



Resource Consent Application

For: Torach Farm Ltd

To: Discharge Dairy Effluent and Land use consent to farm
in a green nutrient allocation zone

Prepared by: Nicole Phillips

Date: January 2017

APPLICATION FOR RESOURCE CONSENT

Applicant: Torach Farm Ltd
C/- 403 Eastern Road
9 KRD
Oamaru

torachfarm@icloud.com

Activity: Discharge dairy effluent to land and air and Land use consent to farm in a green nutrient allocation zone

Location of Activity:

Physical Address: 4247 Kurow Duntroon Highway
Legal Description: Sct 36A and 38A Otekaieke Settlement and Section 1 Survey Office Plan 22454
Site Area: 327.2 hectares
Location: CB17: 0900-3262

Address for Service: Irricon Resource Solutions
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Application fee: \$3990.00 deposit has been paid by Irricon under the reference "Torach"

Additional fees or refund: Direct to applicant

The consultant is the main point of contact for this application and the applicant for compliance matters.

Signed:

A handwritten signature in blue ink, appearing to read 'N Phillips', is positioned next to a vertical blue line.

On behalf of the applicant – January 2017

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This report has been prepared for Environment Canterbury, as the regulatory authority, in accordance with Section 88 of the Resource Management Act 1991 (RMA), by Irricon Resource Solutions, on behalf of the applicant.

1.0 INTRODUCTION

Torach Farm Ltd (herein referred to as the applicant) is seeking to apply for a resource consent to discharge dairy effluent to land and air and a land use consent to farm in a green nutrient allocation zone.

The applicant has recently purchased 327.2 hectares (ha) on the corner of Eastern Road and Kurow Duntroon Highway, Otekaieke. A farm map is included as Appendix A.

The applicant is seeking resource consent for the discharge of dairy effluent for 740 cows.

The applicant's property is irrigated by Kurow Duntroon Irrigation Co (KDIC). KDIC do not hold a consent that limits the maximum amount of nitrate-nitrogen that may be discharged from the scheme area.

The applicant is also seeking a land use consent to farm in a green nutrient allocation zone for an increase in N loss above the baseline by more than 5kg N/ha/yr.

OVERSEER® Nutrient Budgets (OVERSEER) has been completed for the baseline years, the current farming system and the proposed farming system. An OVERSEER report is included as Appendix B with all the relevant details.

Cows are to be milked twice a day for factory supply.

The subject property falls under the jurisdiction of Waitaki District Council. No consents are required for this activity from this territorial authority.

2.0 DESCRIPTION OF THE PROPOSED ACTIVITY

2.1 Description of the Discharge

The discharges shall be only be diluted dairy effluent (the "Diluted Discharge") originating from a dairy shed and any associated stock holding areas (milking platform, yard and potentially longer term a feed pad), solids and odour arising from diluted dairy effluent and solid dairy cow waste.

For the purposes of this application *diluted discharge* is defined as:

- (i) liquid dairy effluent derived from a dairy shed and associated stock holding areas, diluted with wash-down water; and
- (ii) storm water from the dairy shed roof and yard.

The contaminants present in the effluent that will be spread onto the land will consist of faeces and urine, which can also contain soil, feed residues, and other chemicals. Together, these constituents contain nutrients such as, nitrogen, phosphorus and potassium, organic matter, harmful micro-organisms (pathogens such as leptosporosis and salmonella), sediments and toxins.

The anaerobic breakdown of some of these contaminants during decomposition will release potentially odourous gases such as ammonia. No other contaminants other than dairy shed and stock holding area effluent, diluted with wash-down water and associated odour are discharged under this consent.

2.2 Disposal/Irrigation System

The applicant is proposing to discharge effluent via a spray system over the total 200 effective hectares, with a minimum area of 45ha.

2.3 Storage Facility

Effluent will be stored in holding ponds. As yet the applicant has not confirmed the final configuration of the effluent storage facilities. The Dairy effluent storage calculator (DESC) will be used to determine the minimum amount of storage required for the 740 cows.

The storage facility will meet the requirements of rule 5.33, so is a permitted activity:

- The land used for the collection, storage or treatment of animal effluent is not located within
 - 20m of a surface water body , a bore for water abstraction or a coastal marine area
 - Within 50m of the boundary of the property
 - Within a group or community drinking-water protection zone as set out in schedule 1; and
 - The collection, storage and treatment system is sealed, such that seepage into land does not exceed one millimetre per day.

2.4 Proposed Conditions of dairy discharge

It is proposed to carry out the activities under the following conditions.

RESOURCE CONSENT TO DISCHARGE DAIRY EFFLUENT TO LAND AND AIR

A duration of 15 years is sought.

1. The discharges shall only be:
 - (a) diluted dairy effluent originating from a dairy shed as located as shown on Plan
 - i. CRCXXXXXX, which forms part of this consent and stockholding areas; and
 - (b) odour arising from diluted dairy effluent and solid dairy cow waste stored as
 - i. shown on Plan CRCXXXXXX.
2. The discharge of diluted dairy effluent shall only occur within the area labelled on Plan CRCXXXXXX, which forms part of this consent.
3. A maximum of 740 cows per day may be milked in the dairy
4. Prior to this consent being exercised, the consent holder shall establish effluent storage facilities on the property which provide a minimum combined working

capacity as defined by the DESC, which shall be maintained for the duration of this consent.

Note: For the purpose of this consent, 'minimum working capacity' is defined as the capacity available for storing diluted dairy effluent, which excludes stone traps, settling ponds, a minimum 300 millimetre vertical free-board and unpumpable sludge at the base of the pond(s).

5. The "Diluted Discharge" shall only be via a spray irrigation system.
6. If the irrigation system used to distribute the "Diluted Discharge" is also used to distribute water, a backflow preventer manufactured in accordance with AS 2845.1 (1998) or an equivalent standard, shall be installed within the pump outlet plumbing or within the mainline, to prevent the backflow of water or contaminants into the bore.

Any backflow preventer, referred to in condition (6) (a), shall be tested to the standard set out in AS 2845.3 (1993) or an equivalent standard 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.

7. The application depth of the "Diluted Discharge", including any irrigation water applied with this discharge or within 24 hours before or after discharging:
 - (a) shall not exceed 20 millimetres per day; and
 - (b) shall not result in any runoff beyond the property boundary.
8. The discharge shall not:
 - (a) enter, or be onto land within 20 metres of any wetland, surface water body, artificial watercourse, bore or soak hole, or water storage dam.
 - (b) be onto frozen or snow covered soil.
 - (c) occur within 20 metres of a property boundary; or
 - (d) occur within 100 metres of any neighbouring dwelling.
9. The discharge water applied within 24 hours before or after the discharge:
 - (a) shall not exceed a maximum application depth of 20 millimetres on the effluent discharge area; and
 - (b) shall not result in runoff of effluent from the disposal area; and
 - (c) shall not result in effluent ponding on the land surface.
10. The nitrogen loading rate from effluent shall not exceed:
 - (a) 200 kilograms of nitrogen per hectare per year; or
 - (b) 100 kilograms of nitrogen per hectare within any consecutive three month period.
11. The discharge of contaminants to air from the storage facilities shall not result in offensive or objectionable odour or deposition of aerosols beyond the property boundary.

12. The consent holder shall prepare and maintain a Farm Environmental Plan (FEP) in accordance with the requirements of CRC161657. On farm practice shall be in accordance with the FEP and the FEP shall be updated as necessary to reflect any changes in the farming operation over time. A copy of the FEP shall be provided to the Canterbury Regional Council, Attention: RMA Monitoring and Compliance Manager on request.
13. The Farm Environment Plan (FEP):
 - a. shall be audited by a Farm Environment Plan Auditor to determine the compliance of the FEP with the provisions of Appendix One and on farm practice with the provisions of the FEP;
 - b. audit shall be undertaken in accordance with Part C of Appendix One. A copy of the audit shall be provided to the Canterbury Regional Council, Attention: RMA Monitoring and Compliance Manager within two months of the audit being completed; and
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. If this consent is not exercised before XX/XX/2022, it will lapse in accordance with Section 125 of the Resource Management Act 1991.

2.5 Proposed conditions for land use consent to farm in a green zone

- 1 The use of land for farming shall only be within the area shown on Plan CRCXXXXXX, attached to and forming part of this consent.
- 2 The consent holder shall maintain a Farm Environment Plan (FEP) in accordance with CRC161657; and
 - a. on farm practice, shall be in accordance with the FEP at all times;
 - b. the FEP shall be updated as necessary to reflect any changes in the farming operation over time; and
 - c. a copy of the FEP shall be provided to the Canterbury Regional Council, Attention: Regional Leader - Monitoring and Compliance on request.
- 3
- 4 The Farm Environment Plan (FEP) prepared in accordance with Condition (2) above:
 - a. shall be audited within 12 months of the first exercise of this consent. Subsequent audits shall be undertaken within the timeframes specified in Part C of Appendix CRCXXXXXX; andshall be audited in accordance with Part C of Appendix CRCXXXXXX. A copy of the audit shall be provided to the Canterbury Regional Council,

Attention: Regional Leader - Monitoring and Compliance within two months of the audit being completed.

- 5 The farming activity shall be managed:
 - a. to achieve and maintain a Farm Environment Plan audit grade of "A" or "B", as assigned in accordance with Part C of Appendix CRCXXXXXX; and
such that it is not assigned a "C" or "D" grade.
 - b. such that it is not assigned a "C" or "D" grade.
- 6 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:
 - a. 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;
 - b. ensuring that the provisions of Appendix CRCXXXXXX relating to the FEP audit grading system and timeframes are still appropriate; or
 - c. enabling the standards set by a regional plan to be met when a regional plan has been made operative which sets rules relating to minimum standards of water quality.
- 7 The lapsing date for the purposes of section 125 shall be 30th June 2022.

3.0 PLANNING AND LEGAL REQUIREMENTS

3.1 Land and Water Regional Plan (LWRP Decisions)

Rule 5.31 – 5.37 are the relevant rule for stock holding areas and animal effluent and are as follows:

Rule 5.31 *The use of land for a stocking holding area is a permitted activity, provided that the following conditions are met'*

- a. *The stock holding area is not;*
 - a. *Within 20m of a surface water body, a bore used for water abstraction or the coastal marine area; or*
 - b. *Within 100m of a pre-existing dwelling or place of assembly on another property; and*
- b. *The stock holding area is not located within a group or community drinking water protection zone as set out in schedule 1; and*
- c. *All liquid animal effluent, wash-down water or storm water containing animal effluent is collected and disposed of to an animal effluent collection and storage system authorised under Rules 5.33 to 5.37 or an existing discharge permit; and*
- d. *The base of any stock holding area located over an unconfined or semi-confined aquifer shall be sealed such that seepage into land does not exceed one millimetre per day.*

All conditions of this rule can be met therefore the discharge of solid animal waste onto land is a permitted activity.

Rule 5.33 is the relevant rule for the discharge of solid animal and vegetative waste to land and is as follows:

5.33 *The discharge of solid animal waste (excluding and discharge directly from an animal to land), or vegetative material containing animal excrement or vegetative material, including from an intensive farming process or industrial or trade process, into or onto land, or into or onto land in circumstances where a contaminant may enter water is a permitted activity provided the following conditions are met:*

1. *The material does not contain any hazardous substance and;*
2. *The material does not include any waste from a human effluent treatment process; and*
3. *The material is not discharged:*
 - a. *onto the same area of land more frequently than once every two months;*
 - b. *Onto land where solid animal waste , or vegetative material containing animal excrement or vegetative material from a previous application is still visible on the land surface or;*
 - c. *onto land when the soil moisture exceeds field capacity;*
 - d. *within 20 m of a bore used for water abstraction, a surface water body not listed in Schedule 17 or the Coastal Marine Area; or*
 - e. *within 50m of a surface water body listed in Schedule 17 or;*
 - f. *Within a group or community drinking water supply protection area as set out in Schedule 1.*

All conditions of this rule can be met therefore the discharge of solid animal waste onto land is a permitted activity.

Rule 5.33 is the relevant rule for the collection, storage and treatment of animal effluent is as follows:

5.33 *The use of land for the collection, storage and treatment of animal effluent is a permitted activity, provided the following conditions are met;*

1. *The land used for the collection, storage and treatment of animal effluent is not:*
 - a. *Within 20 m of a surface water body (other than a wetland constructed primarily to treat animal effluent), a bore used for water abstraction or the Coastal Marine Area;*
 - b. *Within 50m of the boundary of the property*
 - c. *Within a group or community drinking water supply protection area as set out in Schedule 1; and*
2. *The collection, storage and treatment system is sealed, such that seepage into land does not exceed one millimetre per day.*

All conditions of this rule can be met therefore the discharge of solid animal waste onto land is a permitted activity.

Rule 5.36 is the relevant rule for discharge of animal effluent or water containing animal effluent and other contaminants and is as follows;

1. *The discharge of animal effluent or water containing animal effluent and*

- other contaminants' originating from;
- a. A stock holding area or
 - b. A stock truck holding tank that does not meet one or more of the conditions of rule 5.35; or
 - c. An animal effluent storage facility
2. Onto or into land where a contaminant may enter water is a restricted discretionary activity, provided the following conditions are met;
 3. The discharge of animal effluent or water containing animal effluent and other contaminants;
 - a. Within 20 m of a surface water body (other than a wetland constructed primarily to treat animal effluent), a bore used for water abstraction or the Coastal Marine Area;
 - b. Does not occur beyond the boundary of the property on which the animal effluent is generated unless the written approval of the property owner where the discharge occurs has been obtained; and
 - c. Is not within a group or community drinking water protection zone as set out in Schedule 1; and
 - d. Has backflow prevention installed if the animal effluent or water containing animal effluent is applied with irrigation water; and
 - e. Is not to contaminated or potentially contaminated land; and
 4. The discharge is the subject of a Farm Environment Plan that has been prepared in accordance with Schedule 7 Part A.

Under this rule the proposed activity is a restricted discretionary activity.

A FEP has been prepared as required under CRC163429 (KDIC water permit). The FEP will be updated and audited as required by CRC163429. It is proposed by the applicant that FEP conditions could be included as conditions of consent if the applicant was no longer supplied irrigation water by KDIC.

By adhering to the proposed conditions of consent this application can meet the provisions of rule 5.33. A check of the land parcels against the Listed Land Use Register identified that none of the areas contained any potentially contaminated land.

Nutrient Management

Plan Change 5 was notified on the 4 February 2016. Very few rules have legal effect at the time of notification. None of the rules that have immediate legal effect are relevant to the Valley and Tributaries area of the Waitaki Sub Regional Plan.

Therefore the relevant rules for nutrient management are the Land and Water Regional Plan Green and light blue nutrient allocation zone rules.

Rule 5.57 *The use of land for a farming activity is a permitted activity, provided the following conditions are met:*

1. The nitrogen loss calculation for the part of the property within either the green or light blue nutrient allocation zones does not exceed 20kg per hectare per annum and information is recorded in accordance with Schedule 7 Part D, and supplied to the Canterbury regional Council upon request; or
2. The nitrogen loss calculation for the part of the property within the green or light blue nutrient allocation zones is greater than 20 kg per hectare per annum and:
 - a. Information is recorded in accordance with Schedule 7 Part D, and

- supplied to the Canterbury regional Council upon request; and*
- b. The property is less than 50 hectares in area; or*
- c. The nitrogen loss calculation for the part of the property within either the green or light blue nutrient allocation zones does not increase above the nitrogen baseline by more than 5kg per hectare per annum.*

The OVERSEER modelling shows that the N loss calculation exceeds 20kg N/ha/yr and is also a greater than 5kg increase from the baseline N loss. Therefore Rule 5.58 is the relevant rule and the activity is considered a restricted discretionary activity under Rule 5.58.

Rule 5.58 *The use of land for a farming activity that does not comply with Rule 5.57 is a restricted discretionary activity, provided the following condition is met:*

- 1. A farm Environment Plan has been prepared in accordance with Schedule 7 Part A.*

A FEP has been prepared and provided to KDIC under CRC161657. It will be updated and audited in accordance with the requirements under CRC161657.

3.2 Proposed Canterbury Air Regional Plan Rules – notified 28th Feb 2015

Rule 7.68 is the relevant rule of the Proposed Canterbury Air Regional Plan, concerning rural discharges to air and is as follows:

7.68 The discharge of contaminants into air from the collect, storage, treatment and application of liquid and slurry animal effluent or solid animal effluent onto production land, is a permitted activity provided the following conditions are met:

1. The discharge does not cause a noxious or dangerous effect; and
2. An odour management plan is prepared in accordance with Schedule 2 is held by the persons responsible for the discharge, and where a Farm Environment Plan is required pursuant to Rule 5.45 of the Land and Water Regional Plan, the odour management plan will be a component of that Plan; and
3. The odour management plan is supplied to the CRC on request; and
4. The pH range of the liquid or slurry effluent is between pH6.5 and pH8; and
5. Dissolved Oxygen is present in the liquid or slurry effluent at concentrations greater than 1ppm; and
6. The persons responsible for the effluent application will keep a record for 3 months, to be provided to the CRC on request, of the effluent discharged including the following information:
 - (a) The type of effluent applied to land
 - (b) The estimated daily quantity of effluent applied to land in cubic metres; and
 - (c) The location of the effluent application; and
 - (d) The wind direction at the time of application.

The discharge is not noxious or dangerous and odour management is addressed as part of the FEP.

It is unclear whether the pH and dissolved oxygen status of the effluent meets the requirements of clauses 4 and 5. The applicants assume that they will comply with point 4 and 5. As application records will be kept in the dairy shed as part of their FEP it is assumed that clause 6 of the rule will be complied with.

In terms of Rule 7.68, for the reasons outlined above, this application must be considered a restricted discretionary activity.

4.0 CONSULTATION

No consultation has been undertaken as no party is deemed affected.

As such, no written approvals have been sought, as they are not considered to be required pursuant to the RMA, Section 95E(1), in which no persons can be considered adversely affected by the proposal which creates effects that are less than minor.

5.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The Property

Nature of the surrounding environment: The property is in a rural setting with neighbouring agricultural production.

Nearest dwelling (excluding their own): Approximately 180m metres from the property boundary being located at Eastern Road and 500m from the effluent storage facilities.

Topography: Flat/Rolling/Easy Hill.

Prevailing wind direction: North West.

Resource Consents and Monitoring

The following consents are held by the applicant and relate to the site:

Table 1 – Active Consents relating to the site

Record	Status	Type	Holder Name
CRC146227	Active	Water Dam – Take and use	Mr M E & Mrs M J Kingsbury
CRC146226	Active	Discharge water	Mr M E & Mrs M J Kingsbury

Discharge permits within 2000m of the site

There are 5 active discharge permits within 2000m of the site:

Record	Type	Holder Name
CRC060079.1	Human Effluent	Mary Stella Jerram
CRC062430	Dairy Effluent	Mr A W & Mrs S J Gibson
CRC121849	Waste Management	MFS Ventures
CRC146213	Water pure	MFS ventures
CRC150174	Animal effluent	Otewai Holdings Ltd

Groundwater wells:

There are 28 active bores within 2000m of the discharge areas, with depths ranging from 0.64m to 12.43m.

WELL	OWNER	DEPTH	USE
I40/0011	Easton, DL	31	Domestic and stock water
I40/0066	Unknown	12.8	Domestic
I40/0078	Sargent, PL	27.4	Domestic
I40/0150	MR S R G & MRS J S FIELDING	4	Domestic and stock water
I40/0217	Mr A W & Mrs S J Gibson	2.9	Irrigation
I40/0245	AQUA	10.5	Geotechnical
I40/0246	AQUA	18	Geotechnical
I40/0251	AQUA	29.28	Geotechnical
I40/0255	AQUA	18	Geotechnical
I40/0257	Waitaki District Council	18.1	Geotechnical
I40/0258	Waitaki District Council	18	Geotechnical
I40/0259	Waitaki District Council	18	Geotechnical
I40/0513	Clarksfield, SA		Water level observation
I40/0524	Otewai Holdings Ltd	10	Irrigation
I40/0543	Mary Jerram	24	Irrigation
I40/0641	Waitaki Vineyard Estates	84	Irrigation
I40/0645	Any and John Chambers	16.15	Domestic
I40/0647	Betty and Dennis Morgan	9.14	Domestic
I40/0648	Gill and Own King	12.08	Domestic
I40/0786	Mrs I F Willis	15.5	Domestic
I40/0710	Meridian Energy	3.9	Water level observation
I40/0832	Otewai Holdings Ltd	2.75	unknown
I40/0833	Otewai Holdings Ltd	2.75	unknown

Most these wells are located across the Otekaieke Creek, to the north of the discharge area.

Community supply wells:

None

Surface water irrigation proposed schemes: None

Surface water irrigation schemes:

Yes – KDIC

Ngāi Tahu

Te Runanga o Moeraki

Statutory acknowledgement areas/

Silent files:

None

Land Resources and Conservation

Wetlands:

None located on the property

Sites of special wildlife significance/

Indigenous birds: None located on the property

Area of national/regional significance: None located on the property

Soils:

<u>SMAP</u> <u>Information</u>	Kurow Hill Soil (Kurow_1a.1)	Ngapara deep fine silt loam, rolling (Ngap_1a.2)	Otiake deep silty loam (Otia_6a.1)
PAW (0-60cm)	60mm	93mm	114mm
Permeability of slowest horizon	Slow (<4mm/h)	Slow (<4mm/h)	Slow (<4mm/h)
Dairy Effluent (FDE) risk category	C if slope >7 deg otherwise B	C if slope >7 deg otherwise D	C if slope >7 deg otherwise D

Land and Water Regional Plan

Salmon spawning site: Waitaki River – approximately 1.3km from the closest boundary.

High naturalness water bodies: Waitaki River – approximately 1.3km from the closest boundary.

Groundwater allocation zone: Waitaki – Downstream of Dam

Nutrient allocation zones: Lower Waitaki – Valley and Tributaries
Green

Water Quality and Monitoring

Water quality – ground water: There are 2 groundwater quality sites within 2000m of the discharge area. Sampling was undertaken in 2010 and has been undertaken annually from I40/0543 since 2010.

Bore site	nitrate-N reading (mg/L as N)	Year taken	Direction from discharge area
I40/0543	0.8	2016	SE – across Otekaieke Creek

I40/0710	0.3	2010	N
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Water quality – surface water:

There are two sites located within 2000m of the discharge area that haven't been regularly sampled since 1983.

Location	nitrate-N reading (mg/L as N)	Faecal Coliforms	Year taken	Direction from discharge area
SQ10169 – Dr Creek at SH Culvert	No results	<2	1983	NE
SQ10173 – Otekaieke River @ SH Bridge	No results	<2	1983	NE

Groundwater

Springs:

None

Surface water

Rivers/streams:

Unnamed creek – see Appendix A for farm map

Sensitivity of the receiving environment:

The sensitivity of the receiving environment is considered to be low to moderate risk to the storage and discharge of contaminants. There are a mix of soil types with PAW ranging from 60-114mm. The Soil type primarily used for effluent discharge has a PAW of 114mm. The nearest dwelling not owned by the applicant will have a 180m buffer from the effluent discharge and is over 500m from any proposed effluent storage.

6.0 ASSESSMENT OF ACTUAL AND POTENTIAL EFFECTS OF DISCHARGE OF DAIRY EFFLUENT

The following Assessment of Environment Effects (AEE) contains detail that corresponds with the scale and significance of the effects that the proposed activity may have on the environment, as required by the Fourth Schedule to the Act.

6.1 Adverse effects of the discharge of nitrogen on groundwater

The contaminants present in the effluent to be spread onto land will consist of faeces, urine, and wash-down water and can also include spilled milk, storm water, soil, feed residues, detergents, and other chemicals. Together these sources contain nutrients such as nitrogen, phosphorus, potassium, organic matter, harmful micro-organisms (pathogens such as leptosporosis and salmonella), sediments, and toxins.

Potassium and phosphorus are unlikely to be present in amounts that will cause adverse effects. Nitrogen is the primary nutrient of concern due to its high mobility in soil. Any nitrates not utilised in the soil can leach into groundwater. Elevated nitrate concentrations in groundwater are a concern due to the harmful effects if ingested by humans. The main health concern is methaemoglobinaemia, commonly known as blue baby syndrome. Nitrates have also been cited as a risk factor in developing gastric and intestinal cancer and childhood diabetes, although there is no conclusive evidence to support this. The New Zealand Drinking Water Standard (Ministry of Health, 2000) for nitrate is 50 mg/L (which is equivalent to 11.3 g/m³ of nitrate-nitrogen).

Nitrate nitrogen levels in groundwater in the area are hard to determine given the lack of robust and recent data available, but are indicative of levels well below the NZ drinking water standard.

The Regional Rule for Animal Effluent Disposal onto Land limits the spreading of animal effluent onto grazed pasture to a rate of 200 kg N/ha/yr. This limit relates only to the nitrogen contained in the effluent, and does not include nitrogen inputs from fertiliser. This limit assumes that nitrogen applied from external sources reduces that fixed by clovers such that total inputs to the nitrogen cycle remain relatively static.

The 200 kg N/ha/yr. limit is supported by Canterbury research (primarily at Lincoln University), indicating that the discharge of nitrogen onto grazed pasture within this limit does not contribute significantly to the concentration of nitrate nitrogen in down-gradient groundwater (Rate et al, 1994, Cameron et al, 1995). Monitoring over a 5-year period of groundwater down-gradient of pig effluent application provided results that are consistent with this work (Casey and Cameron, 1995).

NITROGEN LOADING

$$\text{TOTAL N/YEAR (COWS X 6.5) (KG)} = 740 \text{ COWS X } 6.5 = 4810$$

$$\text{DISCHARGE AREA/YEAR (HA)} = 200$$

$$\text{N LOADING RATE (KG/HA/YEAR)} = 4810/200 = 24 \text{ KG/HA/YEAR}$$

$$\text{MINIMUM AREA USED} - 45\text{HA} = 107 \text{ KG/HA/YEAR}$$

VOLUME OF RAW EFFLUENT PROPOSED

$$\text{NUMBER OF COWS X } 5.4 = 740 \text{ X } 5.4 = 3996 \text{ L/DAY}$$

$$\text{VOLUME OF DILUTED EFFLUENT PRODUCED: VOLUME OF RAW EFFLUENT + (VOLUME OF WASH DOWN WATER X NUMBER OF COWS)} = 3996 + (75 \text{ X } 740) = 59,496 \text{ L/DAY}$$

The maximum nitrogen loading rate will be approximately 24 kilograms per hectare per year if spread over the whole farm area, whilst the minimum area of 45ha has also been included to show the loading rate if spread over a smaller area. Both are well below the 200 kg N/ha/yr. limit. Further mitigation measures to protect water quality are proposed as part of the consent conditions and include a farm management plan

and a maximum nitrogen loading rate. As a result any adverse effects of effluent discharge are expected to be less than minor.

6.2 Adverse effects of the discharge of pathogens on groundwater

Animal effluent can contain pathogenic micro-organisms that may cause infections in humans, such as salmonella and leptospirosis. Bacteria and viruses are the organisms of primary concern for discharges to groundwater as larger micro-organisms are likely to be filtered out as they pass through the soil and substrata. The New Zealand Drinking Water Standards (Ministry of Health, 2000) specify *Escherichia coli* (*E.coli*) as the indicator organism for faecal contamination of drinking water. The standards require that the *E.coli* levels in drinking water be less than 1 in 100 mL of sample.

Soil is normally a very good protector of groundwater against the entry of pathogens, providing that it is in an unsaturated state. Bacteria and viruses are attenuated very effectively through desiccation, irradiation filtration, adsorption, and natural attrition. Research undertaken at Lincoln University and elsewhere indicates that the filtration effect of soil is optimal where the effluent application rate is less than half the water holding capacity of the soil. Where the amount of effluent applied exceeds half the pore volume in the soil, 'breakthrough' of pathogens into subsoils (and potentially groundwater) is likely to occur.

The application depth proposed is 20mm.

<u>SMAP Information</u>	Kurow Hill Soil (Kurow_1a.1)	Ngapara deep fine silt loam, rolling (Ngap_1a.2)	Otiake deep silty loam (Otia_6a.1)
PAW (0-60cm)	60mm	93mm	114mm
Permeability of slowest horizon	Slow (<4mm/h)	Slow (<4mm/h)	Slow (<4mm/h)
Dairy Effluent (FDE) risk category	C if slope >7 deg otherwise B	C if slope >7 deg otherwise D	C if slope >7 deg otherwise D

Category	A	B	C	D	E
Soil and landscape feature	Artificial drainage or coarse soil structure	Impeded drainage or low infiltration rate	Sloping land (>7°) or land with hump & hollow drainage	Well drained flat land (<7°)	Other well drained but very stony ^x flat land (<7°)
Application depth (mm)	< SWD*	< SWD	< SWD	< 50% of PAW#	≤ 10 mm
Instantaneous application rate (mm/hr)	N/A**	N/A**	< soil infiltration rate	N/A	N/A
Average application rate (mm/hr)	< soil infiltration rate	< soil infiltration rate	< soil infiltration rate	< soil infiltration rate	< soil infiltration rate
Storage requirement	Apply only when SWD exists	Apply only when SWD exists	Apply only when SWD exists	24 hours drainage post saturation	24 hours drainage post saturation

Many community and domestic water supplies are vulnerable to contamination from land use activities and discharges upstream of the water supply (Ecan, 2011).

There are no community drinking water supplies within 2000m of the activity, therefore, this will not result in community drinking water supplies being unsafe for human consumption and that the overall adverse effects of ponding and leaching can be reduced, and it is considered that adverse effects from pathogens on groundwater will be less than minor.

6.3 Cumulative adverse effects of the discharge on groundwater

In rural areas where there are numerous sources (both point and non-point) of effluent discharges, the cumulative contribution of nutrients and pathogens to groundwater can be significant. In some instances the background concentrations of contaminants are already high because of existing activities. The rapid rate of dairy conversions in Canterbury has raised concerns regarding their cumulative impact on nitrate nitrogen concentrations in groundwater and surface water.

The nitrogen loading rate is low. The effluent system has been designed to ensure that the discharge occurs when field conditions allow. These factors will provide mitigation against adverse effects on groundwater quality. Separation distances are proposed to bores and waterways.

Cumulative effects of nitrate contamination on groundwater are likely to be minor as a result of proposed mitigation measures, and effects on people *de minimis*.

6.4 Adverse effects of the discharge on surface water

Animal effluent discharges onto ground may contaminate surface water because of hydraulic connection between groundwater and a nearby surface water body, surface ponding causing overland flow of effluent to water ways, and direct entry of effluent from the irrigator into waterways.

There are no springs or wetlands within the farm boundary. An unnamed creek flows through the property. Appropriate setbacks are proposed from the stream to prevent effluent entering the stream.

As in Sections 6.1, 6.2 and 6.3 above, effects on groundwater are considered less than minor, and therefore any hydraulically connected groundwater is unlikely to have an adverse effect on surface waterways through contamination. Additionally, the proposed conditions will ensure adverse effects of the discharge on surface water are mitigated.

6.5 Adverse effects of the discharge on public health

Spray irrigation of effluent can discharge pathogens into the air in small aerosols or in larger water droplets in the form of spray-drift. There is potential for disease to be transferred to nearby people as a result of inhalation, particularly where high-pressure irrigation occurs near the property boundary. A precautionary approach in all instances would advocate minimisation of aerosol transfer across the property boundary.

Appropriate buffer distances will be adhered to and aerosols and spray-drift will be maintained within the property boundary; thereby, ensuring that any adverse effects of the discharge on the health of people and stock are minimised and overall, less than minor.

6.6 Adverse effects of odour on air quality

The discharge of dairy effluent onto land through spray irrigators may result in the release of odour. If the effluent is not fresh there is the potential for it to become anaerobic and this is of concern.

The potential effects on air quality (odour) will be less than minor due to the low application rate and the fact that the applicant is advised to spread effluent fresh daily, and only store on windy days when it is not appropriate to spread the effluent.

The proposed conditions of consent provide mitigation measures which aim to ensure that any adverse effects of odour on air quality will be mitigated and as such, remain less than minor.

6.7 Adverse effects of the discharge on amenity

The proposed discharge is located within a rural area and the neighbouring properties are rural holdings. Therefore this activity is consistent with surrounding land uses and the adverse effects of the discharge on the visual amenity of the area are considered to be less than minor.

6.8 Adverse effects on Tangata Whenua

TE WHAKATAU KAUPAPA – NGĀI TAHU RESOURCE MANAGEMENT STRATEGY FOR THE CANTERBURY REGION (ALL AREAS OF CANTERBURY)

	Can you comply?	Y	N	N A	Comments
Forests Policy 6	Wherever possible, but especially at the margins of lakes and rivers, vegetation should be established to assist in stemming the flow of nutrients into these water bodies.	x			
General Water Policy 1	That no discharge into any water body should be permitted if it will			x	

	result in contamination of the receiving water.				
General Water Policy 3	That the quality and quantity of water in all waterways be improved to the point where it supports those fish and plant populations that were sourced from them in the past and that this mahinga kai are fit for human consumption			x	
General Water Policy 6	That when water rights to discharge effluent come up for renewal, investigations should be undertaken to determine if more modern technology would permit an improvement in the quality of any discharge.	x			The discharge area ensures a low nutrient rate and concentration per hectare. New application – this ensures the most modern technology will be used
Mahinga Kai Policy 1	That the quality and quantity of water in all waterways be improved to the point where it supports those fish and plant populations that were sourced from them in the past, and that these mahinga kai are fit for human consumption.			x	
Wahi tapu - Urupa Policy 8	A silent file will be kept on known burial sites by the Ngāi Tahu Maori Trust Board. Where those sites are located outside Maori Reserved land they have been given a number and the general area has been marked on the relevant map in Appendix A to Chapter 5. Anyone proposing any change on or near one of these sites should consult the Ngāi Tahu Maori Trust Board through the Regional Council's Iwi Liaison Officer. Ngāi Tahu Maori Trust Board in turn can initiate contact with those people who have direct interest in that particular site. All decisions will be made on a site by site basis.			x	No silent file exists in the area

NGĀI TAHU FRESHWATER POLICY STATEMENT (ALL AREAS OF CANTERBURY)

	Can you comply?	Y	N	NA	Comments
Maui objective	To require that any activity resulting in the discharge of contaminants to air evaluate and propose measures to prevent adverse impacts on human health.	x			

Mahinga kai objective	Best practice must be used with regards to the spraying of effluent, to minimise spray drift. Consideration must be given to wind direction, best possible application rate, and proximity to waterways and groundwater sources.	x			
Mahinga kai Policy 3	Best practice must be used with regards to the spraying of effluent in farming activities (e.g. piggeries and dairy farms) and the minimisation of odour, including consideration of wind strength and direction.	x			

IMP: KAI TAHU KI OTAGO NATURAL RESOURCE MANAGEMENT PLAN (TAKIWĀ OF BOTH MOERAKI & WAIHAO RŪNANGA)

	Can you comply?	Y	N	NA	Comments
Wai Maori General Policies – Policy 9	To require consideration of alternatives and use of new technology for discharge renewal consents.	x			The scope of the consent being applied for is with a view for adoption of modern application methods, of spray irrigation
Wai Maori General Policies – Policy 14	To encourage Management Plans for all discharge activities that details the procedure for containing spills and including plans for extraordinary events.	x			A Farm Environment Plan (FEP) has been developed.
Wai Maori General Policies – Policy 15	To require all discharge systems to be well maintained and regularly serviced. Copies of all service and maintenance records should be available to Arowhenua Runanga upon request.	x			A condition of consent will provide for this policy
Wai Maori General Policies – Policy 17	To require visible signage informing people of the discharge area; such signs are to be written in Māori as well as English.		x		As the discharge is occurring on private property it is considered that this provision is not necessary under these circumstances
Wai Maori General Policies – Policy 18	To require groundwater monitoring for all discharges to land.			x	
Wāhi Tapu General	To require consultation with Arowhenua Runanga for activities	x			

Policies – Policy 1	that has the potential to affect wāhi tapu.				
Wāhi Tapu General Policies – Policy 7	To discourage all discharges near wāhi tapu.	x			
Air and Atmosphere - Policy 1	To require earthworks and discharges to air consider the impact of dust and other air-borne contaminant on health, mahika kai, cultural landscapes, indigenous flora and fauna, wāhi tapu and taoka	x			

The area of land over which the dairy effluent is spread will retain a low overall nitrogen loading applied to the soil and the large amount of effluent storage provided will allow effluent to be spread when weather and soil conditions allow. Thus it is considered that this application is in keeping with Ngāi Tahu's principles and policies in regard to freshwater.

6.9 Positive effects of the discharge on soil productivity

Dairy effluent contains nutrients and organic material beneficial to soil productivity and plant growth and is a valuable natural fertiliser. The proportion of nutrients found in the effluent is in line with plant requirements. Research on animal effluent found that nitrogen loads of less than 200 kg/ha/year would be assimilated by pasture without significant additional leaching into groundwater. The pasture will also assimilate other nutrients such as potassium and phosphorus.

The applicant considers that the granting of this application will allow the applicants to use the effluent as fertiliser on their own property. This practice promotes the sustainable management of natural and physical resources.

7.0 ASSESSMENT OF ACTUAL AND POTENTIAL EFFECTS OF THE LAND USE CONSENT TO FARM IN A GREEN NUTRIENT ALLOCAITON ZONE

The following Assessment of Environment Effects (AEE) contains detail that corresponds with the scale and significance of the effects that the proposed activity may have on the environment, as required by the Fourth Schedule to the Act.

7.1.1 FARM ENVIRONMENT PLAN (FEP)

The applicants Farm Environment Plan (FEP) forms part of the application and is attached in **Appendix Three**. The FEP addresses the following matters, which are not discussed any further.

- proposed management practices to avoid or minimise the discharge of nitrogen, phosphorus, sediment and microbial contaminant to water from the use of land.

The proposed conditions of the KDIC consent to supply water CRC161657, require that an audit of the FEP will be undertaken in accordance with the FEP audit requirements and the grade will be reported to ECan. The recurrence of future audits will be based on the grade received.

7.1.2 POTENTIAL BENEFITS TO THE APPLICANT, THE COMMUNITY AND THE ENVIRONMENT

The applicant will be able to continue farming in a manner that is both profitable and sustainable. This means that they will continue to employ staff, and support local rural businesses.

7.1.3 POTENTIAL EFFECTS OF THE LAND USE ON SURFACE AND GROUNDWATER QUALITY

The farm is in the Valley and Tributaries Green nutrient allocation zone.

Although none of the rules pertaining to the Valley and Tributaries have any legal effect until Plan Change 5 is made operative in accordance with Clause 20 of Schedule 1 to the RMA (1991) it is relevant to consider the effects of the proposed increase in N loss against some of the sections within Plan Change 5, namely Rule 15B.5.35 – which relates to ensuring that the any increase in N loss from a farming activity does not cause the catchment load limit to be exceeded.

Through the Plan Change 5 process it was clearly identified that the current N load in the Waitaki River was well below the catchment load limit of 244T/yr (which equates to an at source load limit of 790T from agricultural and non-agricultural land).

Generation of nitrogen and phosphorus loss estimates in the Waitaki Catchment, 2015 has the current total N load as 212T N/yr using the CLUES predictions (in stream), which equates to a current source load of 670T/yr for the total Valley and Tributaries area.

It is my understanding that the catchment load limit has been set using a previous version of OVERSEER and is still to be updated using the current version, v6.2.3.

All the OVERSEER modelling for this application has been undertaken in the current version, v6.2.3. It is therefore reasonably difficult to compare the applicants proposed increase in N loss to the catchment load limit and at source load.

The applicant is proposing an increase in N loss from the farm of 6.7T/yr using OVERSEER v6.2.3 (see Appendix 2, OVERSEER report for detail).

It is highly unlikely that this would cause the catchment load limit to be exceeded as it is a small (less than 1%) increase to the current at source load on land. This takes the current at source load from 690T to 696.7T/yr., still significantly less than the at source limit of 790T/yr.

Due to the high catchment load limit and Plan Change 5 hearing showing that the current load is well below the catchment limit, the effects of the land use on this are considered to be less than minor.

7.1.4 NUTRIENT DISCHARGE ALLOWANCE (NDA)

The applicant has proposed an NDA of the Proposed Land use until 2020, and then the GMP Loss Rate from that point on. It is demonstrated above that the increase in N loss under the proposed scenario is unlikely to cause the catchment load limit to be exceeded.

8.0 POLICIES AND OBJECTIVES

8.1 National Policy Statement – Freshwater Management 2014

There are several objectives and policies relating to safeguarding the life-supporting capacity of ecosystem processes and indigenous species in managing the use of water, to avoid further over-allocation and phase out existing over-allocation, improve efficient allocation and use of water and protect significant wetlands.

Objective A1

To safeguard:

- a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and
- b) the health of people and communities, at least as affected by secondary contact with fresh water; in sustainably managing the use and development of land, and of discharges of contaminants.

Objective A2

The overall quality of fresh water within a region is maintained or improved while:

- a) protecting the significant values of outstanding freshwater bodies;
- b) protecting the significant values of wetlands; and
- c) improving the quality of fresh water in water bodies that have been degraded by human activities to the point of being over-allocated.

Policy A1

By every regional council making or changing regional plans to the extent needed to ensure the plans:

- a) establish freshwater objectives in accordance with Policies CA1-CA4 and set freshwater quality limits for all freshwater management units in their regions to give effect to the objectives in this national policy statement, having regard to at least the following:
 - i. the reasonably foreseeable impacts of climate change;
 - ii. the connection between water bodies; and
 - iii. the connections between freshwater bodies and coastal water; and
- b) establish methods (including rules) to avoid over-allocation.

Objective B1

To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water.

Objective B2

To avoid any further over-allocation of fresh water and phase out existing over-allocation.

Objective B3

To improve and maximise the efficient allocation and efficient use of water.

Objective B4

To protect significant values of wetlands and of outstanding freshwater bodies.

Policy B1

By every regional council making or changing regional plans to the extent needed to ensure the plans establish freshwater objectives in accordance with Policies CA1-CA4 and set environmental flows and/or levels for all freshwater management units in its region (except ponds and naturally ephemeral water bodies) to give effect to the objectives in this national policy statement, having regard to at least the following:

- a) the reasonably foreseeable impacts of climate change;
- b) the connection between water bodies; and
- c) the connections between freshwater bodies and coastal water.

Policy B2

By every regional council making or changing regional plans to the extent needed to provide for the efficient allocation of fresh water to activities, within the limits set to give effect to Policy B1.

Policy B3

By every regional council making or changing regional plans to the extent needed to ensure the plans state criteria by which applications for approval of transfers of water take permits are to be decided, including to improve and maximise the efficient allocation of water.

Policy B4

By every regional council identifying methods in regional plans to encourage the efficient use of water.

Policy B5

By every regional council ensuring that no decision will likely result in future over-allocation – including managing fresh water so that the aggregate of all amounts of fresh water in a freshwater management unit that are authorised to be taken, used, dammed or diverted does not over allocate the water in the freshwater management unit.

Policy B6

By every regional council setting a defined timeframe and methods in regional plans by which over-allocation must be phased out, including by reviewing water permits and consents to help ensure the total amount of water allocated in the freshwater management unit is reduced to the level set to give effect to Policy B1.

The activity aims to ensure that there are no adverse effects on water quantity or quality and therefore, meets the objective and policies of the National Policy Statement for Freshwater Management.

8.2 National Environmental Standards – Sources of Human Drinking Water

The purpose of the National Environmental Standard for Sources of Human Drinking Water (NES) is to reduce the risk of human drinking water sources becoming contaminated. For this purpose, a human drinking water source is a natural water body such as a lake, river or groundwater, used to supply a community with drinking water. The standard applies to source water before it is treated and only sources used to supply human drinking water i.e., not stock or other animals.

12 Condition on resource consent if activity may significantly adversely affect registered drinking-water supply

- (1) When considering a resource consent application, a consent authority must consider whether the activity to which the application relates may—
- (a) itself lead to an event occurring (for example, the spillage of chemicals) that may have a significant adverse effect on the quality of the water at any abstraction point; or
 - (b) as a consequence of an event (for example, an unusually heavy rainfall) have a significant adverse effect on the quality of the water at any abstraction point.

The activity aims to ensure that there are no adverse effects on water quantity or quality and therefore, meets the objective and policies of the National Environmental Standard for Drinking Water.

8.3 Canterbury Regional Policy Statement (RPS)

Chapter 4 – Provision for Ngāi Tahu and their relationship with resources

Chapter 4 highlights the Canterbury Regional Council and their relationship with Ngāi Tahu within the resource management process. It deals with the tools and processes required to sustain good working relationships between Ngāi Tahu and natural resources. This application supports the relationship, tools and processes outlined in Chapter 4.

Chapter 7 – Fresh Water

This chapter specifically relates to protecting freshwater from the adverse effects of activities through to efficient use of water either surface or ground. The following policies are relevant to this proposed activity:

Policy 7.3.1 – Adverse effects of activities on the natural character of fresh water – To identify the natural character values of fresh water bodies in the region and to:

- (1) Preserve natural character values where there is a high state of natural character;*
- (2) Maintain natural character values where they are modified but highly valued; and*
- (3) improve natural character values where they have been degraded to unacceptable levels;*

unless modification of the natural character values of a fresh water body is provided for as part of an integrated solution to water management in a catchment in accordance with Policy 7.3.9, and, in that case, any adverse effects on the natural character values of the fresh waterbody are remedied or mitigated.

Policy 7.3.6 – Fresh water quality - requires the setting of water quality standards for surface water and ground water resources in the region, which are appropriate for each water body... and to manage activities which may affect the water quality (including land uses), singularly or cumulatively, to maintain water quality at or above the set standard for that water body...

Policy 7.3.7 – Water quality and land uses – to avoid, remedy or mitigate adverse effects in land uses on the quality of fresh water (surface or ground)...

The proposed conditions aim to ensure that there are little or no adverse effects on water quality and therefore, are consistent with Chapter 7 of the RPS.

Chapter 14 – Air Quality

Issue 14.1.2 of this chapter recognises air quality issues in Canterbury, including odours from agriculture.

Objective 14.2.2 aims to: *enable the discharges of contaminants into air provided there are no significant localised adverse effects on social, cultural and amenity values, flora and fauna, and other natural and physical resources.*

Policy 14.3.3 requires the setting of: *standards, conditions and terms for discharges of contaminants into the air to avoid, remedy or mitigate localised adverse effects on air quality.*

This application is consistent with this issue, objective and policy.

8.4 Te Runanga O Ngāi Tahu Freshwater Policy Statement

This document contains the following Objectives and Policies, considered relevant to this application:

1. *Objective Wahi Tapu: To afford total protection to waters that have particular spiritual significance to Ngāi Tahu*

Policy 1: Identify sites for immediate protection because of their significance as wahi tapu.

Policy 2: Agree with resource management agencies objectives, policies and methods that protect the sites identified by Papatipu Runanga.

2. *Objective Mauri: Restore, maintain and protect the mauri of freshwater resources.*

Policy 1: Identify freshwater resources where:

- *Mauri is unaffected by modification and human activity do that these water bodies can be afforded total protection*
- *Mauri is adversely affected, and the activities that cause such affects*

Policy 2: Accord priority to ensuring that availability of sufficient quantities of water of appropriate water quality to maintain and protect the mauri of a water body, in particular, priority is to be accorded when developing water allocation regimes.

Policy 3: Adopt catchment management planning as the means of achieving integrated management.

Policy 4: Protect the opportunities for Ngāi Tahu's uses of freshwater resources in the future.

3. *Objective Mahinga Kai: To maintain vital, healthy mahinga kai populations and habitats capable of sustaining harvesting activity.*

Policy 1: Protect critical mahinga kai habitats and identified representative areas

Policy 2: Restore and enhance the mahinga kai values of rivers, streams, wetlands and riparian margins.

Policy 3: Ensure that activities in the upper catchments have no adverse effect on mahinga kai resources in the lower catchments.

Policy 4: Restore access to freshwater resources for cultural activities, including the harvest of mahinga kai.

4. *Objective Kaitiakitanga: To promote collaborative management initiatives that enables the participation of Ngāi Tahu in freshwater management.*

Policy 1: Ensure Ngāi Tahu has access to information about the status of resources and the activities of resource users so that it is able to anticipate the effects of activities on customary values and uses.

Policy 2: Assist with the development of Ngāi Tahu's capacity to conduct formal cultural impact assessments and require such assessments as part of an assessment of environmental effects.

Policy 3: Facilitate effective Ngāi Tahu participation in:

- Policy formulation*
- Decision making*
- Operation management activities; and*
- Monitoring activities*

Policy 4: Improve the integration of western science and traditional local knowledge in order to develop a better understanding of all water use planning related matters.

Policy 5: Increase the ability of Papatipu Runanga to understand and participate in all aspects of research and to have influence in setting research priorities.

This application is consistent with these values, objectives and policies.

8.5 Land and Water Regional Plan

Objectives:

3.1 Land and water are managed as integrated natural resources to recognise and enable Ngāi Tahu culture, traditions, customary uses and relationships with land and water.

3.2 Water management applies the ethic of ki uta ki tai – from the mountains to the sea – and land and water are managed as integrated natural resources recognising the connectivity between surface water and groundwater, and between fresh water, land and the coast.

3.5 Land uses continue to develop and change in response to socio-economic and community demand.

3.6 Water is recognised as essential to all life and is respected for its intrinsic values.

3.8 The quality and quantity of water in fresh water bodies and their catchments is managed to safeguard the life-supporting capacity of ecosystems and ecosystem processes, including ensuring sufficient flow and quality of water to support the habitat and feeding, breeding, migratory and other behavioural requirements of indigenous species, nesting birds and, where appropriate, trout and salmon.

3.8A High quality fresh water is available to meet actual and reasonably foreseeable needs for community drinking water supplies.

3.12 When setting and managing within limits, regard is had to Community outcomes for water quality and quantity.

3.14 Outstanding fresh water bodies and hāpua and their margins are maintained in a healthy state or are improved where degraded.

3.15 Those parts of lakes and rivers that are valued by the community for recreation are suitable for contact recreation.

3.17 The significant indigenous biodiversity of rivers, wetlands and hāpua are protected.

3.23 Soils are healthy and productive, and human-induced erosion and contamination are minimised.

3.24 All activities operate at "good environmental practice" or better to optimise efficient resource use and protect the region's fresh water resources from quality and quantity degradation.

Policies:

Activity and Resource

4.12 *There are no direct discharges to surface water bodies or groundwater of:*
(a) untreated sewage, wastewater (except as a result of extreme weather related overflows or system failures) or bio-solids;
(b) solid or hazardous waste or solid animal waste;
(c) animal effluent from an effluent storage facility or a stock holding area;
(d) organic waste or leachate from storage of organic material; and
(e) untreated industrial or trade waste.

4.13 *For other discharges of contaminants into or onto land where it may enter water or to surface water bodies or groundwater (excluding those passive discharges to which Policy 4.26 applies), the effects of any discharge are minimised by the use of measures that:*

- (a) first, avoids the production of the contaminant;*
- (b) secondly, reuses, recovers or recycles the contaminant;*

4.14 *Any discharge of a contaminant into or onto land where it may enter groundwater (excluding those passive discharges to which Policy 4.26 applies):*

- (a) Will not exceed the natural capacity of the soil to treat or remove the contaminant; and*
- (b) Will not exceed available water storage capacity of the soil; and*
- (c) Where meeting (a) and (b) is not practicable the discharge will:*
 - i. Meet any nutrient limit in Schedule 8 or Sections 6-15 of this Plan; and*
 - ii. Utilise the best practicable option to ensure the size of any contaminant plume is as small as is reasonably practicable; and*
 - iii. Ensure there is sufficient distance between the point of discharge, any*

- other discharge and drinking water supplies to allow for the natural decay or attenuation of pathogenic micro-organisms in the contaminant plume; and
- iv. not result in the accumulation of pathogens, or a persistent or toxic contaminant that would render the land unsuitable for agriculture, commercial, domestic or recreational use or water unsuitable as a source of potable water or for agriculture; and
 - v. not raise groundwater levels so that land drainage is impeded.

Soil Stability

- 4.22 Sedimentation of water bodies as a result of land clearance, earthworks and cultivation is avoided or minimised prevented by the adoption of control methods and technologies, such as maintaining continuous vegetation cover adjacent to water bodies, or capturing surface run-off to remove sediment and other contaminants or by methods such as direct drilling crops and cultivation that follows the contours of a paddock.

Discharges of collected animal effluent

- 4.33 Any system to store, treat and dispose of animal effluent onto land has sufficient storage capacity to avoid the need to dispose of effluent when soil moisture or weather conditions may result in effluent run-off into surface water or leaching into groundwater; and to avoid evident damage.

Nutrient Management

- 4.34 The loss of nitrogen nutrients from any farming activity to water is minimised through first by:
- (a) raising awareness of the nitrogen nutrient losses from farming by requiring monitoring and record-keeping on existing farms of modelled nutrient loss;
 - (b) secondly supporting the use of industry articulated farming activities that have nutrient losses operating at good practice or better; and
 - (c) and finally, introducing, through plan changes to Sections 6 to 15 of this Plan, nutrient discharge allowances to achieve collaboratively agreed catchment-based water quality outcomes requiring the provision of information on modelled nutrient loss from farming activities to enable better decision-making.
- 4.35 Where a load limit or nutrient discharge allowance has been set in Sections 6 to 15 of this Plan, farming activities will shall achieve the nutrient load limit and nutrient discharge allowance for the catchment in Sections 6 to 15 of this Plan.
- 4.36 Sustainable farming practices are promoted in all areas by:
- (a) enabling very small farming operations or farms with minimal nutrient discharges to be undertaken without requiring the record-keeping of modelled nutrient loss;
 - (b) recognising that there may be limited increases in the loss of nutrients from farming activities in areas where regional water quality outcomes are at risk of not being met, that are shown by an Orange colouring on the Series A Planning Maps, provided that regional water quality outcomes will still be met; and
 - (c) encouraging industry and irrigation scheme-based initiatives to improve land and water use practices for farming activities, reduce nutrient loss and nutrient discharges, and facilitate land use consenting, including irrigation scheme-wide initiatives, reporting and auditing of their constituent farms.

- 4.37 Prevent any increase in the loss of nutrients from farming activities in areas where region-wide water quality outcomes are not being met, that are shown by a Red colouring on the Series A Planning Maps and in Lake Zones as shown on the Series A Planning Maps.
- 4.38 Require the adoption of the best practicable options to minimise the loss of nutrients from farming activities in areas where region-wide water quality outcomes are at risk of not being met, that are shown by an Orange colouring on the Series A Planning Maps.
- 4.39 Irrespective of the nutrient allocation status of a catchment as shown on the Series A Planning Maps, to allow the following discharges, provided the design and management of the discharge treatment system minimises the discharge of nutrients that may enter water:
- (a) wastewater discharge from a marae;
 - (b) community wastewater treatment schemes; or
 - (c) wastewater discharge from a hospital, a school or other education institution; or
 - (d) on-site domestic wastewater discharges.
- 4.40 Farm Environment Plans are used as a primary means of identifying and delivering good environmental practice across a range of farm activities, including nutrient loss management, efficient and effective use of water for irrigation, riparian management, stock movements across waterways, offal and farm rubbish pits, the storage and application of effluent and fertiliser use.
- 4.41 Applications for resource consents for farming activities will be accompanied by a Farm Environment Plan that has been prepared in accordance with Schedule 7 and the conditions of any resource consent granted will specify:
- (a) procedures and criteria for the timely review and updating of the Farm Environment Plan;
 - (b) a requirement to meaningfully implement the Farm Environment Plan;
 - (c) monitoring and information provision; and
 - (d) requirements for the independent auditing of the Farm Environment Plan and the remedying of compliance issues raised in the audit.

8.6 Notified Plan Change 5

Plan Change 5 was notified on the 4 February 2016. Only 8 rules have legal effect at the time of notification. None of the rules that have immediate legal effect are relevant to the Valley and Tributaries area of the Waitaki Sub Regional Plan.

Although Section B objectives and policies are relevant; until the plan is operative the LWRP is deemed to be of greater weight.

The most relevant policy from Section B of Plan Change 5 is;

15B.4.25 Freshwater quality is maintained within the Valley and tributaries freshwater management unit by;

- a) Avoiding increases in nitrogen loss from farming activities that would cause the Valley and Tributaries agricultural nitrogen load limit calculated in accordance with Schedule 27 to be exceeded; and
- b) Only granting a resource consent for a farming activity to exceed the nitrogen baseline where the application demonstrates that the local in-stream

and groundwater quality limits in Table 15B (c) and 15B (e) will not be exceeded; and

- c) Including, on any resource consent granted for the use of land for a farming activity, conditions that require farming activities to operate at or below Good Management Practice loss rate, in any circumstances where that Good Management Practices loss rate is less than either the baseline GMP loss rate or the agricultural nitrogen load limits as calculated in accordance with Schedule 27.

8.7 Proposed Canterbury Air Regional Plan – notified 28th February 2015

The objectives and policies of the Proposed Canterbury Air Regional Plan have been considered in their entirety and the below policies and objectives are deemed to be of most relevance to this activity:

Policy – Rural Discharges to Air

6.26

The discharge of contaminants into air associated with rural activities do not cause offensive or objectionable effects beyond the boundary of the property of origin.

Objectives

5.1 *Where air quality provides for people's health and wellbeing, it is maintained.*

5.3 *Air quality protects the mauri/life supporting capacity of the environment.*

5.4 *Discharge to air are managed to maintain the amenity values of the receiving environment*

5.5 *Discharges to air do not adversely affect the relationship of Ngai Tahu with their culture and traditions*

5.8 *It is recognised that air quality expectations throughout the Region differ depending on location and the characteristics of the receiving environment*

5.9 *Activities are spatially located so that they result in appropriate air quality outcomes being achieved both at present and in the future.*

Policies and objectives have been taken into account by this application; the relevant matters are addressed in the assessment of effects and can be achieved via the proposed conditions of consent.

9.0 PART II MATTERS

Under section 104(1) of the Act, the consent authority must consider applications “subject to Part II” of the Act.

9.1 Purpose of the Act

The purpose of the Act is to “promote the sustainable management of natural and physical resources”.

Based on the assessment of environmental effects and the proposed mitigation measures, it is considered that the proposed activity is consistent with the purpose and principles of the Act.

9.2 Matters of National Importance

The consent authority is directed to **recognise and provide for** a number of matters set out in Section 6 of the Act. These matters include, but are not restricted to, the

preservation of the natural character of rivers and their margins, protection of outstanding natural features and landscapes, and the protection of areas of significant indigenous vegetation. Section 6(e) requires the relationship of Maori, their culture and traditions to the environment to be provided for. It is considered that the proposed activity will not affect any of the matters set out in Section 6.

9.3 Other Matters

Section 7 of the Act requires that the consent authority **shall have particular regard to** certain other matters. Of particular relevance to this application are:

- (a) Kaitiakitanga:
- (b) *The efficient use and development of natural and physical resources:*
- (c) *The maintenance and enhancement of amenity values:*
- (d) *Intrinsic values of ecosystems:*
- (f) *Maintenance and enhancement of the quality of the environment:*
- (g) *Any finite characteristics of natural and physical resources:*
- (h) *The protection of the habitat of trout and salmon.*

It is considered that the proposed dairy effluent discharge and storage will not affect any of the matters set out in Section 7 if carried out in accordance with the proposed and consented mitigation measures.

9.4 Principles of the Treaty of Waitangi

Section 8 of the Act requires the consent authority to **take into account** the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

The Ngāi Tahu resource management strategy for the Canterbury Region, "Te Whakatau Kaupapa" expresses a preference for land discharges over those directly into surface waters. Policy 4 in Section 4-20 states:

That the Canterbury Regional Council should actively encourage the disposal of effluent onto land rather than into water, provided that the groundwater is not polluted in the process.

The discharge of dairy effluent onto land supports this preference.

10.0 CONCLUSION

This application proposes discharge of effluent from 740 cows, across 210 hectares of land on a property with a total of 327.2 hectares.

The effects of the activities sought are considered to be less than minor. The nitrogen loading rate is low, potentially reducing any resulting adverse effects on soil, ground and surface water. Overall, potential adverse effects of ponding and leaching will be reduced, through the existing and proposed effluent storage facilities and adherence to the proposed consent conditions.

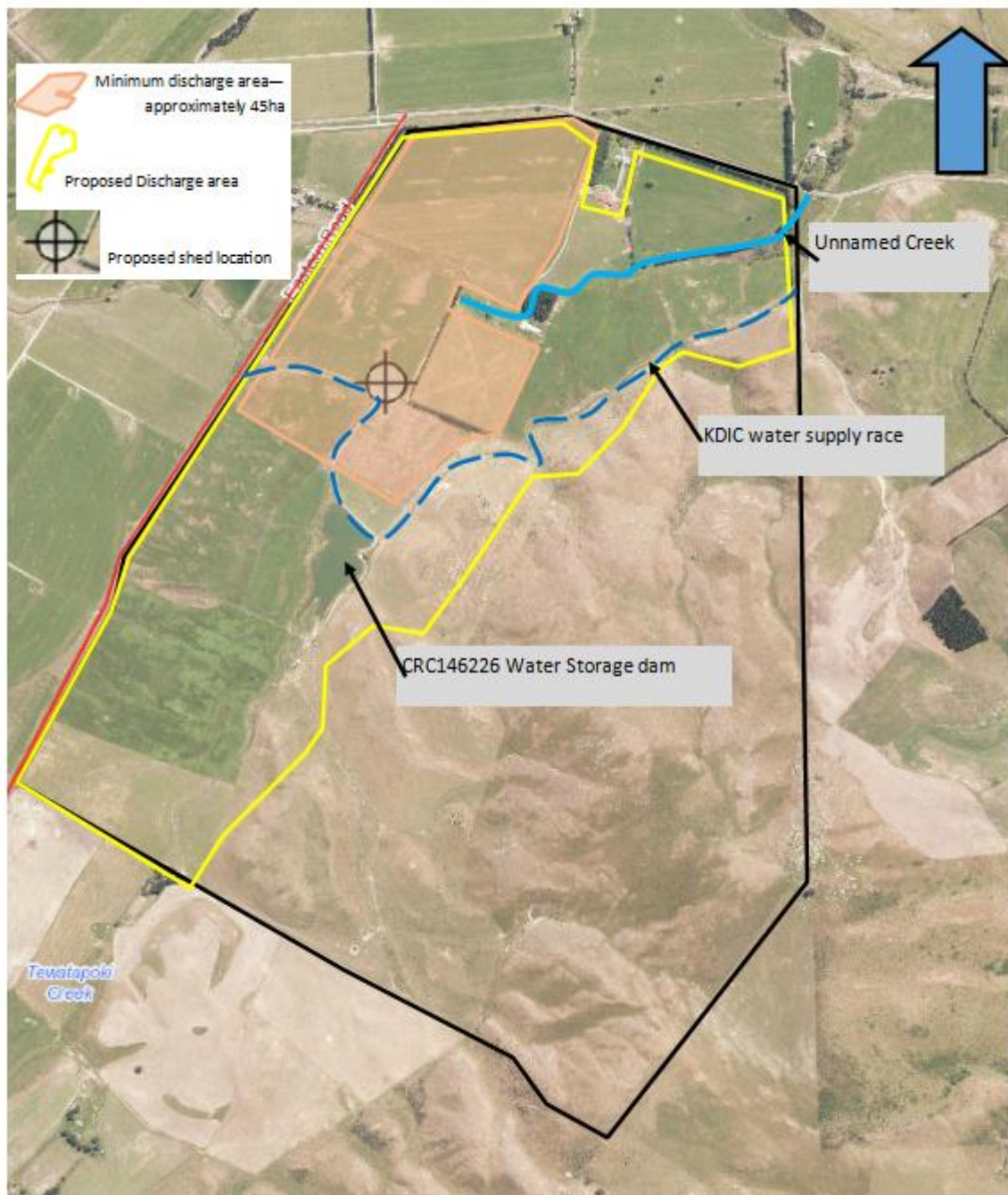
Drinking water supplies will not be affected. Moreover, it is unlikely the sensitivity of the receiving environment will change in the future, as the dairy farm is located in a rural area, surrounded by land that is similarly zoned. Together, any adverse effects on the environment are considered less than minor.

No persons in the local or wider community are considered adversely affected by application for dairy discharge. Accordingly, this application can be granted without the need for public notification.

11.0 REFERENCES

- Casey, B and Cameron, KC, 1995. *The Effects of Land Application of Piggery Effluent on Groundwater Quality: Results of a Five Year Monitoring Programme 1989-1994*. CRC published report.
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- Mojsilovic, O. Duff, K. Shaw, H, Palmer, K and Steel, K. 2015. *Generation of nitrogen and phosphorus loss estimates in the Waitaki Catchment*. CRC Technical Report R15/109.
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APPENDIX A - LOCATION PLAN



APPENDIX B – OVERSEER REPORT

Please see PDF report attached to application and electronic OVERSEER files.

