48 hours, on notice from the Canterbury Regional Council, to allow measurement of natural groundwater levels.

10.

- (a) The standing water level, relative to ground level, in bore L37/0853 or L37/1568 shall be measured as follows:
 - i. once at the start of the irrigation season before pumping has commenced;
 - ii. once two days after the cessation of pumping at the end of the irrigation season; and
 - iii. once within the first seven days of each calendar month outside of the irrigation season.
- (b) All measurements of the standing water level and date of measurement shall be recorded in a log book kept for that purpose, and supplied to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, each year during the month of June, or when requested in writing.

11. Backflow prevention

- (a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser or any other added contaminant, unless:
 - i. a reduced pressure zone (RPZ) backflow preventer; OR
 - ii. an air gap backflow preventer

is installed within the pump outlet plumbing.

- (b) The back flow prevention device must be designed and installed in accordance with Canterbury Regional Council (CRC) guide "Fertigation, Backflow Preventers" E05/30 (June 2009).
- (c) The backflow preventer must be installed downstream of the water meter.
- (d) The injection point for the effluent, fertiliser or added contaminant must be located downstream of the backflow preventer device.
- (e)

- i. a RPZ device installed in accordance with (a)(i) shall be tested within one month of its installation and every 12 months thereafter by a certified Approved Backflow Technician (ABT) or Independent Qualified Person (IQP) as defined in the CRC guide E05/30;
- ii. the test report for the RPZ undertaken in accordance with (e)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within one month of each test;

OR

(f)

- i. An air gap device in accordance with (a)(ii) shall be photographed. The photograph shall clearly show the air gap system. A diagram showing the dimensions of the air gap and outlet pipe are to be included;
- ii. The information required in accordance with (f)(i) shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within two months of the installation of the device.

(g) A copy of:

- i. the most recent test report required under (e)(ii); OR
- ii. information required under (f)(ii);

shall be located in the adjoining pump shed and be readily accessible.

Advisory note:

This condition does not authorise the distribution of effluent or fertiliser as this is subject to separate consent requirements pursuant to s15 of the RMA.

12. Farm environmental management plan

- (a) The consent holder shall, prior to the use of water taken in terms of this permit for irrigation, provide a copy of an individual Farm Environmental Management Plan (FEMP) to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager which shall address at a minimum how the individual farm will implement practicable steps to:
 - i. ensure water is used in a technically efficient manner;
 - ii. minimise nutrient losses from the property, including but not limited to measures identified in clause (d) below.
- (b) With the exception of the first period ending 30 June during which this consent is exercised for the irrigation of dairy pasture, for each preceding 12 month period ending 30 June, 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 same 12 month period ending 30 June;

- (c) A record of the input data, the calculations and associated results from clause (b) shall be:
- i. kept and maintained by the consent holder;
 - ii. certified as an accurate record by a person who can demonstrate competency in agricultural management;
 - iii. maintained for the property for the duration of the consent;
 - iv. provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of written notice requesting the data.
- (d) (i) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds eight grams per cubic metre, the consent holder shall review the records kept in accordance with clause (c), and shall determine what changes to farm management practices used in the coming 12 month period will minimise the loss of nitrate-nitrogen by leaching below the plant root zone;
- (ii) Where the modeled nitrate-nitrogen concentration in the soil drainage water exceeds 16 grams per cubic metre and cannot be reduced below this concentration, no water may be taken in terms of this permit.
- (e) Where changes are made to farm management practices in accordance with clause (d) of this condition, the consent holder shall include a section in the FEMP prepared in accordance with clause (a) of this condition detailing these changes.
- (f) Compliance with the individual FEMP shall be audited annually by suitably qualified independent assessor. If any non-compliance is noted, the consent holder shall remedy the non-compliance within one month.
- (g) A copy of all compliance audits carried out in accordance with clause (f) shall be forwarded to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 31 July each year.
- (h) For the purposes of this condition:
- i. an 'approved method' is:
 1. 'OVERSEER' (AgResearch);
 2. The Soil Plant Atmosphere Model (SPASMO- HortResearch);
 3. Any other method approved by the Canterbury Regional Council.
 - ii. the 'subject land' means the area identified in attached plan CRC10348.
 - iii. a 'suitably qualified independent assessor' shall have a relevant degree in farm management practices and shall have experience preparing and auditing Farm Environmental Management Plans.
 - iv. 'records of input data' shall include farm management information such as the following required for the running of the approved method:

1. timing and rate of irrigation applications;
2. timing and rate of all nitrogen fertiliser applications;
3. timing and rate of nitrification inhibitor applications;
4. stocking rates (number and type of animals) on a monthly basis;
5. timing of cultivation activities and crops/pasture planted.

13. The consent holder shall take all practicable steps to:

- (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
- (b) Avoid leakage from pipes and structures; and
- (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

14. Saltwater intrusion

- (a) Water taken in terms of this permit shall cease following any sample of water from any of bores L37/0867, L37/0693 and L37/1713, or from any replacement monitoring bores installed at the coast between Inverrose Road and Chertsey Kyle Road, having a measured electrical conductivity of 150 mS/m or more; and
- (b) On request, and at the cost of the person making the request, the Canterbury Regional Council may take and analyse samples from the monitoring bores, in addition to the Canterbury Regional Council's twice-yearly monitoring programme; and
- (c) Water taken in terms of this permit may only recommence following two consecutive samples of water, taken at least one week apart, from all bores within the monitoring site where all samples taken have a measured electrical conductivity of less than 150 mS/m, as measured by the Canterbury Regional Council.

15. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of 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.

16. The lapsing date for the purposes of section 125 shall be 31 March 2016.