

## **APPLICANT - RJ & JM MEIKLE**

**CRC040446 – To take and use water from bore I41/0030 at a rate of 12 litres per second for the irrigation of 26 hectares of crops and pasture**

### **[ ] Location of take – groundwater.**

Water may be taken only from bore I41/0030, 100 millimetres diameter and 15 metres deep, at or about map reference I41:2088-8544.

### **[ ] Rate of take and annual volume.**

Water may be taken at a rate not exceeding 12 litres per second, with a volume not exceeding 1036.8 cubic metres per day, and 144,300 cubic metres between 1st July and the following 30th June.

### **[ ] Land use and area to be irrigated.**

The water taken in condition ( ) shall only be used for irrigation of crops and pasture, as described in the application, on the area of land shown in attached plan “RJ & JM Meikle – Area to be irrigated”.

### **[ ] Nitrate management.**

#### **Nitrates- Nitrogen**

#### **[ ] .1.**

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

- (iv) Provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 September each year, or upon request.
  - (c) For the purposes of this condition an approved method is
    - (i) 'Overseer' (AgResearch)
    - (ii) The Soil Plant Atmosphere Model (SPASMO- HortResearch)
    - (iii) Any other method approved by the Canterbury Regional Council.
  - (d) For the purposes of this condition, the subject land means the area that is irrigated between 1 July and 30 June of the following year.
  - (e) Between the 1<sup>st</sup> September and 30<sup>th</sup> November of each year a groundwater sample ('the Sample') will be taken from the shallowest bore on the property to which this consent applies; and
  - (f) The Sample shall be analysed by a laboratory that is certified for that method of analysis for nitrate-nitrogen; and
  - (g) The results of this analysis shall be provided to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager by the 30<sup>th</sup> January of each year.
- [ ] .2.
- (a) Fertiliser shall be applied in accordance with a nationally recognized quality assurance program for fertilizer application.
  - (b) For the purposes of this condition a quality assurance program is:
    - (i) The New Zealand Fertiliser Manufacturers' Research Association Code of Practise for Fertiliser Use;
    - (ii) The Code of Practise for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07;
    - (iii) Any other method approved by the Canterbury Regional Council.

#### Nutrient Budget

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

#### Irrigation Infrastructure

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

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

A copy of the report shall be given to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.

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

#### Farm Management Plan

[ ] .6.

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

- (d) An audit shall be undertaken by an appropriately qualified person to determine compliance by the consent holder with the provisions of the Farm Management Plan. The audit shall take place each year for the first 3 years after taking of water commences under this consent and thereafter at least once every 5 years. A copy of the audit shall be provided to the Canterbury Regional Council: attention the Compliance and Enforcement Manager.

## Fencing

### [ ] .7. Within the irrigated area:

- (a) In respect of any natural, permanently flowing, surface water feature permanent fencing shall be erected in general accordance with the Canterbury Regional Council's "Guide to managing waterways on Canterbury farms" & companion guide "Lowland Plains, Streams and Drains"
- (b) Where practicable, riparian planting shall be carried out within fenced areas.
- (c) Temporary fencing will be erected when stock are grazing areas of the property where there is access to other waterways, excluded from condition (a) above.
- (d) All fencing will be maintained in a good state of repair.

### **[ ] Straight length of pipe.**

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

### **[ ] Flow meter – pumped.**

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

specified in clauses (b) (i), or which is telemetered, as specified in clause (b)(ii).

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

**[ ] Certification.**

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

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

**[ ] Standing water level**

- (a) The standing water level, relative to ground level, in bore J41/0030 shall be measured once every calendar month after pumping has ceased for:
  - (i) at least 24 hours; or
  - (ii) the period of time required for 95 percent recovery of the pumping induced drawdown.

PROVIDED THAT: condition ( ) may be used only after the consent holder has on at least one occasion measured the recovery response of bore J41/0030 over a 24 hour period following cessation of pumping. This is to determine the time required for 95 percent recovery of pumping induced drawdown.

- (b)
  - (i) All measurements of the standing water level shall be recorded in a log book kept for that purpose and supplied to Canterbury Regional Council, attention RMA Compliance and Enforcement Manager, annually during the month of June, or as requested.
  - (ii) Results of any analysis of the recovery response of bore J41/0030 shall be supplied to Canterbury Regional Council within 20 working days of measurement.

**[ ] Backflow prevention - groundwater.**

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

**[ ] Efficient use of water.**

The consent holder shall take all practicable steps to:

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

**[ ] Review**

The Canterbury Regional Council may, once per year, on any of the last 5 working days of June serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise

