

The Hearing Panel

22 February 2018
9.00 am

Staff Report for Hearing

The recommendation in the staff report represents the opinion of the writer and it is not binding on the Hearing Panel. The report is evidence and has no greater weight than any other evidence that the Panel will hear and consider.

Hearing of Application – APP-20171302

South Dairy Limited

Compiled by Emily Allan, Consents Officer

- Hearing: The hearing is scheduled to commence at 9.00 am on Thursday, 22 February 2018 in the Council Chambers, Environment Southland, corner of Price Street and North Road, Waikiwi, Invercargill.
- Application: South Dairy Limited (the Applicant) have applied to expand an existing dairy farm by increasing cow numbers and land, to discharge dairy shed and feed pad effluent to land, to retrospectively construct an effluent storage pond and to take and use groundwater.
- Notification: The application was publicly notified on 30 August 2017 and one submission was received in opposition. No supporting or neutral submissions were received.
- Executive Summary: This is an application for land use consent to expand a dairy farm, a discharge permit, a water permit and a retrospective land use consent to construct effluent storage pond. The previously held discharge and water consents expired 9 July 2017, 23 working days after the application was lodged, and the property has been operating without necessary resource consents since this time. As outlined in this report the key issues are:
1. the application is inconsistent, and may be contrary to, policy direction, including Policy 15(3) and Policy 16(1)(b) of the pSLWP which provide clear direction on the acceptable level of effects on water quality;
 2. the effects on water quality of the proposed application have not been avoided or mitigated as directed by policy, and therefore, the proposed application is likely to result in

significant effects which have not been provided for in the Regional planning provisions;

3. The uncertainty resulting from the Overseer budgets supplied to model the existing environment, and from failing to supply requested information regarding the construction of the effluent storage pond, add to the environmental risk from this application;
4. I recommend that consent is **refused**.

1. Introduction

1.1 Status and purpose of this report

This report has been prepared under Section 42A of the RMA 1991 (RMA) to assist in the hearing of the application for resource consent made by South Dairy Limited. Section 42A allows local authorities to require the preparation of such a report on an application for resource consent and allows the consent authority to consider the report at any hearing.

The purpose of the report is to assist the Hearing Panel in making a decision on the application.

1.2 About the author

My name is Emily Allan. I am a Consents Officer employed by the Southland Regional Council. I have been employed by the Council as a Consents Officer since July 2015. I have processed applications for similar activities, including expanded dairy farms, since the beginning of my employment with the Southland Regional Council.

I hold the following qualifications from Canterbury University, Christchurch:

- Bachelor of Science in Geology; and
- Bachelor of Arts in Political Science.

I hold the following qualifications from Auckland University, Auckland:

- Postgraduate Diploma in Science in Environmental Management.

I also hold a Certificate in Sustainable Nutrient Management (Intermediate Overseer qualification), from Massey University. I am also currently working towards a Masters in Environmental and Resource Planning from Massey University with the aim of graduating in 2018.

I have been the officer in charge of the application since it was lodged and received by Council. I have also visited the site.

1.3 Information relied on in preparation of this report

In preparation of this report I have had regard to the following documents:

- resource consent application dated 7 June 2017;
- technical comment from the Technical Services Engineer dated 12 June 2017;

- further information requested under Section 92(1) of the RMA;
- Resource Management Act 1991;
- Regional Effluent Land Application Plan 1998;
- Regional Water Plan 2010;
- proposed Southland Water Land Plan 2016;
- Te Tangi a Tauria (Iwi Management Plan) 2008.

The application was lodged on 7 June 2017, prior to the Regional Policy Statement 2017 being approved by Council resolution on 20 September 2017 and becoming operative on 9 October 2017. The National Policy Statement on Freshwater 2014, the Regional Policy Statement 1997 and the Proposed Regional Policy Statement 2012 have been assessed, but as there is no invalidity, incomplete coverage or uncertainty of meaning within lower order planning documents this assessment has not been included in the report. The lower order documents give effect to the higher order documents through the hierarchy of documents process set out in the Resource Management Act.

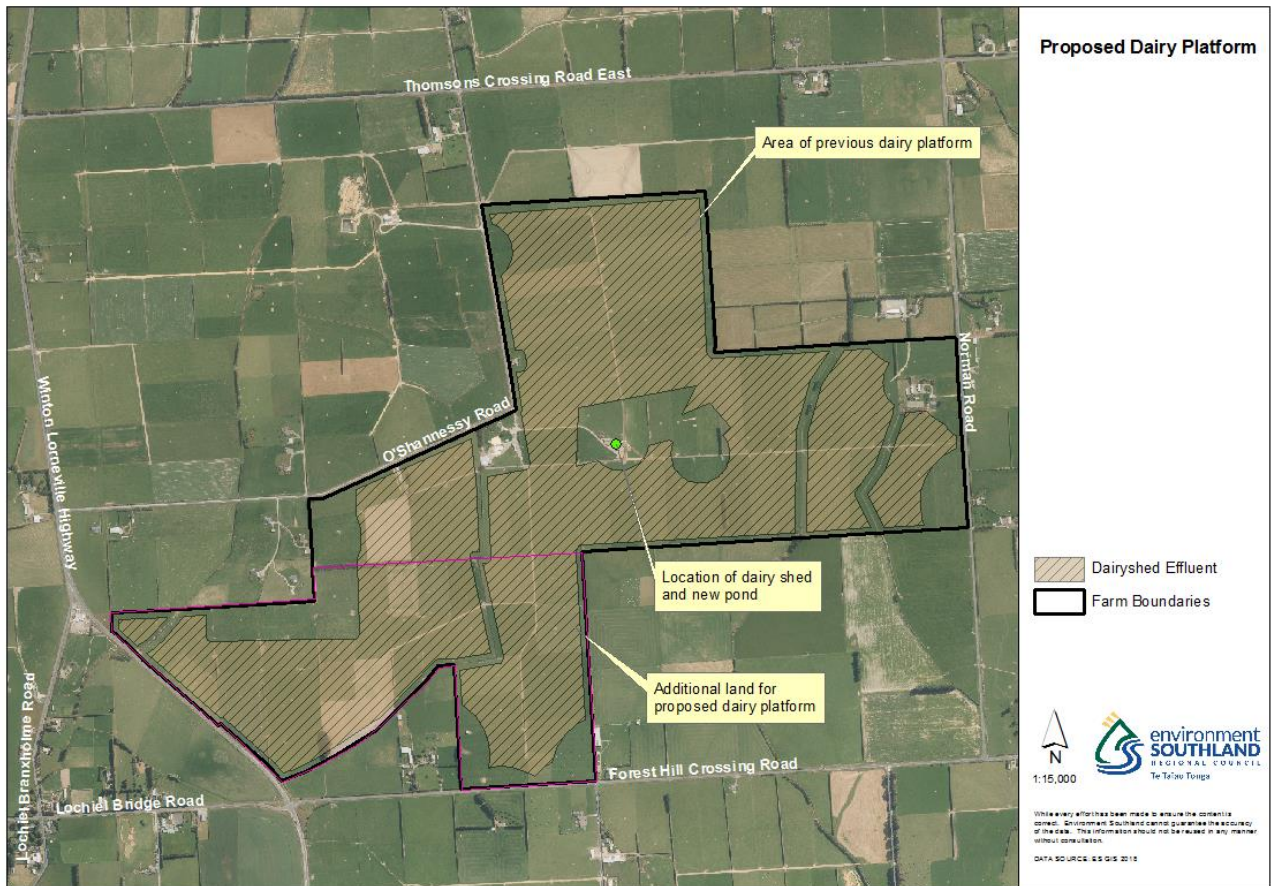
Abbreviations

RMA	Resource Management Act 1991
RELAP	Regional Effluent Land Application Plan
RWP	Regional Water Plan
pSWLP	proposed Southland Water Land Plan
NPS-FM	National Policy Statement on Freshwater Management 2014
DWSNZ	Drinking Water Standards for New Zealand 2005 (Revised 2008)
CPEng	Chartered Professional Engineer
CNMA	Certified Nutrient Management Advisor
Overseer	OVERSEER® Nutrient Budgets
R1s and R2s	Replacement Cows, one year and two year olds.

2. The application and procedural matters

2.1 The proposed activities

Applicant:	South Dairy Limited
Application:	To expand an existing dairy farm by increasing cow numbers and land, to discharge dairy shed and feedpad effluent to land, to retrospectively construct an effluent storage pond and to take and use groundwater.
Site address or location:	373 O'Shannessy Road
Legal description:	Part Section 47 Block I Winton Hundred, Sections 51, 52 and 53 Block I Winton Hundred, Lot 1 DP 7035, Lots 1, 2 and 3 DP 377137, Section 11 Block II Winton Hundred and a paper road.
Map Reference:	NZTM2000 1241675E 4873820N (location of dairy shed)



Map 1: Location of South Dairy Limited application site.

The Applicant is proposing to:

- increase cow numbers from 599 cows to 750 cows;
- the size of the dairy platform is increasing from 165 ha to 252 ha (increase of 87 ha);
- discharge effluent to land via a low rate and high rate systems to 183 ha;
- increase discharge effluent area by 143 ha;
- take and use 90,000 litres of groundwater per day; and
- retrospectively construct a new 5,565m³ synthetically lined effluent storage pond.

The following table summarises matters relevant to this application:

Property Details:-	
Catchment	Oreti River and Makarewa River
Total Farm Area (ha)	252ha
Replacement Consents? Change in scale/intensity?	Yes – Increasing cow numbers and land
Physiographic zone(s)	Gleyed and Oxidising
Freshwater Management Unit	Oreti

Water Permit Details:-	
Source of water (bore or watercourse)	Existing bore – E46/0942
Groundwater zone/name of watercourse	Makarewa (RWP) Lower Oreti (pSWLP)
Aquifer type (for groundwater takes)	Both lowland aquifers
Rate of take (L/s)	1.9
Freshwater storage onsite? How much?	Yes – 45m ³
Daily volume (m ³ /day)	90

Water Permit Details:-	
Consistent with 120 L/cow/day?	Yes
Yearly volume (m ³ /year)	30,445
Mean Annual LSR (m ³ /year) (See App H of RWP)	327,100,000 (RWP)
Preliminary Allocation (m ³ /year) (See App H of RWP)	49,065,000 (RWP) 13,490,000 (pSWLP)
Amount currently allocated (m ³ /year) (see allocation tables from Science)	3,768,015 (RWP) 1,660,999 (pSWLP)
% of Mean Annual LSR allocated (see allocation tables from Science)	7.7% (RWP) 12.3% (pSWLP)

Discharge Permit Details:-	
Current permit specifies cow numbers? How many?	Yes – 599 cows
Proposed Cow numbers	750 cows
Stocking rate (cows/ha)	3.0
Winter milking proposed?	No
Other sources of effluent?	Feed pad/standoff pad
Effluent disposal area (ha)	183ha
Effluent area changing?	Yes – increasing from 40ha to 183ha (increased by 143ha)
Irrigation method	Travelling Irrigator, slurry tanker or umbilical system
Application rate and depth	Travelling Irrigator – max depth of 10mm Slurry tanker and umbilical system – max depth of 5mm
Effluent collection/storage system	Stone trap to sump to new effluent storage pond
Proposed storage volume (m ³)	5,565 m ³
No. days storage? (90 days for high rate and 60 days for low rate systems recommended)	148 days (proposed storage)
Dairy Effluent Storage Calculator 90% storage requirement (m ³)	5,522 m ³

Land Use Consent Details (effluent storage):-	
Type of Storage (Pond, Tank, Structure)	Pond and sludge beds
Effluent storage/treatment designer	Civil Tech Ltd – CPEng is Hadley Consultants Ltd
Contractor	Dean Shearing
Drawings from engineer/product specifications supplied?	Yes - Reviewed by Council's Technical Services Engineer
Method of sealing pond	Synthetic liner

Land Use Consent Details (expansion of a dairy farm):-	
Increase in cow numbers?	Yes – increase from 599 to 750 cows (151 cows added)
Management plan (or on ES Register of Independently Audited Self-Management Participants)?	Yes, Drafted with Application. Final Version to be required as consent condition
Increase in farm area? Size of increase in ha	Yes – increasing from 165ha to 252ha (increased by 87ha)
Increase in effluent disposal area? Size of increase in ha	Yes – increasing from 40ha to 183ha (increased by 143ha)

2.2 Key Issues

Points of contention for this application are:

- What is the existing environment?
 - Three different Overseer budgets have been provided to Council to represent the existing environment (the starting point for assessing under section 104 the significance of the “on the environment” if consent is to be granted). It is unclear which of these three budgets, if any, is the most useful and appropriate for determining the status of the existing environment.
- The difficulty in establishing what the existing environment is creates issues when assessing the application against relevant policy. For example, Policy 15(3) and Policy 16(1)(b) in the pSLWP are directive, with the avoidance (or not) of effects on the environment being critical.
- The potential environmental effects could be greater than those provided for in the policy direction from the pSWLP. Of the three modelled scenarios for the existing environment, Scenarios 2 and 3 have a high level of uncertainty (as discussed below).
- Whether or not the pond on site has been constructed appropriately. Despite multiple requests, no evidence has been provided to demonstrate that the pond has been constructed appropriately.
- Without the evidence identified in the point above, there is increased uncertainty regarding the discharge of effluent to land and whether this discharge will be appropriately mitigated. Without this mitigation measure, the effects of the discharge are likely to be greater than provided for in the policy direction from the plans.
- The discharge to land is via high rate irrigation methods only which is contrary to Policy 8(b) in Te Tangi a Taurira, which requires low rate irrigation.

2.3 Regional Planning framework – rules

Resource consents are required under the Regional Effluent Land Application Plan (RELAP), and the Regional Water Plan (RWP) and the proposed Southland Water Land Plan (pSWLP).

Regional Effluent Land Application Plan 1998

- The discharge of feed pad effluent and dairy shed effluent via high rate irrigation methods is a **discretionary activity** under **Rule 5.4.6**.

Under the RELAP the application is considered to be for a discretionary activity. The discharge of feedpad effluent was not addressed in the RWP (subsequent operative plan) so the relevant rule defaults back to the RELAP. The dairy shed effluent discharge rule in the RWP also does not take into account high rate irrigation methods on Category A, B, D or E land. Therefore, this also defaults back to the RELAP.

Regional Water Plan for Southland (2010)

- The discharge of dairy shed effluent to land via high rate slurry tanker to a maximum depth of 5 mm is a **restricted discretionary activity** under Rule 50(d)(ii).
- The taking of groundwater is a **discretionary activity** under Rule 23(d).
- The construction of the effluent pond is a **restricted discretionary activity** under Rule 49(a).

Under the RWP the application is considered to be for a discretionary activity. Rule 50(d) is specific to slurry tankers and does not provide for the other discharge irrigation methods applied for, including travelling irrigator and umbilical system. Therefore, the discharge from these irrigation methods have been addressed under the RELAP. The discharge of effluent is not consistent with what was undertaken on site as of 17 July 2010 as this application is for an increase in scale. Therefore, the discharge activity is not consistent with Rule 50(b) or (c) in the RWP.

Proposed Southland Water and Land Regional Plan (2016)

- The discharge of effluent to land is a **discretionary activity** under Rule 35(c).
- The taking of groundwater is a **discretionary activity** under Rule 54(d).
- The construction of the effluent storage facility is a **restricted discretionary activity** under Rule 32(a).
- The use of land for dairy farming (expansion of an existing dairy farm) is a **discretionary activity** under Rule 22(a).
- Rule 3 – for controlled or restricted discretionary activities

Under the pSWLP the application is considered to be for a discretionary activity. Section 124(1) and (2) of the RMA do not apply as the application was lodged less than three months in advance of the existing consent expiring. Therefore, the discharge activity cannot comply with criteria (i) of Rule 35(b). Rule 35(c) is specific to expanding dairy farms and to the physiographic zones relative to this site. Therefore, the application does meet Rule 35(c). Rule 35(d) would only apply if the Applicant was unable to meet Rule 35(c).

An application for resource consents was lodged with Environment Southland in accordance with these requirements (application appended).

Due to the individual consent activities being bundled to the highest consent test and under the most restrictive provisions of the relevant plans the application is considered to be a **discretionary activity**.

Under Section 104B the Council may grant or refuse consent for a **discretionary activity**, and if it grants the application, may impose conditions under Section 108 of the RMA.

Retrospective Consent

When the application was first lodged, it included an application to construct effluent storage. During the site visit on Friday 8 December 2017, it was clear that the effluent storage pond had already been constructed and was in operation with effluent in the pond at the time of the site visit. The Applicant has since identified that this application is now retrospective. This is not necessarily an issue for processing a resource consent. Case law has provided direction to Council with regard to processing a retrospective consent application with Judge Treadwell stating:¹

“There is nothing inherently wrong with retrospective consents and we make clear that the consent parts of the Act are not to be used as a punitive arm. If a Council in any particular instance considers there has been a breach of the RM Act or of the terms of its plan, it should use the prosecution or enforcement sections not punish the Applicant by refusal of resource consent.”

¹ Colonial Homes Ltd v Queenstown Lakes District Council (1995) Planning Tribunal Decision W104/95 [Paragraph 2]

With regard to this application, the issue is not that the application is retrospective but that we have not received evidence that the pond has been constructed according to Council standards which are used to assess if the structure has been constructed appropriately. Judge Smith identified that:²

“The role of the consent authority and the Court in respect of this type of retrospective consent must, of its nature, be significantly more limited than a general consent. The question for this Court and the Council in considering such a retrospective consent is: (1) whether or not the design and installation used is one that is appropriate in the circumstances; and (2) what conditions of consent might properly be imposed to ensure that the effects of the activity are adequately remedied, avoided or mitigated.”

For this activity, we are consenting the construction of the pond, not the ongoing use of the pond so any imposed consent conditions would relate to construction.

2.4 Further information request

Further information was requested twice from the Applicant on the 21 June 2017 and on 29 November 2017. The requested information included:

- clarification of Overseer and Application details;
- identification of good management practices for the use of land for dairy farming;
- identification and assessment of the adverse effects of the proposed activities;
- a request to provide a detailed policy assessment with regards to Policies 15(3) and 16(1)(b) in the pSWLP;
- clarification on the Effluent System Details and Dairy Effluent Storage Calculator;
- a request to provide an Overseer budget which represents the most recent three years.

The above information was provided by the Applicant (appended).

2.5 Notification and Submissions

The application was publically notified on 30 August 2017 as the effects of the proposed application were likely more than minor. This decision was based on the application in front of us on 24 August 2017. This decision was made for the following reasons:

- *The increased nitrogen losses modelled in Overseer (+315kg/year) for the expanded dairy farm.*

Mitigation measures for the nitrogen loss below the root zone have been accounted for in the Overseer model. Overseer models a steady state and uses long-term averages, so the increased nitrogen loss is likely to be ongoing and cumulative in the environment. Therefore, this increase in nutrient loss below the root zone is likely to adversely affect water quality with an increased risk of eutrophication and toxicity of water for humans and animals. The policy direction in the pSWLP is that the effects of the expanded dairy farm need to be fully mitigated to be consistent with Policy 16(1)(b). Based on this policy, the adverse effect from the intensification of a dairy operation that is not fully mitigated is likely to be more than minor.

- The lack of deferred effluent storage as a mitigation measure prior to 1 December 2017 will likely result in the discharge of effluent on saturated soils which will have effects on water

² Harris v Bay of Plenty Regional Council (2008) Environment Court Decision W072/08 [Paragraphs 7 and 8]

quality. The policies in the RELAP, RWP and pSWLP provide strong policy direction on maintaining or enhancing water quality;

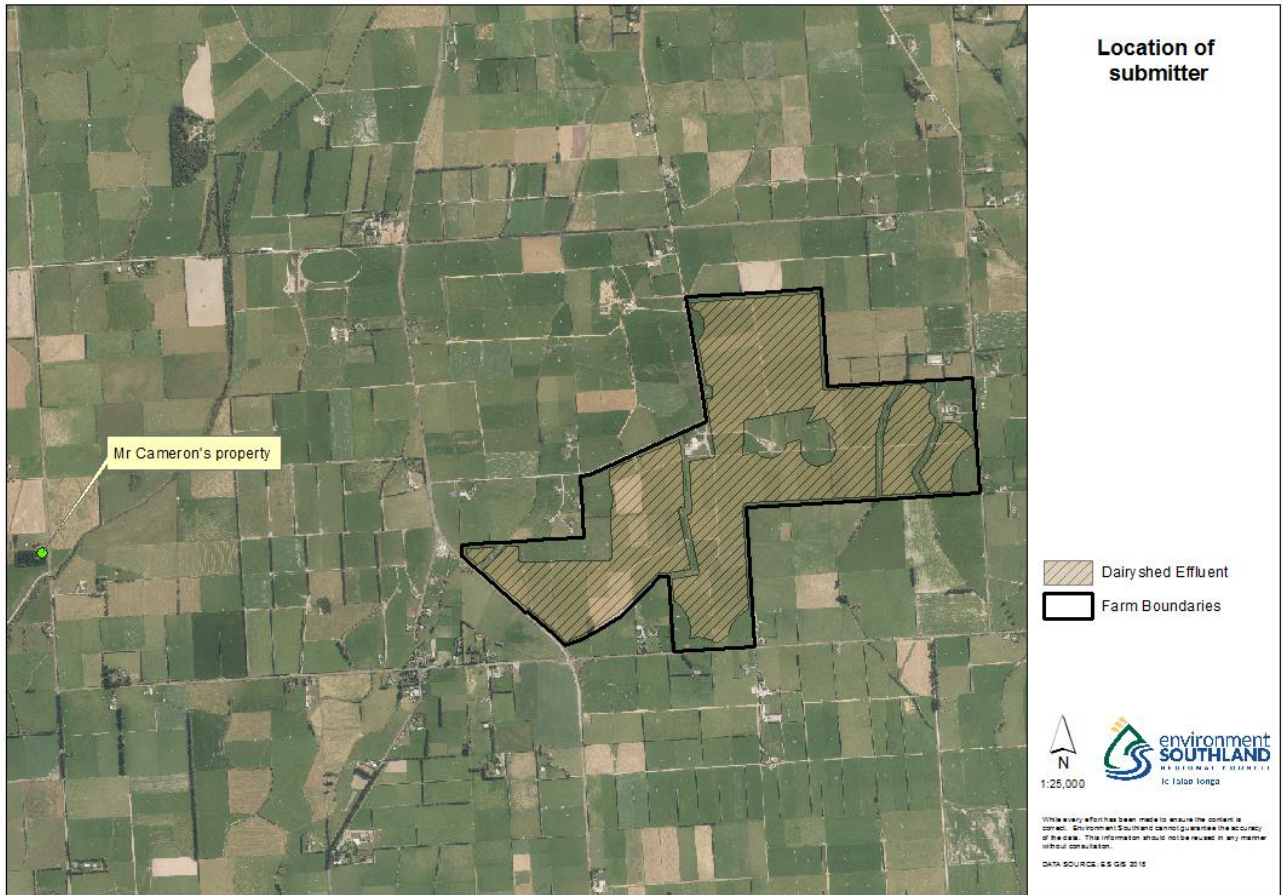
The above decision to publicly notify the application was made under Section 95A(2)(a) of the RMA. This section means that the consent authority considered that the adverse effects on the environment from the activity would be, or would likely be, more than minor.

One submission was received in opposition. No neutral submissions or submissions in support were received.

The submission received was from Lawrence Cameron on 12 September 2017. In submission, Mr Cameron objected to more cows being introduced to the Lochiel area. As a resident of the Lochiel area, Mr Cameron is concerned about the impact further cows will have on common resources, including air and water in the region. Mr Cameron would like Council to decline the application.

Mr Cameron is not a trade competitor of the Applicant. Though he initially indicated he did not want to be heard with regard to his submission, on 19 December 2017 he advised rather that he did wish to be heard. Section 100 is worded to say that if the submitter subsequently advises that they do not want to be heard, a hearing is not required. This implies that if the submitter subsequently advises that they do want to be heard, a hearing is required. There is not a section of the RMA which explicitly states that a submitter can change their position on whether to be heard or not, although based on the implication above and the injustice caused by not allowing the submitter to have their say, it is my view that it is appropriate for Mr Cameron to be heard at the hearing. A decision was made on 1 December 2017 to hold a hearing under Section 100, prior to Mr Cameron asking to be heard.

Map 2 below shows the location of Mr Cameron's property relative to the application site (approximately 2.4 km west).



Map 2: Location of South Dairy Limited application site and Cameron property

2.6 Section 99 pre-hearing meeting

A section 99 pre-hearing meeting for the application was not held, as decided under Section 100. There is a submitter in opposition to the application. However, based the submission received, I considered it unlikely that a pre-hearing meeting would assist in clarifying a matter or issue, or facilitating a resolution of a matter or issue. The decision was made to proceed straight to a hearing.

3. Assessment

3.1 Statutory Considerations

Section 104 of the Act sets out the matters to be considered when assessing an application for a resource consent. Section 104(1) of the RMA, 1991, states:

- (1) *When considering an application for a resource consent and any submission received, the consent authority must, subject to Part 2, have regard to:*
 - (a) *any actual and potential effects on the environment of allowing the activity; and*
 - (b) *any relevant provisions of:*
 - (i) *a national environmental standard:*
 - (ii) *other regulations:*
 - (iii) *a national policy statement:*
 - (v) *a regional or proposed regional policy statement:*
 - (vi) *a plan or proposed plan; and*

- (c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

Those matters which are relevant for this application are discussed in the following sections.

Section 104 of the RMA requires consideration of the effects of the application and relevant policy and plan provisions, “subject to” Part 2 of the RMA. Case law indicates that the provisions of the regional plans (and the other instruments listed in s104) have been developed under, and give specific effect to, Part 2. Therefore the direction provided by the plan provisions should take precedence when deciding a resource consent, although the provisions of Part 2 will provide guidance where the plan provisions are unclear.

This approach to applying Section 104, while relatively new and arising only since *King Salmon*³, now appears to be reasonably well established. The Environment Court in *Saddle View Estate*⁴ inferred, from the approach taken in *King Salmon*, that the matters in Part 2 and in the higher order statutory instruments “...must be applied as particularised in regional and district plans” (paragraphs 92-93). Plans are to be applied as containing, in particularised form, all the relevant provisions of Part 2. Any specific objectives or policies in plans must not be “subverted” by reference to Part 2 or other matters⁵. *Davidson*⁶, adopted a similar view (paragraphs 68-77), but confirmed the view in a consenting context rather than in the planning context, which was the setting for *King Salmon*. The High Court in *Davidson* held that where there has been invalidity, incomplete coverage or uncertainty of meaning within lower order planning documents, “resort to Part 2 should then occur”.

In *Aro Valley*⁷ the High Court said that the Act envisages the formulation and promulgation of a cascade of planning documents, each intended to ultimately give effect to Part 2, including section 6. A decision under the relevant plan provisions is at the bottom of that cascade and “...independent reference by the decision maker [to Part 2] is not a mandatory consideration”.

From this logic I have adopted a report format that largely reverses the order in s104(1)(b). This means that, after consideration of effects, my interpretation of the proposal would be first against the relevant plans and then against the higher order documents if there is invalidity, incomplete coverage or uncertainty of meaning in the relevant plans. In this instance, I believe there is no invalidity, incomplete coverage or uncertainty in the RELAP, RWP and the pSWLP. Therefore I have included a full assessment of regional plan policy in the body of this report.

Sections 108 and 108AA are relevant for this application and provide for consent to be granted subject to conditions and sets out the kind of conditions that may be imposed.

3.2 Description of the existing environment

3.2.1 What is the Existing Environment?

Is important to understand what the existing environment is so that we have a baseline from where to begin assessing the effects of the activity *on the environment* (as required by Section 104). Case law helps to define what should be included within the existing environment and what should not, and is discussed here.

³ *Environmental Defence Soc Inc v The New Zealand King Salmon Co Ltd* [2014] NZSC 38, [2014] 1 NZLR 593

⁴ *Saddle View Estate Ltd v Dunedin CC* [2014] NZEnvC 243, [2015] NZRMA 1. Paragraph 92.

⁵ *Saddle View Estate Ltd v Dunedin City Council* [2014] NZEnvC 243, [2015] NZRMA 1. Paragraph 93.

⁶ *RJ Davidson Family Trust v Marlborough District Council* [2017] NZHC 52, NZRMA 227. Paragraph 76.

⁷ *Aro Valley Community Council Inc. v Wellington City Council* [2015] NZHC 532. Paragraph 24.

The Environment Court in *Port Gore Marine Farms* took the approach that “... we need to bear in mind that we must imagine the environment, for the purposes of Section 104(1)(a) of the Act, as if the three marine farms were not actually in it.”⁸. The approach taken in *Sampson* came to the same conclusion and the Court stated that for consents which are granted for a defined term and may not be renewed, “... the existing environment must be determined as the environment that might exist if the existing activity, to which the ... consents relate, were discontinued.”⁹

Additionally, the approach taken in *Ngati Rangi Trust* is of the same vein and the Court outlined “I therefore agree that the approach taken... in *Port Gore Marine Farms Ltd v Marlborough District Council* was the approach which the Environment Court should have adopted in the present case”¹⁰. This was based on information from *Environmental and Resource Management Law* which states “... the existing environment cannot include, in the context of a renewal application, the effects caused by the activities for which the renewal consents are sought...”¹¹.

The assessment of effects in this report has used the approach to the ‘existing environment’ taken in the case law above, that the environment does not include existing activities for which consent is sought, nor the effects arising from it.

3.2.2 The Physical Environment

The subject site is currently a dairy farm situated approximately 15.2km north west of Wallacetown and 17.1km south west of Winton. The site is bounded by Forest Hill Crossing Road on the south, Winton Lorneville Highway on the west and Norman Road on the east. O'Shannessy Road borders the north west corner. Unnamed tributaries of both the Oreti River and the Makarewa River run through the discharge area. Tussock Creek is located approximately 1.3km east of the discharge area and the Winton Stream is located approximately 2.5km west of the discharge area. The surrounding area is generally rural, with other dairy farms nearby.

The following table summarises the matters relevant to the proposed effluent disposal area:

Soils	Soil Type	Vulnerability Factors		
		Structural Compaction	Nutrient Leaching	Waterlogging
	Pukemutu (74%)	Severe	Slight	Severe
	Edendale (15%)	Slight	Moderate	Slight
	Northhope (1%)	Severe	Moderate	Moderate
FDE land classification	98% Category A (Artificial drainage or coarse soil structure), 2% Category B (Well drained flat land).			
Groundwater nitrate levels	Pristine, pre-European, minor to moderate land use impacts and moderate to high land use impacts			
Physiographic Zones	Oxidising and Gleyed			

⁸ *Port Gore Marine Farms v Marlborough District Council* [2012] NZEnvC 72. Paragraph 140.

⁹ *D R Sampson & Others v Waikato Regional Council* RMA741/99, RMA745/99, A178/2002

¹⁰ *Ngati Rangi Trust v Manawatu-Wanganui Regional Council* [2016] NZHC 2984. Paragraph 64.

¹¹ *Ngati Rangi Trust v Manawatu-Wanganui Regional Council* [2016] NZHC 2984 citing Derek Nolan *Environmental and Resource Law* (5th ed. Lexis Nexis, Wellington, 2015) at 610.

Topoclimate Soils

The Information for this section has come from the Topoclimate Southland Soils Information Sheets, No. 1, No. 5 and No. 11. These soils are reflected in the Overseer budgets supplied to Council for this application.

Pukemutu soils

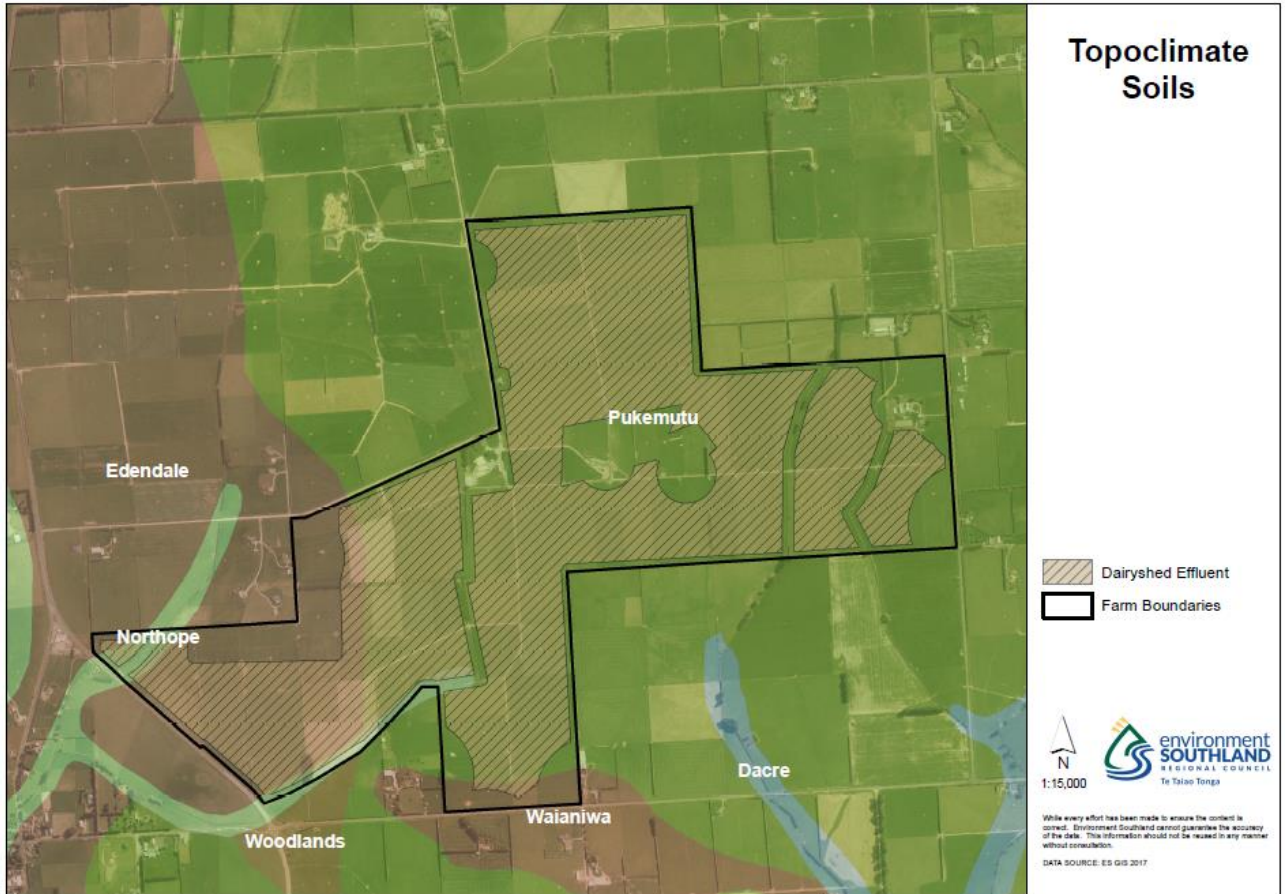
These soils have a severe vulnerability to structural degradation by long-term cultivation or compaction by heavy stocking and vehicles and to waterlogging during wet periods. This rating reflects the poor drainage, and slow permeability, with low clay, and P-retention in the topsoil reflected in the low structural stability. The primary contaminate pathways for these soils are overland flow, or preferential flow through tile drains.

Edendale Soils

These soils are formed in deep wind-blown loess derived from greywacke and schist rocks. These soils are generally well drained and have a deep rooting depth, high water-holding capacity, and silt loam textures. They have a moderate vulnerability to leaching to groundwater. This rating reflects the moderately high water-holding capacity and slow subsoil permeability offset by the good profile drainage. The primary contaminate pathway for these soils is deep drainage of nutrients to groundwater.

Northope Soils

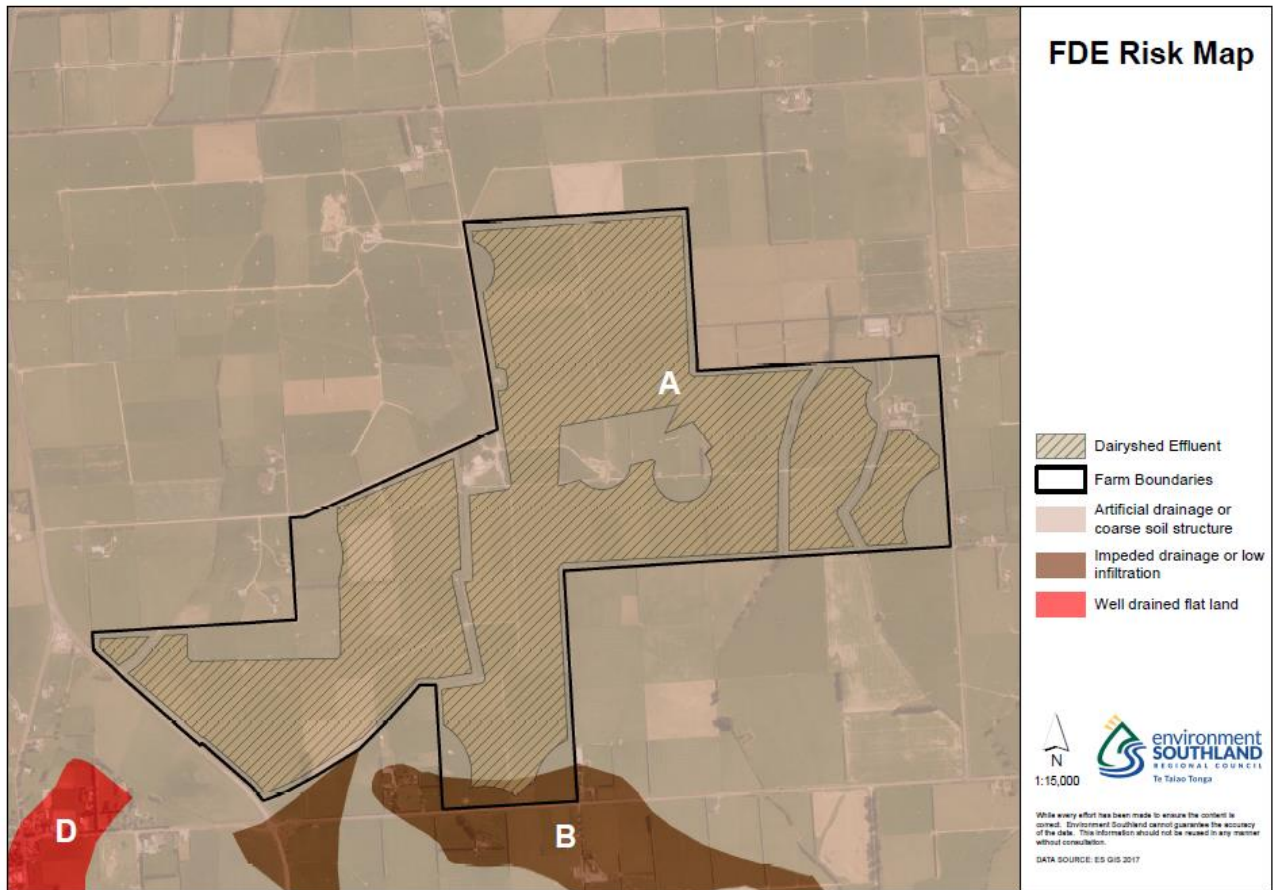
These soils have heavy silt loam texture and imperfect drainage, causing limited seasonal wetness. The Northope soils have a severe vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the imperfect drainage and low P-retention. They also have a moderate vulnerability to leaching to groundwater and to waterlogging during wet periods. This rating reflects the imperfect drainage and undulating slopes.



Map 3: Location of relevant topoclimate soils on site.

FDE Land Categories

The Farm Dairy Effluent Land Categories are identified in the RWP and are used to determine the risk of irrigating effluent onto different types of land. This is particularly relevant to Policy 42 in the RWP, which provides direction on risks associated with the discharge of dairy effluent to land. For this site the primary land category identified is Category A, which is characterised by a high likelihood of artificial drainage or coarse soil structure. There is a small area of Category B land identified in the south of the site. Category B land is characterised by impeded drainage or low infiltration of water through the soils.



Map 4: Location of FDE Land Categories identified in the RWP

Physiographic Zones

The physiographic zones relate to the classification of land and risks to water quality based on factors including soil types, landscape classification, climate, topography and water chemistry. These zones have been established in Southland to provide a framework for establishing how contaminants move through the environment, and highlighting key contaminant movement risk pathways. These have been developed to better understand Southland’s water and why it is better quality in some areas than others. The land within the dairy platform is located within the Oxidising and Gleyed physiographic zones. The effluent disposal area is also located within these zones.

Key features of the Oxidising Physiographic Zone

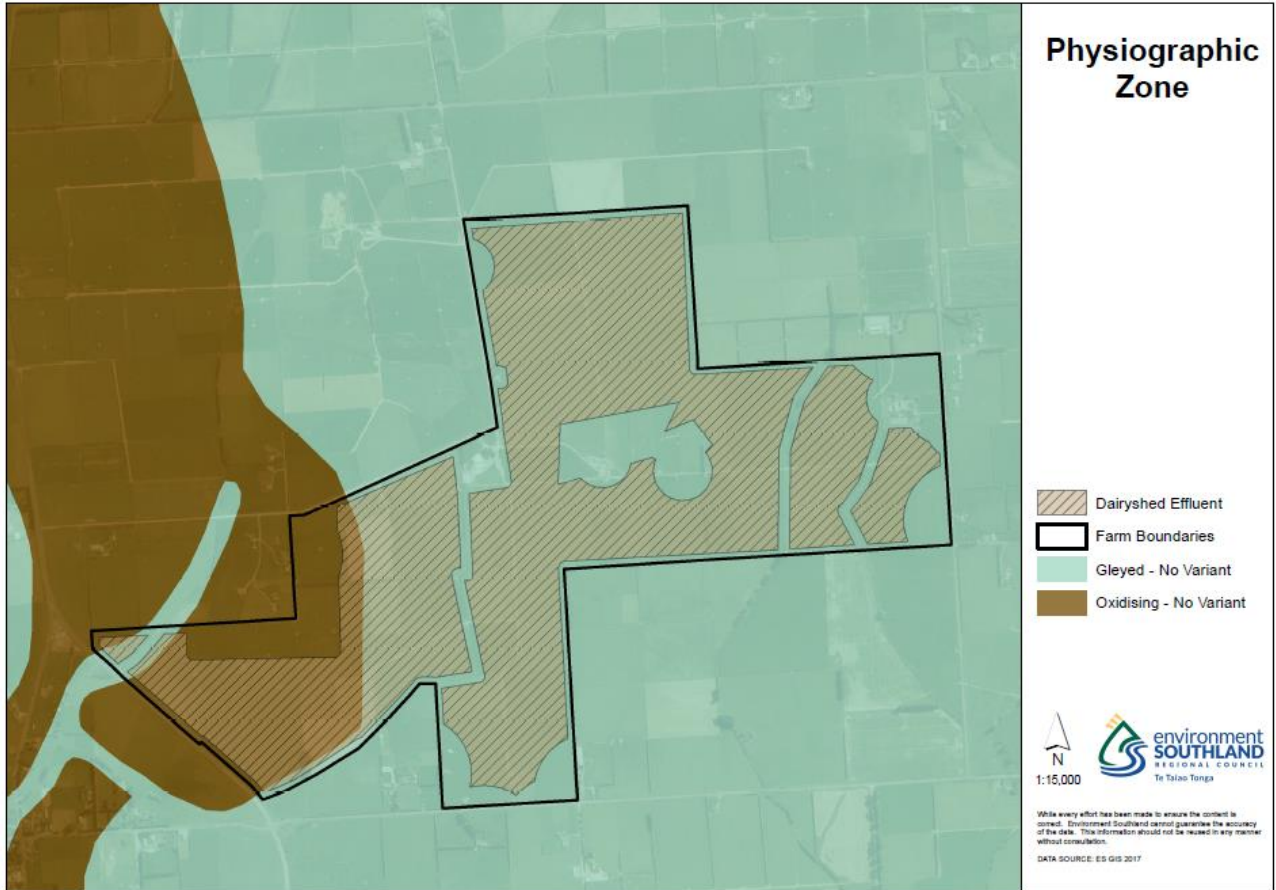
The Oxidising physiographic zone is generally found in low elevation, flat to gently undulating land on elevated terraces along the outer margins of the major river systems. This is consistent with this site, with low lying flat land located in the south west of the site. The drainage to waterways for this zone varies depending on slope, soil texture and permeability. Because of the features of this zone (the oxidising zone for this site is on flat free draining soils), the main risk for this site in regards to water quality is to groundwater quality in the Makarewa and Lower Oreti groundwater zones.

Key features of the Gleyed Physiographic Zone

The Gleyed physiographic zone is generally found within historic wetland areas and typically have a high groundwater level. Soils are generally fine textured, prone to waterlogging and therefore are likely to have extensive artificial subsurface drainage. The

drainage to waterways for this zone is predominately through artificial drainage or through overland flow during heavy rainfall. Because of the features of this zone and variants located on this property, the main risk for this site in regards to water quality is to surface water quality in the Oreti River and the Makarewa River.

The site characteristics are consistent with the physiographic zones identified.



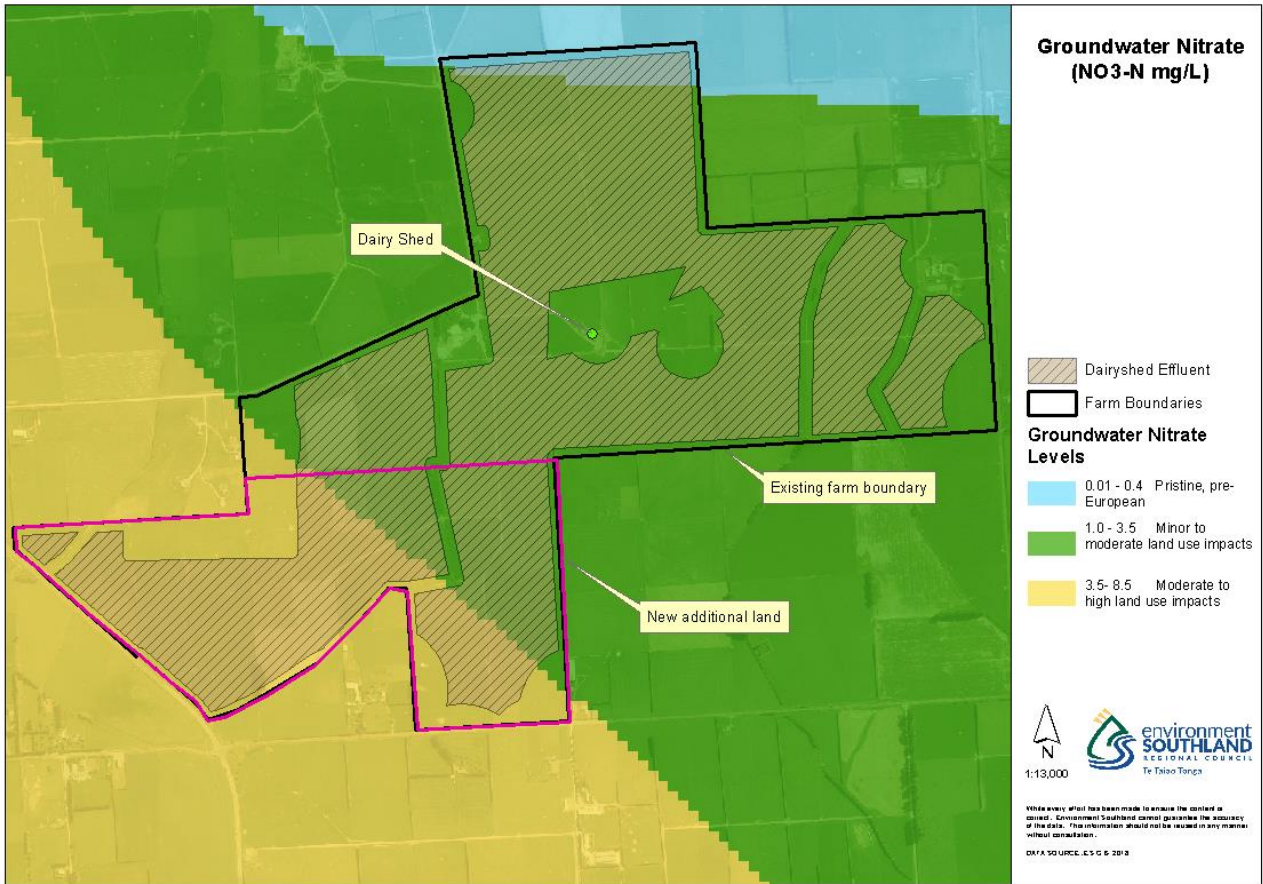
Map 5: Location of physiographic zones for the site.

Groundwater

The RWP has delineated groundwater management zones for the Southland region and the Applicant's property is located in the Makarewa (RWP) and Lower Oreti groundwater zones (pSWLP).

Generally groundwater quality within both the Makarewa and Lower Oreti groundwater zones comply with limits set in the Drinking Water Standards for New Zealand (DWSNZ), although they do vary according to the source aquifer and location.

Groundwater quality under the site ranges from pristine, pre-European condition (i.e. NO₃-N between 0.01–0.4 mg/L) to nitrate levels which reflect moderate to high land use impacts (i.e. NO₃-N between 3.5–8.5 mg/L) in the south. The groundwater nitrate levels are higher under the additional land, than under the existing dairy platform with levels under the additional land which effect minor to high land use impacts (i.e. NO₃-N between 1–8.5 mg/L). The expanding the dairy operation is moving onto land which has degraded groundwater quality.



Map 6: Groundwater nitrate levels underneath the site.

Surface Water

The site is split between the Makarewa River and Oreti River catchments with unnamed tributaries of both rivers running through the proposed discharge area. The Makarewa River is a tributary of the Oreti River which joins the sea by discharging out through New River Estuary. The Oreti River is subject to a Water Conservation Order and is a Statutory Acknowledgement River under the Ngai Tahu Claims Settlement Act 1998. This river is one of the main rivers in Southland and stretches 170 km from its origin in Northern Southland, to the New River Estuary where it enters the sea.

The New Zealand Freshwater Fish Database (NZFFD) indicates that Lamprey (*Geotria australis*), Inanga (*Galaxias maculatus*), Brown Trout and multiple types of Bully have been located approximately 3.7 km south west of the site in the Oreti River.

The edge of the expanded discharge area is approximately 250 metres upstream of a registered drinking-water supply that provides water to between 25 and 100 people. Lochiel School takes groundwater via bore from the Oreti River catchment.

The edge of the expanded discharge area is also approximately 14 km upstream of a registered drinking-water supply that provides water to more than 501 people. The Invercargill City Council takes surface water from the Oreti River for community supply at Branxholme.

There are also two unregistered drinking water sites for Alliance at Lorneville on the Oreti River and for Alliance at Wallacetown on the Makarewa River.

Modelled nutrient loss below the root zone (Overseer)

The “existing environment” includes activities legally occurring there currently, and the adverse environmental effects arising from them. To establish the effect of activities currently undertaken on the site, the Applicant used Overseer to model nutrient losses below the root zone.

Three different Overseer budgets were provided through the application process to establish the status of the ‘existing environment’. These were:

Overseer Budget	N loss to water	P loss to water	Relative to proposed scenario
Budget One	32 kg/ha/year with total N loss of 8,037 kg/year	1.3 kg/ha/year with total P loss of 325 kg/year	Increased N loss by 2 kg/ha/year, with a total increased N loss of 315 kg/year. There is no change to P loss.
Budget Two	47 kg/ha/year with total N loss of 11,704 kg/year	1.4 kg/ha/year with total P loss of 344 kg/year	Decreased N loss by 13 kg/ha/year, with a total decreased N loss of 3,352 kg/year. Decreased P loss by 0.1 kg/ha/year, with a total decreased P loss of 19 kg/year.
Budget Three	47 kg/ha/year with total N loss of 11,791 kg/year	1.3 kg/ha/year with total P loss of 333 kg/year	Decreased N loss by 13 kg/ha/year, with a total decreased N loss of 3,439 kg/year. No change to per ha P loss ratio but a decreased total P loss of 8kg/year.

- A budget for the most recent year (2016/17) which had no cropped area and with no stock on farm over June and only 32 cows wintered on site in July. This budget had a modelled N loss of 32 kg/ha/year.
- A budget for the three years prior to the first budget (2013/14, 2014/15, and 2015/16) which had 24.2ha of cropped area and a total of 769 stock wintered on site in June and 739 stock wintered on site in July on farm. This budget had a modelled N loss of 47 kg/ha/year.
- A budget for the most recent three years (2014/15, 2015/16 and 2016/17) which had 31.4ha of cropped area, and 276 R1s and R2s wintered on site in June and 224 R1s and R2s wintered on site in July. This budget had a modelled N loss of 47 kg/ha/year.

The Applicant also provided a fourth Overseer scenario outlining the nutrient losses from the proposed farming activity for which they are seeking resource consent. The difference between the “existing” and “proposed” scenarios gives insight into the effects “on the environment” required to be assessed under section 104. While Overseer does not in itself identify effects, these can to some extent be inferred from the scale of nutrient losses and other relevant analysis (of physiographic zones, sensitivity of downstream environments, and so on).

The first Overseer budget

Initially the application was lodged with a budget which reflects the 2016/17 year immediately prior to the consent lodgement. This budget does not include any stock wintered on farm in June and only contains 32 replacement cows wintered on farm in July. These figures are consistent with the proposed Overseer scenario which also reflected no cows wintered on farm in June and 32 cows wintered in July.

This budget suggested a 32 kg/ha/year N loss to water, which was less than the loss modelled for the proposed future scenario of 34 kg/ha/year (i.e. the application showed that the proposed expansion of the dairy farm would increase the nutrient losses from the farm).

The second Overseer budget

The second Overseer budget was volunteered by the Applicant and provided on 22 November 2017 (initially supplied on 9 November 2017 although these were the incorrect files). This budget was for the 2013/14, 2014/15, and 2015/16 years (but did not include the most recent 2016/17 year). This budget also included significant wintering on farm with:

- 259 cows in June;
- 399 cows in July;
- 310 R1s and R2s in June;
- 140 R1s and R2s in July;
- 200 dry cows in June; and
- 200 dry cows in July.

This is a total of 769 stock in June and 739 stock in July on farm.

This budget included a pasture production value of greater than 18 kg Dry Matter/ha/yr for all pasture blocks (not crop blocks), which is identified in the proposed Environment Southland Overseer Checklist as likely being unviable for Southland's climate. No explanation was provided with the budget regarding the high pasture production values. This budget also included 16.4 ha of crop area with an additional 7.8 ha of swedes rotated through the platform (total crop area of 24.2 ha) which was not previously included in the first Overseer budget.

This second Overseer budget had a modelled N loss to water of 47 kg/ha/year, which is significantly higher than the loss modelled for the proposed scenario of 34 kg/ha/year.

The third Overseer budget

The third Overseer budget was requested in a second s92(1) request on 29 November 2017 and was supplied on 21 December 2017, with the supplementary report on 22 December 2017. This budget modelled losses from the 2014/15, 2015/16 and 2016/17 years and included some wintering of R1s and R2s on farm with 276 in June and 224 in July. No milking cows or dry cows were wintered on farm in this budget. The budget included a larger cropped area than the other budgets, with 24.8ha in crop and an additional 6.6 ha of swedes rotating through the platform (total crop area of 31.4) – an extra 7.2ha of crop.

This budget had a modelled N loss to water of 47 kg/ha/year, which is higher than the loss modelled for the proposed scenario of 34 kg/ha/year.

Known limitations of Overseer

Main limitations with the use of Overseer as a predicative model for quantitatively establishing environmental effects are:

- *Models up to the root zone only:* Overseer models the loss to water but this does not take into account attenuation and time delay with nutrients below the root zone.
- *Model outputs are not environmental effects:* Overseer models the loss to water but this does not take into account nutrient sensitivity in the existing environment. The effect of the modelled nutrient loss on water will depend on the location that it will be occurring in.
- The model can be subject to relatively wide margins of error.

Duncan (2016 p. 153¹²) summarises the concerns raised over the use of Overseer budgets stating that:

Overseer can estimate nitrogen losses from the root zone of land and risks of phosphorus loss to generate a farm's average in kilograms per hectare per annum. Initially developed in the 1990s as a decision support tool to help farmers make decisions on how much fertiliser to apply, its more recent use as a regulatory tool has been controversial and consistently challenged in the Courts by the agricultural industry. Its well-known error margin of between 20 and 30 per cent has been one issue of concern. Shifts in the output numbers (up and down) as the science and data inputs change is another. Nevertheless, Overseer is now central to limit setting and regional planning across New Zealand.

With regard to the concerns raised by Duncan (2016) in relation to the margin of error for the Overseer model, while I acknowledge the significant error factor for each individual budget, for this application the budgets have been used comparatively rather than as stand-alone figures. The modelled differences between the budget representing the existing environment and the proposed scenario have been minimised by using the same version of Overseer for both, having both scenarios completed by the same Certified Nutrient Management Advisor (CNMA), inputting data in a manner consistent with the Overseer Best Practice Guidelines, and using many of the same in-puts for both scenarios unless there is an intentional modelled change (i.e. effective farm area, soil types, rainfall site are all consistent data inputs).

With regards to concerns over the shifts in the output numbers as science and data inputs change, this represents a greater challenge to address. One of the ways that Environment Southland has approached this with other consent applications is to reflect Overseer budget in-puts rather than out-puts as consent limits. If you decide that the consent can be granted, then I would advise a similar approach is taken in the consent, by including consent limits relating to the timing and volume of fertiliser discharge, wintering practices on farm, area available for cropping and volume and type of imported supplementary feed.

¹² Duncan, R. (2016). Ways of knowing—out-of-sync or incompatible? Framing water quality and farmers' encounters with science in the regulation of non-point source pollution in the Canterbury region of New Zealand. *Environmental Science & Policy*, 55, 151-157.

With regards to changing science, this is a constant factor in processing consent applications as science is continuously advancing and progressing.

3.2.3 Activities previously consented

The assessment of effects under Section 104 of the RMA can be informed by the compliance history. I have outlined the compliance history below.

3.2.3.1 Compliance History

For AUTH-204476 (previous discharge permit) the Applicant has a mixed compliance history. From 7 August 2010 until 27 March 2017 ten inspections have been undertaken by Council Compliance Officers. During this time the Applicant received:

- a 10-rating (significant non-compliance) inspection on the 15 November 2010 due to ponding as a result of over-application of effluent via travelling irrigator. This non-compliance was responded to with advice and education, with a follow up inspection on 6 December 2010 which received a 1-rating (fully compliant) inspection;
- on 26 February 2009 and on the 4 October 2009, the Applicant received two 5-rating (minor non-compliance) inspections. For both of these inspections, the non-compliance observed by the Compliance Officer related to the over-application of effluent via travelling irrigator.
- on 5 March 2008 the Applicant received a 2-rating (technical non-compliance) inspection due to the management of silage leachate. All other inspections received a 1-rating (fully compliant) inspection.

For AUTH-204477 (previous water permit) the Applicant has been inconsistent in returning their water take data. The Applicant has been compliant in returning their monthly water take data by the council required timeframes for 2007, 2008, 2009, 2013, 2014 and 2015. The Applicant received a non-compliance rating for not returning their monthly water take data by council required timeframes for 2010, 2011, 2012, 2016, and 2017. The consent holder received a warning letter with regards to over abstraction on 16 November 2011.

3.3 Actual and potential effects

Effects that must be disregarded (Section 104(2))

Section 104(2) of the RMA states:

- (2) *When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect.*

This concept outlined in Section 104(2) is known as the permitted baseline. In my assessment, no effects have been disregarded as result of applying the permitted baseline. This is for three reasons. First, Policy 39 of the proposed Southland Water and Land Plan removes the discretion of Council to apply a permitted baseline argument for the use of land for a farming activity. Therefore, while there is a permitted activity rule in the plan relating to the use of land for dairy farming (Rule 21), this has not been taken into consideration as a permitted baseline. It is acknowledged that this permitted

rule does allow the activity to form part of the existing environment, which is a different concept to the permitted baseline. No effects have been disregarded for the use of land for dairy farming.

There is no permitted activity with regards to the construction of effluent storage in either the Regional Water Plan or the proposed Southland Water and Land Plan. The definition of effluent storage has changed between the operative and proposed plans, with the operative plan stating that it is only storage if the structure is over 22.5 m³ in volume. This proposed plan has no minimum volume limits.

Also, with regard to the water take and the discharge of effluent to land, any permitted baseline would only relate to a fraction of the effect of the water take or the discharge. Applying a permitted baseline for the water take and effluent discharge is unlikely to alter the assessment of effects in any way due to the fraction of effects that would be permitted.

Effects to be considered (Section 104(1)(a))

Consideration of the following effects is required:

- effects on water quality, including potential for contamination of groundwater and surface water;
- soil health;
- effects on water quantity (including stream depleting effects);
- odour; and
- temporary and cumulative effects

Water Quality

The application included an assessment of the effects of the discharge activity on water quality. This is primarily a qualitative assessment. Good management practices which will be undertaken to minimise the adverse effects of the activity have been identified in the Farm Effluent Management Plan included in the application as an appendices.

Use of land for dairy farming and effects on water quality

The key policies relating to this activity are Policies 15(3) and 16(1)(b) of the pSWLP. These policies provide clear direction to decision makers about assessing the level of effects for this activity. There is no equivalent rule in the RWP for expanded dairy farming so greater weight has been placed on the provisions of the pSWLP. These policies are discussed further on in the report as they provide a lens through which the effects of the activity are viewed.

Policy 15(3) seeks to maintaining and improving water quality with regards to land use consents by avoiding adverse effects which will reduce water quality. Policy 16 seeks to minimise the environmental effects from farming activities by strongly discouraging applications to further intensify existing dairy farming of cows where the effects on water quality of the intensification cannot be “fully mitigated”. These policies work in tandem with the Physiographic specific policies and general directions in the plan to maintain and improve water quality. To mirror this, the assessment of effects focuses on the effects of the intensification and also on cumulative effects of the proposal.

The expansion of the dairy farm (from 599 to 750 cows) is to be undertaken in accordance with current good management practices set out in the management plan contained in the consent

application. These management practices relate to the specifics of the physiographic zones and include:

- utilising a nutrient management plan;
- soil testing is carried out each year to optimise use of fertilisers and supplements;
- surface waterways and wetlands are fully fenced;
- sufficient land area is available for the dairy operation;
- cows are wintered off farm;
- tracks and lanes sited away from streams;
- pugged soil re-sown as soon as practical
- restricted grazing of cropland and pasture, and restricted grazing in autumn;
- the use of fodder crop to maintain energy level with low N feed;
- a large land application area is available to ensure N & K returns are not excessive;
- fertiliser in split dressings.

The measures described above were part of the supporting information when the pSWLP was notified and are aimed at mitigating effects of the activity on water quality. Each management practice has a varying degree of effectiveness in terms of nitrogen, phosphorus, microbes (e.g. E coli) and sediment.

The transportation pathways are shown in the table below. Mitigation measures to address these are the increase in the farm boundary, the use of a feedpad and the use of no till pasture cultivation were possible.

Physiographic zone	Key transport pathways and contaminants			
	Overland flow	Lateral drainage (through the soil zone)	Deep drainage (leaching to groundwater)	Artificial drainage (subsurface drainage)
Gleyed	N, P, M, S _(o)	N		N, P, M, S
Oxidising	N, P, M, S _(o)		N	N, P, M, S _(b)

The Applicant has also identified the location of critical source areas, swales, tile drains and waterways on the site.

The Applicant has modelled predicted nutrient losses using the Overseer Software. This programme assumes that best practice will be followed on the site at all times and does not account for mitigation measures to reduce phosphorus losses. The budget presents a whole farm loss of 34 kg/ha/yr of nitrogen, and 1.3 kg /ha/yr of phosphorus to water. For this activity, the effects on water quality are based on what this proposed loss scenario modelled in Overseer will be on the existing environment.

For the existing environment, that the proposed losses will be assessed against, the Applicant proposed three different scenarios:

- *Scenario 1*

The first scenario represents an increase from the nitrogen losses modelled for the proposed scenario with an additional 2 kg/ha/year of nitrogen, with the phosphorus to water maintained at 1.3 kg/ha/year. This is a modelled increase in total nitrogen loss of 315 kg/year.

The information in the application suggests that the nutrient losses from the site will increase as a result of the expanded dairy farming operation. Since adverse environmental effects of dairy farming for the large part arise from nutrient losses to water, it must follow that there will be an increase in the effects as a result of the use of land for dairy farming (as it relates to the intensification). Possible effects of the increased nitrogen loss are the eutrophication and toxicity of water for humans and animals. High levels of nitrate in water can make it unsafe to drink for humans and can be toxic for sensitive organisms (like young trout and salmon). Ammonia is highly toxic to fish and other creatures that live in water (at lower concentrations than nitrate) and too many nutrients in water can lead to excessive plant growth, algal blooms and depletion of oxygen in the water. The Applicant has provided GMPs and mitigation measures although with regard to nitrogen these are generally accounted for in the Overseer nutrient budgets. Therefore, it is my conclusion that the effects from the intensification of the dairy farm for the first scenario are likely to be more than minor when viewed through the lens of the policies in the pSWLP.

- **Scenario 2**

The second scenario represents a decrease from the nitrogen losses modelled for the proposed scenario with a reduction of 13 kg/ha/year, with a reduction in the phosphorus to water by 0.1 kg/ha/year. This is a modelled decrease in total nitrogen loss of 3,352 kg/year, and a modelled decrease in total phosphorus loss of 19kg/year.

This information suggests that the changes to the proposed farming operation will likely reduce losses from the site. In this scenario, the changes to wintering practices on farm and the change to cropping area will offset the losses resulting from the additional cows. Since adverse environmental effects of dairy farming for the large part arise from nutrient losses to water, in the general absence of additional losses it must follow that there will be an absence of additional effects as a result of the use of land for dairy farming (as it relates to the intensification). There are some concerns regarding the inputs into this scenario as the pasture production values are very high (possibly modelling a non-viable farm system), and the number of stock wintered on site is higher than the average provided in the accompanying report. Therefore it is my conclusion that, if it is the view of the panel that this scenario reflects appropriate current activities undertaken on farm, the effects from the intensification of the dairy farm for the second scenario are likely to be less than minor when viewed through the lens of the policies in the pSWLP. However, I hold significant concerns regarding the viability of this modelled farm system for scenario 2.

- **Scenario 2**

The third scenario represents a decrease from the nitrogen losses modelled for the proposed scenario with a reduction of 13 kg/ha/year, with the phosphorus to water maintained at 1.3 kg/ha/year. This is a modelled decrease in total nitrogen loss of 3,439 kg/year, and a modelled decrease in total phosphorus loss of 8 kg/year.

This information suggests that the changes to the proposed farming operation will likely reduce losses from the site. In this scenario, the changes to wintering practices on farm and the change to cropping area will offset the losses resulting from the additional cows. Since adverse environmental effects of dairy farming for the large part arise from nutrient losses to water, in the general absence of additional losses it must follow that there will be an absence of additional effects as a result of the use of land for dairy farming (as it relates to the intensification). Therefore, it is my conclusion that the effects from the intensification of the

dairy farm for the second scenario are likely to be less than minor when viewed through the lens of the policies in the pSWLP.

It is important to note that no target nitrogen or phosphorus losses for properties or catchments have been set in the Water Plan, or the pSWLP.

Effluent discharge and effects on water quality

Potential adverse effects of discharging dairy shed and feed pad effluent onto land include contamination of groundwater and contamination of surface waterways.

When applied to soils in an appropriate manner, the effluent can act as a nutrient fertiliser. The proposed storage capacity (identified in the mitigation measures below) may allow for the scheduling of effluent irrigation based on soil moisture deficits, which would decrease the potential for nutrient loss to water¹³. Over application or application at the wrong time, when soils are at field capacity, would likely accelerate the loss of those nutrients out of the root zone and into groundwater (and/or surface water via artificial drainage networks).

The Applicant has proposed to use good management practices to minimise adverse effects arising from the activity. These measures are:

- adherence to standard Council buffer distances between the discharge area and nearby waterways to reduce the risk of overland flow of effluent into waterways. A 20 metres buffer will be in place from any internal waterways;
- use of low depth irrigation;
- use of an effluent storage pond.

These three mitigation measures listed above are significant factors for determining the effects of the proposed discharge activity. A discharge of effluent to land that is appropriately mitigated is likely to have less than minor effects. Although, for this application it is my conclusion that the mitigation measures above are not sufficient to minimise the effects to water quality resulting from the discharge of dairy shed and feed pad effluent to land.

The first mitigation is suitable for the site. While the primary contaminant pathway for the proposed dairy platform is overland flow, there are no additional risk factors which would uniquely apply to this site (i.e. the location is not identified as sensitive, e.g. Waituna, and there is no Peat Wetland physiographic zone on site). Therefore, I conclude that this is a suitable mitigation measure.

The second mitigation measure is appropriate for the site and is consistent with academic literature¹⁴ for minimising the effects of effluent discharge to land. Policy direction is to promote low rate irrigation as well as low depth irrigation although the Applicant has decided to remove this mitigation measure on 25 January 2017. When viewing this second mitigation measure through the lens of the plan, it is my view that this mitigation measure is partially effective at minimising effects on water quality from the discharge of effluent to land. Provided the other mitigation measures were appropriate, it is my view that this partial mitigation measure would increase the level of effects resulting from the discharge from less than minor to minor.

¹³ Houlbrooke, D J, et al. "A review of literature on the land treatment of farm-dairy effluent in New Zealand and its impact on water quality." *New Zealand Journal of Agricultural Research* 47.4 (2004): 499-511.

¹⁴ ¹⁴ Houlbrooke, D J, et al. "A review of literature on the land treatment of farm-dairy effluent in New Zealand and its impact on water quality." *New Zealand Journal of Agricultural Research* 47.4 (2004): 499-511.

The third mitigation measure is appropriate for the site, but I am uncertain that the Applicant can meet this mitigation measure. This uncertainty arises as evidence that the pond is suitable to be used has not been supplied to Council despite request. This increased uncertainty is addressed below in the section relating to the construction of effluent storage. If this pond is determined to be a suitable structure to continue to be used, then this mitigation measure would be appropriate. If this pond is not determined to be a suitable structure, this would limit the ability of the Applicant to defer irrigation. Deferred irrigation is essential as it allows for the irrigation of effluent only when there is soil moisture capacity for the nutrient to be up-taken by pasture growth. Irrigating on saturated soils would likely significantly increase the effects of the discharge on water quality.

It is my view that the use of high rate irrigation methods only for the discharge of effluent to land increases the effects of the activity to minor. However, the uncertainty that the pond is suitable to be used to defer effluent irrigation is much more significant. Therefore, I conclude that the effects resulting from the discharge of effluent to land are likely to be more than minor.

Construction of effluent storage and effects on water quality

In regards to the location of the effluent storage facility, the recommended buffer distances of 100 metres from water abstraction points and 50 metres from any surface water body, artificial watercourse or coastal marine area have been met therefore decreasing the potential viral and bacterial risks to surface and groundwater associated with agricultural effluent storage facilities.

There is a significant risk to water quality and public health if deficiencies in the design and construction of an agricultural effluent storage facility results in a discharge to groundwater or surface water. Appropriate design and construction standards are contained in the *Environment Southland Code of Practice for Design and Construction of Agricultural Effluent Ponds OR the IPENZ Practice Note 21*. To ensure these standards are met, agricultural effluent storage facilities need to be properly designed by persons with experience in the design and oversight of construction of this type of facility. In addition, the construction of a pond requires an experienced contractor with adequate heavy equipment. The design has been reviewed by Council's Technical Services Engineer and he is satisfied that the pond will be constructed in accordance with the Code of Practice. As the pond is retrospective, the construction of the pond also needs to address the above requirements.

There is increased uncertainty with regards to the construction of the pond identified above. The effect of the construction of effluent storage on water quality will depend significantly on whether the structure was built in accordance with current standards. This evidence was requested from the Applicant at the site visit but has not yet been provided to Council. If this structure has not been built as per the design plans submitted to Council or in accordance to Practice Note 21, it is likely that the effects on water quality will be greater than those provided for in the planning provisions. As I am unable to conclude that the structure has been built in accordance with the above provisions, I am taking a precautionary approach and assuming that it has not. Consequently, the effects on water quality resulting from the construction of effluent storage are likely to be more than minor.

If this evidence is provided to Council, this would likely change my position with regards to effects from the construction on water quality resulting from this application.

Soil Health

The effluent disposal field will be 183 hectares. This figure is more than the area needed to meet the minimum requirement of 4 hectares per 100 cows, which is calculated to achieve a maximum loading

of 150 kg of nitrogen/hectare/year from effluent irrigation and more than the 8 hectares per 100 cows as recommended in the Best Practice Guidelines Booklet¹⁵.

There are three different soils in the disposal area. The predominant risk for the Pukemutu and Northope soil types is structural compaction and waterlogging and the predominant risk for the Edendale soil type is leaching nutrients to groundwater. When topography and physiographic zones are taken into account, the main risk factor for the eastern section of the property for the discharge of effluent is overland flow and for the western section to nutrient leaching to groundwater. Mitigation measures that address this include the use of a low depth effluent irrigation systems and the use of a feed pad over wet periods.

Provided the effluent is applied at the appropriate rate and depth when there is soil moisture capacity, soil health and available nutrients should be maintained and enhanced.

Water Quantity

The rate of abstraction is less than 2 litres per second. The Applicant has freshwater storage ponds of 45 m³ for stock water and shed washdown to ensure this abstraction rate can be met. At this rate of abstraction stream depletion effects do not need to be considered under the policies of the RWP. The abstraction is also unlikely to cause any significant effects on neighbours' bore water supplies.

The Applicant is taking a reasonable amount of water for dairy activities (120 litres per cow per day), and is consistent with the recommended volumes of between 120 to 140 litres per cow per day for dairy shed washdown and stock drinking water.

The groundwater zone has a preliminary allocation of 49,065,000 m³/year (RWP) and 13,490,000 m³/year (pSWLP). Cumulative allocation from the groundwater zone, including this application about 7.7% (RWP) and 12.3% (pSWLP) of the preliminary allocation. The Applicant will require 90 m³ per day during the milking season. This equates to 30,445 m³ per year.

No adverse environmental effects are anticipated as a result of the taking of water as proposed. Recommended conditions of consent will require that the abstraction of water is metered and the results reported to Council.

Adverse effects of the proposed water take are expected to be less than minor.

Odour

As long as the effluent is applied in accordance with the specified application rates and depths, and the buffers specified by recommended consent conditions are maintained, then there should little risk of adverse effects from odour and spray drift on surrounding landowners and occupiers.

Effluent storage facilities can cause problems with odour, however, the closest dwelling on another property is located well over 200 metres from the effluent storage facility and the facility is located more than 50 metres from the property boundary. A recommended condition of consent requires that there are no significant adverse effects on surrounding landowners and occupiers as a result of odour from the storage facility.

¹⁵ Farm Dairy Effluent, Best Practise Guidelines (2007), Environment Southland

Consideration of Alternatives

For the expansion of the dairy farm, the Applicant considered three scenarios:

1. continuing the current farming practice;
2. extending the effluent discharge area but retaining current cow numbers (599 cows);
3. expanding the dairy platform as proposed in the application.

The Applicant concluded that options one and two were sub-optimal for environmental, economic or efficiency reasons.

The Applicant has not identified any alternatives with regards to the discharge of collected effluent to land.

Temporary and Cumulative Effects

The RMA defines a cumulative effect as an effect that arises over time or in combination with other effects.

Overseer has been used as a tool to model the cumulative effects on the proposed environment. As Overseer models a steady state and uses long-term averages, the nitrogen loss is likely to be ongoing and cumulative in the existing environment. For this application, the first scenario represents an increase in nitrogen losses below the root zone, which would likely be ongoing and have an increased cumulative effect. The second and third scenarios represent a decrease in nitrogen losses below the root zone, which would likely have a reduced effect on the cumulative impacts resulting from this farm.

Based on current information with regard to storage volumes of current aquifers, I do not consider that the proposed groundwater abstraction for the operation will cause adverse cumulative effects on groundwater quantity as the aquifer is not facing allocation issues and the total groundwater abstraction from the Makarewa (RWP) or Lower Oreti (pSWLP) aquifers, including the volume required for this operation, represents approximately 1 % (Makarewa) or 3 % (Lower Oreti) of the land surface recharge of the aquifer (RWP figures).

As the activities proposed are ongoing and any resulting effects are not likely to be temporary.

Effects Conclusion

The mitigation measures include in the application are low water abstraction rate, low rate and low depth effluent discharge using a travelling irrigator, a slurry tanker or umbilical system, the increased land in the effluent discharge area and farm boundary, observing appropriate buffer distances as recommended by Council, and the use of a new feedpad.

The primary effects identified are to water quality, water quantity, soil health and odour. The adverse effects of the water abstraction should not be more than minor. However, the adverse effects of the use of land for dairy farming, the effluent discharge activities and the use of land for the construction of effluent storage on the environment will be more than minor due to the uncertainty in the existing environment and the construction of the effluent storage pond.

Overall, the potential effects from the proposed land use for dairy farming, the discharge of effluent to land activities and the construction of effluent storage on water quality are likely to be more than minor.

3.4 Relevant provisions of the relevant regional plan objectives, policies and rules (Section 104(1)(b)(v))

Council is currently operating under three Regional Plans – the Regional Effluent Land Application Plan (RELAP), the Regional Water Plan (RWP) and the proposed Southland Water Land Plan (pSWLP). The pSWLP was notified by the Consent Authority on 3 June 2016. Whilst not given the same weight as the provisions within the operative RELAP or the RWP when making a determination on the activities that fall under both operative and proposed rules under Section 104(1) (b) regard must, Subject to Part 2 of the Act, be had to the provisions of any proposed plan. For the expansion of the dairy farm, greater weight has been placed on the pSWLP as there is no corresponding rule in the operative plans. This is explained in more detail in the weighting section below.

The relevant provisions of all plans are detailed below and are considered in turn but the key policy drivers for this application are:

- *For the pSWLP* – Policies A4, 15(3) and 16(1)(b) which focus on the effects on water quality and provide clear direction to decision makers to avoid or strongly discourage activities which reduce water quality unless adverse effects are avoided or fully mitigated.
- *For the RWP* – Policies A4, 31A, 31C, 41 and 42 which focus on matching the level of management required to the environmental risk resulting from the proposed activities.
- *For the RELAP* – Policies 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.6 and 4.2.7 which focus on taking a precautionary approach, minimize impacts on water quality, human health and animal health, ensuring sustainability and promoting good management practice.

These policies are explained in more detail below, although it is my opinion that the application is inconsistent or contrary to all the above key policy provisions.

Proposed Southland Water Land Plan

The objectives and policies of the pSWLP that are relevant to this application have been grouped according to topic.

Ngai Tahu

Objective 3 *The mauri (inherent health) of waterbodies provide te hauora o te tangata (health of the people), te hauora o te taiao (health of the environment and te hauora o te wai (the health of the waterbody).*

Objective 4 *Tangata whenua values and interests are identified and reflected in the management of freshwater and associated ecosystems.*

Policy 1 *Enable papatipu rūnanga to effectively undertake their kaitiaki responsibilities in freshwater and land management through Environment Southland:*

1. *providing copies of all applications that may affect a Statutory Acknowledgement area, tōpuni, nohoanga, mātaítai or taiāpure to Te Rūnanga o Ngāi Tahu and the relevant papatipu rūnanga;*

2. *identifying Ngāi Tahu interests in freshwater and associated ecosystems in Southland/Murihiku;*
3. *reflect Ngāi Tahu values and interests in the management of and decision-making on freshwater and freshwater ecosystems in Southland/Murihiku, consistent with the Charter of Understanding.*

Policy 2

Any assessment of an activity covered by this plan must:

1. *take into account any relevant iwi management plan; and*
2. *assess water quality and quantity based on Ngāi Tahu indicators of health.*

Comment

Te Tangi a Tauria, and the views of Te Runanga o Ngai Tahu and Te Ao Marama Inc. (representatives of the four rūnanga) have been taken into account in assessing the application. Te Ao Marama Inc. and Te Runanga o Ngai Tahu were both served copies of the application during the notification process of the application. Neither of these parties submitted on the application. Papatipu rūnanga have had the opportunity to effectively undertake their kaitiaki responsibilities in freshwater and land management.

In terms of Policy 2, the provisions of Te Tangi a Tauria will be discussed below. Regarding the indicators of health, based on the list on page 150 of Te Tangi a Tauria, the main ones of relevance to the application are water quality and whether water is safe to drink. Therefore, provided that the effluent system, discharge and land use are managed to avoid adverse effects on water quality, the proposal will not conflict with the policy.

Physiographic Zones**Policy 6**

In the Gleyed physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. *requiring implementation of GMPs to manage adverse effects on water quality from contaminants transported via artificial drainage and lateral drainage;*
2. *having particular regard to adverse effects on water quality from contaminants transported via artificial drainage and lateral drainage when assessing resource consent applications and preparing or considering management plans.*

Policy 10

In the Oxidising physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. *requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via deep drainage and lateral drainage;*
2. *having particular regard to adverse effects on water quality from contaminants transported via deep drainage and lateral drainage when assessing resource consent applications and preparing or considering management plans.*

Comment

The physiographics project was undertaken to better understand and estimate spatial variation in freshwater hydrochemistry at a regional scale in Southland, New Zealand. Environment Southland developed a semi-quantitative, mechanistic conceptual model to estimate the hydrochemical

variation in ground and surface waters and shallow, soil influenced groundwater on the basis of four key drivers:

- (i) precipitation source;
- (ii) recharge mechanism and water source;
- (iii) combined soil and geological redox potential, and;
- (iv) the combination of geomorphic setting and substrate (rock or biological sediment) composition.

The physiographic zones are particularly relevant to the discharge activity and for the use of land for dairy farming. In assessing the actual and potential effects of the activities which may affect water quality the Applicant has addressed the factors listed in the above policy, the factors which contribute to the classification of the land into certain zones and have tailored their good management practices and mitigation measures accordingly.

Therefore if the above policy was considered with full weight that the activities would be consistent with these provisions.

Effluent Management

- Objective 13* *Enable the use and development of land and soils, provided:*
- (a) The quality, quality and structure of soil resources are not irreversibly degraded though land use activities and discharges to land;*
 - (b) The discharge of contaminants to land or water that have significant or cumulative effects on human health are avoided; and*
 - (c) Adverse effects on ecosystems (including diversity and integrity of habitats), amenity values, cultural values and historic heritage values are avoided, remedied or mitigated to ensure these values are maintained or enhanced.*
- Objective 18* *All activities operate at “good (environmental) management practice” or better to optimise efficient resource use and protect the region’s land, soils, and water from quality and quantity degradation.*
- Policy 14* *Prefer discharges to land, rather than direct discharges to water.*
- Policy 17*
- 1. Avoid adverse effects on water quality, and avoid as far as practicable other adverse environmental effects of the operation of, and discharges from effluent management systems.*
 - 2. Manage effluent systems and discharges from them by:*
 - (a) designing, constructing and locating systems appropriately and in accordance with standards;*
 - (b) maintaining and operating effluent systems in accordance with best practice guidelines;*
 - (c) avoiding any surface run-off/overland flow, ponding or contamination of water resulting from the application of agricultural effluent to pasture;*
 - (d) avoiding the discharge of raw sewage and untreated agricultural effluent to water.*

Comment

Objective 13 seeks to ensure the discharge of contaminants do not have a significant or cumulative effect on human health and that the intensified land use of dairy farming will not impact negatively on ecosystem health. Provided that the discharge of effluent does not cause further degradation and contamination of the groundwater resource, the effects on human health should not be significant. Without evidence to support the use of deferred storage, I am unable to conclude that the discharge activity will be appropriately mitigated to achieve this objective. The impact that the expanded dairy farm will have on ecosystem values including the integrity of habitat will depend on what is considered the existing environment.

Policy 17 refers to avoiding adverse effects from the use of effluent management systems and managing these systems and discharges from them by designing, constructing and locating systems appropriately and in accordance with best practices guidelines, the effluent system proposed is consistent with the policy. As evidence that the effluent storage pond has been constructed in accordance with standards has not been supplied to Council despite request, I do not have sufficient information to determine if the application is consistent with Policy 17(2)(a) with regards to construction, and to Policy 17(2)(b) with regards to best practice guidelines. Therefore, I conclude that the application is inconsistent, and may be contrary to, Policy 17.

Water Quality

Objective 1 *Land and water and associated ecosystems are managed as integrated natural resources recognising the connectivity between surface water and groundwater, and between freshwater, land and the coast.*

Objective 8 (a) *The quality of water in aquifers that meet both the Drinking Water Standards for New Zealand 2005 (revised 2008) and any freshwater objectives, including for connected surface water bodies, established under the Freshwater Management Unit process is maintained; and*
 (b) *The quality of water in aquifers that have been degraded by land use and discharge activities (with the exception of those aquifers where ambient water quality is naturally less than the Drinking Water Standards for New Zealand 2005 (revised 2008) is improved.*

Policy A4 1. *When considering any application for a discharge the consent authority must have regard to the following matters:*
 (a) *the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water; and*
 (b) *the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.*
 2. *When considering any application for a discharge the consent authority must have regard to the following matters:*
 (a) *the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with fresh water; and*

- (b) *the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.*

Policy 13 Manage land use activities and discharges to land and water so that water quality and the health of humans, domestic animals and aquatic life, is protected.

Policy 15 Maintain and improve water quality by:

1. *... [not applicable]*
2. *avoiding point source and non-point source discharges to land that will reduce surface or groundwater quality, unless the adverse effects of the discharge can be avoided, remedied or mitigated;*
3. *avoiding land use activities that will reduce surface or groundwater quality, unless the adverse effects can be avoided, remedied or mitigated; and*
4. *avoiding discharges to artificial water courses that will reduce water quality in a river, lake or modified watercourse beyond the zone of reasonable mixing.*

so that:

1. *water quality is maintained where it is better than the water quality standards specified in Appendix E “Water Quality Standards”; or*
2. *water quality is improved where it does not meet the water quality standards specified in Appendix E “Water Quality Standards”; and*
3. *water quality meets the Drinking-Water Standards for New Zealand 2005 (revised 2008); and*
4. *ANZECC sediment guidelines (as shown in Appendix C of this Plan) are met.*

Policy 16

1. *Minimising the environmental effects (including on the quality of water in rivers, coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands, and groundwater) from farming activities by:*
 - (a) *strongly discouraging the establishment of new dairy farming or new intensive winter grazing activities in close proximity to sensitive waterbodies identified in Appendix Q;*
 - (b) *strongly discouraging applications to establish new, or further intensify existing dairy farming of cows or intensive winter grazing activities where the effects on the quality of water, including cumulatively, of groundwater, waterbodies, coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands cannot be avoided or fully mitigated or in areas where water quality is already degraded to the point of being over-allocated.*
2. *Requiring all farming activities, including existing activities, to:*
 - (a) *either implement a Management Plan, as set out in Appendix N, or be listed on the Environment Southland Register of Independently Audited Self-Management Participants;*
 - (b) *actively manage sediment run-off risk from farming and hill country development by requiring setbacks from waterbodies, riparian planting, limits on areas or duration of exposed soils and the prevention of stock entering surface waterbodies;*

- (c) *manage collected and diffuse run-off and leaching of nutrients, microbial contaminants and sediment through the identification and management of higher risk physiographic zones on a regional scale, and critical source areas within individual properties.*

Comment

Policy A4 provides direction to Council on the significance of effects relating to the life-supporting capacity of fresh water and on the health of people and the community from secondary contact, and the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, and people and the community affected by secondary contact, resulting from the discharge would be avoided. The Applicant has applied to discharge effluent via high rate methods (travelling irrigator, slurry tanker and umbilical system) although to a low depth (10 mm for travelling irrigator, and 5mm for slurry tanker and umbilical system). The uncertainty regarding the use of deferred storage is also relevant to the discussion on Policy A4. Due to the uncertainty of having deferred storage or not and the high rate discharge, the Applicant is unlikely to provide for the avoidance of contamination although this does not necessarily mean that the proposed activities will result definitely in contamination. The design, set up and management of the effluent system (by using high rate effluent discharge and uncertainty regarding having the ability to defer effluent application) does not sufficiently seek to avoid contamination as stated in Policy A4.

The proposed discharge to land may be managed in a way so that the factors considered in Policy 13 are protected although the evidence to support this has not been provided to Council. Provided the effects of the discharge activity do not adversely affect the groundwater resource, the application for the discharge activity would be consistent with this policy. Without this evidence I do not have enough information to conclude that the discharge activity is consistent with this policy.

With regards to the land use consent for the use of land for dairy farming, consistency with this policy will depend on what is considered the existing environment. For the land use consent, the primary management indicator to assess the impact on water quality is the modelled nutrient losses below the root zone established by Overseer. Due to the multiple Overseer scenarios provided to Council, I am unable to determine what the existing environment is for this activity. If the existing environment losses are greater than the proposed scenario Overseer budget, I conclude that the activity is consistent with this policy. Although, if the existing environment losses are less than the proposed scenario Overseer budget, I conclude that the activity is not just inconsistent, but is contrary to this policy.

Policy 14 directs to prefer discharges to land, rather than direct discharges to water, the application is consistent with this policy.

Policy 15 provides strong direction to avoid land use activities that will reduce surface or groundwater quality unless the effects can be avoided, remedied or mitigated. This Policy was written after the King Salmon case law has clarified the use of the word “avoid”. Therefore, this word was used in the plan with the intent that any land use activities that reduce water quality would not be acceptable under the pSLWP framework. The use of land for dairy farming has not previously been a regulated activity and the existing use of land for dairy farming is taken into account when determining the existing environment for the site. As multiple Overseer budgets have been provided to Council to establish the existing environment, I have not been able to conclude that the application is consistent with this policy. If the existing environment losses are greater than the proposed scenario Overseer budget, I conclude that the activity is consistent with this policy. Although, if the existing environment losses are less than the proposed scenario Overseer budget, I

conclude that the activity is not just inconsistent, but is contrary to this policy. The key mitigations that the Applicant has made to their farming operation include wintering stock off farm each year and not cropping within the farm boundary. Mitigations have been determined as an intentional change to improve a farming practice from what was previously undertaken as part of the existing environment. While the second and third Overseer budgets supplied to Council contain crop area and stock wintered on site, the first budget supplied does not. Therefore, if the first budget is taken as the existing environment, these two stated mitigation measures do not represent a change from what was currently undertaken as part of the existing environment.

With regards to the land use consent for the expanded dairy farm activity, Policy 16(1)(b) provides the most directive policy in the pSLWP. This policy is to strongly discourage applications for the further intensifying existing dairy farming of cows where the effects on water quality (including cumulative effects) cannot be avoided or fully mitigated. The term 'strongly discourage' is consistent with the Environment Court commentary which stated that¹⁶

“A policy 'to strongly discourage' is close to but is not a directory policy as was the 'avoidance' policy in the NZCPS- the subject of the Supreme Court's decision in EDS v NZ King Salmon. A discouragement policy - even when a strong one - still permits an Applicant to request a plan change. “

To put this terminology into a consent planning context, it has been concluded that “strongly discourage” is one step below the direction provided by the term “avoid”. Further intensify has been determined as effects on the existing environment which has been discussed in Section 3.2 above. The level of effects above the existing environment that are acceptable under Policy 16(1)(b) are zero. This policy puts a hard line in the sand with regards to effects from expanded dairy farming operations. To conclude that the proposed intensification is consistent with this policy, it is necessary to establish the existing environment. For this application, multiple Overseer budgets have been prepared as a tool to establish the existing losses below the root zone of nutrients to water. As I have not been able to conclude what forms the existing environment, I am unable to establish if the proposed intensification is consistent, inconsistent or contrary to this policy. It is my view that if you take the first Overseer budget supplied as the existing environment, then the application is contrary to this policy. If you accept either the second or third Overseer scenarios provided to Council, then the application may be consistent with this policy. It is acknowledged that we are operating in an information poor environment with regards to the effects of nutrient losses below the root zone as catchment limits have not yet been set for this site. It is assumed that if there are increased losses below the root zone, this will have some effect (although unquantified) and the bar set in this policy is zero.

Part 2 of Policy 16 requires that all farming activities implement a management plan, actively manage sediment runoff and manage nutrients, microbial contaminants and sediment through the various methods described in the policy. A Farm Environmental Management Plan in accordance with Appendix N has been prepared for the proposal, this outlines existing setbacks from waterbodies, riparian planting, identification of Critical Source Areas and stock exclusion. Good Management Practices, consistent with the identified Physiographic Zone are proposed to manage the potential run-off and leaching of nutrients, microbial contaminants and sediment. Therefore, the proposal is consistent with Part 2 of Policy 16.

¹⁶ *Appealing Wanaka Inc v Queenstown Lakes District Council* [2015] NZEnvC 139 at [73]

Water Quantity

Although the pSWLP has policies which cover water quantity, the activity under this Plan is a permitted activity, therefore these policies have been omitted.

Term and consideration of Consent

Policy 39A To improve integrated management of freshwater resource and the use and development of land in whole catchments, including interactions between freshwater, land and associated ecosystems (including estuaries).

Policy 40 When determining the term of a resource consent consideration will be given, but not limited, to:

- 1. granting a shorter duration when there is uncertainty regarding the nature, scale, duration and frequency of adverse effects from the activity or the capacity of the resource;*
- 2. relevant tangata whenua values and Ngāi Tahu indicators of health;*
- 3. the duration sought by the Applicant, plus material to support the duration sought;*
- 4. the permanence and economic life of any capital investment;*
- 5. the desirability of applying a common expiry date for water permits that allocate water from the same resource or land use and discharges that may affect the quality of the same resource;*
- 6. the Applicant's compliance with the conditions of any previous resource consent; and*
- 7. the timing of development of FMU sections of this Plan, and whether granting a shorter or longer duration will better enable implementation of the any revised frameworks established in those sections.*

Policy 41 Consider the magnitude of environmental effects and risk when determining requirements for auditing and supply of monitoring information on resource consents.

Policy 42 When considering resource consent application for water permits:

- 1. ... [not applicable]*
- 2. ...*
- 3. installation of water measuring devices will be required on all new permits to take and use water, and existing permits in accordance with the Resource Management (Measurement and Reporting of Water Takes) regulations 2010;*
- 4. ...*
- 5. ...*

Comment

The proposal generally achieves the purpose of Policies 39 to 42. With specific reference to matching monitoring to risk the Applicant has set out within the Farm Environmental Management Plan details of ongoing monitoring and maintenance which is proposed to be undertaken to help to allow these methods to be improved over time. In terms of the permitted baseline, the assessment of effects and risks of the proposal has not disregarded any effects on the basis of whether they are permitted by the plan. The proposed conditions of consent and Farm Environmental Management Plan are the

primary methods for ensuring that good environmental management practices and mitigation measures are documented and implemented by the Applicant.

There are significant interactions between freshwater, land and associated ecosystems as part of this application. However, integrated management is difficult to achieve through the consent process.

Term of consent is discussed below in Section 4.1.

The magnitude of environmental effects and risks of the proposal have been considered by the Applicant who has found the adverse effects to be no more than minor.

Consideration has been given to the factors listed in Policy 42, the factors to be considered have already been assessed in previous sections of this report and will be used to make a decision on the application and water abstraction and use activity. The activity proposed is consistent with this policy.

Regional Water Plan

The majority of the RWP was adopted in January 2010, with the plan provisions on agricultural effluent ponds being adopted in April 2010. No additional plan provisions have been adopted since then, including after the amendments to the RMA.

The objectives and policies of the RWP that are relevant to this application have been grouped according to topic.

Iwi management plans

Policy 1A Any assessment of an activity covered by this plan must take into any relevant Iwi Management Plan.

Comment

The provisions of Te Tangi a Tauira, current iwi management plan, have been considered below in Section 3.9 of this report.

Water quality, Agricultural effluent, Land use and Soils

Objective 2 Manage water quality so that there is no reduction in the quality of the water in any surface water body, beyond the zone of reasonable mixing for discharges, below that of the date this Plan became operative (January 2010).

Objective 8

- (a) to maintain groundwater quality in aquifers that already meet the 'Drinking Water Standards for New Zealand 2000'; and
- (b) to enhance groundwater quality within aquifers degraded by land use and discharge activities (with the exception of those aquifers where ambient water quality is naturally less than the 'Drinking Water Standards for New Zealand 2000') to ensure general compliance with the 'Drinking Water Standards for New Zealand 2000' by the year 2010.

Objective 9A To manage discharges onto or into land so that the quality and structure of soil resources are maintained.

- Objective 9B* *To manage discharges onto or into land so that adverse effects on human health are avoided.*
- Policy A4*
1. *When considering any application for a discharge the consent authority must have regard to the following matters:*
 - (a) *the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water; and*
 - (b) *the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.*
 2. *When considering any application for a discharge the consent authority must have regard to the following matters:*
 - (a) *the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with fresh water; and*
 - (b) *the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.*
- Policy 6*
- (a) *Use non-regulatory methods, in addition to rules, to maintain and enhance surface water and groundwater quality, and to avoid, remedy or mitigate adverse effects on soil quality.*
 - (b) *Assess on an ongoing basis whether the adoption of non-regulatory methods has resulted in improvements to water or soil quality, and consider the introduction of other inventions id improvements have not resulted.*
- Policy 7* *Prefer discharges to land over discharges to water where this is practicable and effects are less than adverse.*
- Policy 13* *Avoid the point source discharge of raw sewage, foul water and untreated agricultural effluent to water.*
- Policy 25* *To avoid, remedy or mitigate the adverse effects arising from point source and non-point source discharges so that there is no deterioration in groundwater quality after reasonable mixing.*
- Policy 31A*
- Match the level of management that is required for discharges of contaminants onto or into land to the level of environmental risk posed by the following risk factors:*
- (a) *Nature and quantity of contaminants in the discharge*
 - (b) *Sloping land*
 - (c) *Soils with artificial drainage or coarse structures*
 - (d) *Soils with impeded drainage or low infiltration rates*

- (e) *Well drained soils*
- (f) *Climate*
- (g) *Proximity to groundwater*
- (h) *Proximity to surface water*
- (i) *Soil's current physical, chemical and biological characteristics and its potential to leach nutrients*
- (j) *Natural hazards (for example, flooding and erosion)*

Policy 31C Manage discharges of contaminants onto or into land to avoid, remedy or mitigate adverse effects, including on:

- (a) *soil quality;*
- (b) *amenity values;*
- (c) *habitats, ecosystems and indigenous biological diversity;*
- (d) *historic heritage, cultural and traditional values;*
- (e) *natural character;*
- (f) *outstanding natural features*

Policy 31D Encourage the beneficial reuse of materials where this is appropriate and promote discharges of these materials onto or into land to maximise the potential reuse of the nutrients and water contained in the discharge.

Policy 41 Adverse effects of agricultural effluent ponds. Avoid adverse effects on water quality, and avoid as far as possible adverse environmental effects, associated with the location, design, construction, operation and maintenance of agricultural effluent ponds.

Policy 42 Avoid adverse effects on water quality and other adverse environmental effects associated with the application of farm dairy effluent to land by matching farm dairy effluent management to receiving environment risk

Comment

The application may not be consistent with, and may be contrary to, Objective 2. The Applicant has not provided evidence to show that the effluent storage pond is suitable to hold effluent despite this being requested at the site visit and a response on 19 December 2017 from the Applicant saying this will be available in a couple of days. If the Applicant does not have sufficient storage of effluent available to defer irrigation until soil moisture conditions are suitable, they will either be applying effluent when soil moisture conditions are not suitable or the structure may be leaking. I am currently unable to determine if there are adverse effects on groundwater and surface water quality with regard to the use of this structure for effluent storage.

Policy A4 provides direction to Council on the significance of effects relating to the life-supporting capacity of fresh water and on the health of people and the community from secondary contact, and the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, and people and the community affected by secondary contact, resulting from the discharge would be avoided. The Applicant has applied to discharge effluent via high rate methods (travelling irrigator, slurry tanker and umbilical system) although to a low depth (10mm for travelling irrigator, and 5mm for slurry tanker and umbilical system). The uncertainty regarding the use of deferred storage is also relevant to the discussion on Policy A4. Due to the uncertainty of having deferred storage or not and the high rate discharge, the Applicant is unlikely to provide for the avoidance of contamination although this does not necessarily mean that the proposed activities will result definitely in contamination. The design, set up and management of the effluent system (by using high rate effluent discharge and uncertainty regarding

having the ability to defer effluent application) does not sufficiently seek to avoid contamination as stated in Policy A4.

Policy 6 refers to the use of non-regulatory methods to maintain and enhance water quality. The Applicant has included an effluent management plan which outlines good management practices.

I consider that the application is consistent with Policy 7 as this only provides for the preference of discharges to land over water where this is practicable. The Applicant has applied to discharge effluent to land via high rate methods which is consistent with this policy.

I consider that the application may be inconsistent with Policy 13, which seeks to avoid the point source discharge of raw sewage, foul water and untreated agricultural effluent to water. The uncertain ability to defer effluent until soil moisture conditions are suitable mean that it is hard to meet the high test set out in the policy with regards to the use of the word “avoid”. I have no evidence to conclude that the retrospective pond has been constructed according to current required standards.

Policy 25 seeks to avoid, remedy or mitigate the adverse effects arising from point source and non-point source discharges so that there is no deterioration in groundwater quality after reasonable mixing. I consider the discharge activity may be inconsistent with, or contrary to, this policy as the actual effects of the discharge activity on the groundwater resource are unknown and the primary contaminant pathway for the new effluent discharge area in the south west corner of the site as identified by the physiographic zone (oxidising) are for nutrient leaching to groundwater.

Policy 31A seeks to match the level of management that is required for the discharge of contaminants to land to the level of environmental risk. Policy 31C seeks to manage the discharge of contaminants to land to avoid, remedy to mitigate adverse effects on a list of parameters. As evidence that the pond constructed is suitable to hold effluent has not been supplied to Council despite requests, it is reasonable to take a precautionary approach and conclude that it is not suitable. If this is concluded, it would be very difficult for the Applicant to manage their current effluent system to match the risks presented by climate as they will be unable to defer irrigation when soil moisture conditions are not suitable. Therefore, I conclude that the application is inconsistent with Policy 31A. Due to this inconsistency, they will likely also be inconsistent with Policy 31C as the result of the inconsistency with Policy 31A will cause inconsistency with Policy 31C with regards to soil quality and habitat, ecosystems and indigenous biological diversity. Decision makers should take into account these policies and when considering consent conditions, should the application be granted.

Policy 31D encourages the reuse of materials where this is appropriate. The application is consistent with this policy as the Applicant proposes to discharge effluent via irrigation methods to a low depth. Effluent is able to be used as a plant growth resource when applied at appropriate rates and depths for the soil resource.

Policy 41 provides strong direction on the level of effects that are acceptable with regards to effluent storage ponds. The test in this policy is “avoid” which has clear planning connotations as a result of the King Salmon case law. Policy 41 directs the decision makers to avoid as far as possible adverse effects associated with the construction and operation of the effluent storage pond. The application has not provided evidence that the pond constructed without consent is suitable to hold effluent. This evidence was requested at the site visit, when we were made aware that the application was retrospective, and the Applicant has stated in an email on 19 December 2017 that this evidence would be supplied to Council in a few days. To date of writing this report, this evidence has not been provided. Typical evidence would be a CPEng authorised statement (PS4 statement) that the pond

has been constructed according to the design plans submitted to Council as part of the application process, and that it has been constructed according to Practice Note 21. Without evidence to show that the effluent storage pond is suitable, I am taking a precautionary approach and conclude that the application is at least inconsistent with this policy and may be contrary to this policy.

Policy 42 sets out criteria for minimum management of the application of effluent to land taking into account the property specific risks as set out in this policy. The proposed discharge activity may be inconsistent with, and may be contrary to, this policy. Policy 42 provides direction to decision makers to avoid adverse effects on water quality and any other effects associated with the discharge of effluent by matching management to risk. Table 1 in this policy states that the storage requirement for this site is necessary to only ensure the application of effluent when there is an appropriate soil water deficit. I consider that the effluent management is not matched to the receiving environment risk if the effluent storage pond is not suitable to hold effluent. I cannot determine if the application is contrary to this policy with regard to avoiding effects on water quality, as the actual effects of the discharge activity on water quality are not clear as the evidence has not been provided to Council.

Water quantity

- Objective 7* *To maximise the efficiency of water use.*
- Objective 9* *To ensure that the total volume and rate of groundwater abstraction is sustainable.*
- Policy B7* *When considering any application the consent authority must have regard to the following matters:*
- (a) the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem; and*
- (b) the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.*
- Policy 21* *To ensure that the rate of abstraction and abstraction volumes specified on water permits to take and use water are no more than reasonable for the intended end use.*
- Policy 22* *Require, where appropriate, the installation of water measuring devices on all new permits to take and use water.*
- Policy 23* *Impose a condition enabling the review of consent conditions in accordance with Sections 128 and 129 of the RMA 1991 on all new permits to take and use water.*
- Policy 28* *To manage groundwater abstraction to avoid significant adverse effects on:*
- *long-term aquifer storage volumes*
 - *existing water users*
 - *surface water flows and aquatic ecosystems and habitats*
 - *groundwater quality*

- Policy 29*
- (a) *Manage the stream depletion effect of any groundwater abstraction with a rate of take exceeding 2 litres per second [Policy abbreviated]*
 - (b) *Minimise the cumulative stream depletion effect of groundwater... [Policy abbreviated].*

- Policy 30*
- (a) ... *[not applicable]*
 - (b) ...
 - (c) ...
 - (d) *Provide for:*
 - i. *a level of permitted groundwater abstraction where this is a minimal risk of adverse effects;*
 - ii. *a primary allocation for consented water abstraction and use;*
and
 - iii. ...
 - (e) *Require resource consent application for groundwater abstractions to be supported by a level of information that corresponds to the level of risk of adverse effects. [Policy abbreviated]*
 - (f) ...
 - (g) ...
 - (h) ...
 - (i) ...

- Policy 31* *Limit the interference effects [policy abbreviated].*

Comment

The groundwater abstraction and use is a medium scale activity, in an aquifer that is well within allocation limits and at a rate that is reasonable for the intended use. Therefore it is consistent with Policies B7, 21, 28, 29, 30 and 31. Conditions will be imposed in accordance with Policies 22 and 23. The groundwater abstraction and use activity is consistent with all of the above listed policies.

Term and granting of Consent

- Policy 14A* *To determine the term of a water permit consideration will be given, but not limited, to:*
- (a) *the degree of certainty regarding the nature, scale, duration and frequency of adverse effects from the activity;*
 - (b) *the level of knowledge of the resource;*
 - (c) *relevant tangata whenua values*
 - (d) *the allocation sought, particularly the proportion of the resource sought;*
 - (e) *the duration sought by the Applicant, plus material to support the duration sought;*
 - (f) *the permanence and economic life of the activity;*
 - (g) *capital investment in the activity;*
 - (h) *monitoring and review requirement in permit conditions;*
 - (i) *the desirability of applying a common expiry date for water permits that allocate water from the same resource; and*
 - (j) *the Applicant’s compliance with the conditions of the previous permit (where a new water permit is sought for a previously authorised activity).*

Policy 43 Match consent duration and inspection and audit requirements on resource consents to apply farm dairy effluent to land to the level of risk of adverse environmental effects.

Comment

Term of consent and inspection and audit requirements are discussed below in Section 4.1 if the application is granted.

Regional Effluent Land Application Plan

The component of the application relevant to the RELAP is the discharge of feed pad effluent to land, as this activity is not covered in the RWP for Southland so have defaulted back to the relevant operative regional plan. The objectives and policies of the **RELAP** relevant to this application have been assessed below:

Objective 4.1.1 Ensure life supporting capacity of soil is safeguarded

Objective 4.1.2 Ensure water quality and its life supporting capacity is safeguarded

Objective 4.1.5 Recognise and provide for relationship Takata Whenua

Policy 4.2.1 Sustainability of the soil ecosystem. Protect the sustainability of the soil ecosystem from adverse effects of effluent and sludge discharges onto or into land.

Policy 4.2.2 Discharge to land. Utilise land treatment of effluent where it can be undertaken in a sustainable manner and without significant adverse effects

Policy 4.2.3 Avoid where practicable, remedy or mitigate adverse effects on water. Avoid where practicable, remedy or mitigate adverse effects on water quality, water ecosystems and water potability from effluent and sludge discharge onto or into land.

Policy 4.2.4 Precautionary approach. Adopt a precautionary approach to the discharge of effluent onto or into land where there are uncertainties regarding adverse effects.

Policy 4.2.6 Human and animal health. Avoid where practicable, remedy or mitigate any adverse effects to human and animal health arising from discharges of effluent onto or into land

Policy 4.2.7 Good practice and maintenance. Promote good practice and regular maintenance of effluent and sludge systems.

Policy 4.2.8 Takata whenua. Recognise and provide for takata whenua concerns related to the discharge of effluent and sludge onto or into land.

Comment

With regards to the discharge of effluent, common mitigations would include the use of deferred storage to ensure discharge only when appropriate for soil moisture conditions, the use of low rate and low depth discharge over a large area and the use of buffer distances to waterways. For this application, the Applicant has stated that it will maintain standard Council buffer distances, and while

it is applying to discharge via high rate method (travelling irrigator, slurry tanker and umbilical system) it will discharge to a low depth over a large area. This will partially meet the second standard mitigation measure.

With regards to the use of deferred storage, it is my view that the Applicant cannot achieve this mitigation measure. While the Applicant has built its new effluent storage pond (without consent), no evidence has been provided to Council to confirm that the structure built matches the plans applied for, or that it has been constructed according to Practice Note 21. Standard Council consent conditions on the construct of effluent storage would require that the pond is certified by a CPEng as being built according to the design plans and in accordance with Practice Note 21 prior to use. This requirement was made clear to the Applicant at the site visit (when we were advised that the pond application was retrospective) and has been highlighted by the Applicant in email correspondence as outstanding necessary information. At the date of writing this report, I have not received this certification from a CPEng. Therefore, I am unable to confirm that the effluent storage structure is appropriate to be used as a mitigation measure for deferring irrigation of feed pad effluent to land.

Policy 4.2.7 is to promote good management practice. When this is put into the context of the discharge of feed pad effluent to land, I interpret this policy as a tool to ensure that the activity is appropriately mitigated to current standard. As the Applicant is unable to meet the standard mitigation measures, and has not provided any alternative mitigation measures I conclude that the discharge of feed pad effluent to land is inconsistent with Policy 4.2.7.

I also conclude that as the Applicant is unable to provide evidence that they have met the standard mitigation measures as outlined above, they are also inconsistent with Policy 4.2.1 and Policy 4.2.2 which both focus on sustainability. To be sustainable, the Applicant would need to show that the impacts of their proposed operation can be maintained at a constant rate. If the use of deferred storage on site is not available, the discharge of feed pad effluent would occur when soil moisture conditions are not appropriate which would result in increased cumulative effects on the environment.

Policies 4.2.3 and 4.2.6 focus on avoiding where practicable, remedying or mitigating the effects of the proposed activity to minimise impacts on water quality, human health and animal health. The evidence to show they are meeting the mitigation measure for deferred storage has not been provided to Council despite my request for this information and the assurance from the Applicant that it would be provided within the next few days of 19 December 2017. Therefore, it is my view that the Applicant is inconsistent with these policies as it has not mitigated the effects of the proposed activity.

Policy 4.2.4 advises Council to adopt a precautionary approach. With regards to this policy, it is not appropriate to apply an adaptive management approach to consent conditions and re-enforces the need for the evidence to support mitigation measures to be supplied to Council as part of the application process. I consider that for this policy to be implemented there needs to be minimal uncertainty regarding the discharge of feed pad effluent to land to be able to grant the consent. The outstanding information regarding the suitability of the pond to defer effluent irrigation provides a high level of uncertainty, which provides direction regarding the ability of Council to grant the proposed application.

Policy 4.2.8 regarding the views of Takata whenua will be addressed in the section on Te Tangi a Tauira.

To conclude, it is my view that the above objectives and policies provide complete coverage and clear direction on the discharge of feed pad effluent to land. The Applicant has not provided

evidence to show they can meet the standard mitigation measures for the discharge of feed pad effluent to land. Therefore, the Applicant is inconsistent with Policies 4.2.1, 4.2.2, 4.2.3, 4.2.6 and 4.2.7. Following the direction provided by Policy 4.2.4 requiring Council to adopt a precautionary approach, I conclude that this activity should be declined.

Weighting section of proposed and operative plans

Council is currently operating under three regional plans, which are all relevant for this application – the RELAP (RELAP), the RWP (RWP) and the pSWLP (pSWLP). The pSWLP was notified by the Consent Authority on 3 June 2016. Whilst not given the same weight as the provisions within the RWP when making a determination on the application under Section 104(1) (b) regard must, Subject to Part 2 of the Act, be had to the provisions of any proposed plan. The relevant provisions of all relevant plans are detailed below and are considered in turn.

The activities have been considered against all relevant provisions of the RELAP, RWP and the pSWLP. The key policies from the RELAP relate to sustainability and providing for the life-supporting capacity of water. It is considered that the discharge of feed pad effluent is generally inconsistent with these policies due to the lack of evidence provided that they can mitigate the discharge through deferred storage. The key policies from the RWP related to avoiding adverse effects on water quality, and soil health and water quantity. It is considered that the discharge permit and the construct of effluent storage activities are generally inconsistent with these provisions, although the water permit is consistent with the water quantity provisions. The key policies in the pSWLP related to the physiographic zones which the site is located in and directions around maintain and improving water quality. It is considered that the activities are potentially inconsistent or contrary with these provisions, although this depends significantly on what is considered the existing environment.

In this policy assessment greater weight has been given to the provisions of the RELAP (RELAP) and the RWP (RWP) for the discharge of dairy shed and feed pad effluent to land, the construction of effluent storage and the abstraction of water. This is because the water take is a permitted activity under the pSWLP (PSWLP) and the pSWLP has only been notified and has just completed going through the hearing process. The pSWLP has not been through the formal plan consideration process to complete independent testing or review under the RMA Schedule 1 process.

The pSWLP was notified on 3 June 2016, with the application in question being lodged after this date. Consequently the Applicant was fully aware of the requirement for this consent when applying and the provisions of the pSWLP. Therefore, with regards to the use of land for an expanded dairy farm greater weight has been placed on the pSWLP. This is because there is no corresponding rule in the RWP, these policies and rules are intended to give effect to higher order documents including the NPSFM 2014, these policies represent a clear and significant shift in Council policy and the pSWLP introduces more coherent objectives and policies relating to expanded dairy farming.

In taking this stance on the pSLWP, I have considered the arguments of injustice, timing, legitimacy, consistency and precedence. With regards to injustice and timing, the Environment Court have said that¹⁷

“it is inevitable that sometimes developers will get caught between a change in regulations. Planning is a dynamic institution constantly changing with new ideas and philosophies designed to give effect to the single purpose of the Act – sustainable management. An apparent injustice to an Applicant caught between changing “playing fields” needs to be weighed against the manner in which the new provisions show a

¹⁷ Mapara Valley Preservation Society Inc v Taupo District Council [2007] Environment Court Decision A083/07 (Paragraph 51)

significant shift in Council policy towards establishing new provisions in the plan that are more in accord with Part II of the Act. ”

The High Court also stated that¹⁸ they do not accept that the

“circumstances of injustice criterion applies only in relation to the Applicant...[and] that if it can be shown that refraining from giving weight to a plan change causes injustice to a party opposing a proposal, that could also be a relevant factor in an appropriate case .”

I do not believe that putting greater weight on the pSLWP will cause the Applicant an injustice as the relevant rules and policies had legal effect from notification on 3 June 2016, and the application was not lodged until 7 June 2017. Therefore, the Applicant was aware of the rules and policies for a year prior to lodging the application and had sufficient time to prepare a response to these provisions. I do consider that not applying this weighting to the pSLWP will cause an injustice to the submitter, as the rules and policies have been developed specifically to regulate this activity and the effects that it may have on the existing environment.

With regards to legitimacy and consistency, it is acknowledged that other expanded dairy operations have been granted under these provisions. Initially, when the pSLWP was first notified a more lenient approach was adopted for applications that were lodged prior to notification. This was a direct response to questions over injustice. As more applications have been processed, Council has found a consistent approach which was adopted for this application. In this case, the Applicant was informed of the current policy framework prior to submitting the application and has intentionally applied for consent under these rules. Just because other Applicants have received consent for something does not mean that we should grant this one.

With regards to precedence, there is nothing unique to this scenario from other proposed expanded dairy operations and the pSLWP framework provides clear guidance on expanded dairy farms.

I do not believe that putting weight on the pSLWP will unfairly disadvantage the Applicant, and not doing so may cause an injustice for the submitter. Therefore, it is appropriate to put greater weight on the pSLWP.

3.5 Relevant provisions of National Environmental Standards and other regulations (Section 104(1)(b)(i) and (ii))

National Environmental Standard for Sources of Human Drinking Water Regulations 2007

This NES is relevant to any application for a discharge permit. These regulations aim to reduce the risk of drinking water sources being contaminated. Regulations 7 and 8 only apply to an activity that has the potential to affect a registered drinking-water supply that provides no fewer than 501 people with drinking water for not less than 60 days each calendar year.

The edge of the expanded discharge area is approximately 250 metres upstream of a registered drinking-water supply that provides water to between 25 and 100 people. Lochiel School takes groundwater via bore from the Oreti River catchment.

The edge of the expanded discharge area is also approximately 14 km upstream of a registered drinking-water supply that provides water to more than 501 people. The Invercargill City Council takes surface water from the Oreti River for community supply at Branxholme.

¹⁸ Keystone Ridge Ltd v Auckland City Council [2001] High Court Decision AP24/01 (Paragraph 30)

There are also two unregistered drinking water sites for Alliance at Lorneville on the Oreti River and for Alliance at Wallacetown on the Makarewa River.

Any potential effects on the water supply are likely to be negligible. The discharge of effluent is not directly to water and maintenance of buffer zones, along with other mitigation methods, will be required by consent conditions. Provided the conditions are adhered to, then the discharge is not likely to introduce or increase the concentrations of contaminants at the drinking water abstraction point that would cause a breach of the standards.

Resource Management (Measurement and Reporting of Water Takes) Regulations 2010

Accurate, complete and current water information is a critical building block in establishing a water management system in which water is effectively allocated and efficiently used. The regulations apply to holders of water permits (resource consents) which allow fresh water to be taken at a rate of 5 l/s or more.

As the proposed take is less than 5 l/s then the regulations do not apply. However, metering will be required as a condition of consent to demonstrate compliance with the consent.

3.6 Any other matters considered relevant and reasonably necessary to determine the application (Section 104(1)(c))

Te Tangi a Taurira

Te Tangi a Taurira is the Iwi Management Plan for Southland. The policies relevant to this application are:

Farm Effluent Management (Section 3.5.1)

- | | |
|-----------------|--|
| <i>Policy 2</i> | <i>Ensure that Ngai Tahu ki Murihiku are provided with the opportunity to participate through pre hearing meetings or other processes in the development of appropriate consent conditions for discharge consents, including monitoring conditions.</i> |
| <i>Policy 4</i> | <i>Sustain the life supporting capacity of soils for future generations.</i> |
| <i>Policy 7</i> | <i>Require soil risk assessments prior to consent for discharge to land, to assess the suitability and capability of the receiving environment. Effluent should be applied at rates that match the ability of land to absorb it.</i> |
| <i>Policy 8</i> | <i>Require best practice for land application of managing farm effluent, in order to minimise adverse effects on the environment. This includes:</i> <ul style="list-style-type: none"> <i>(a) application rates that are specific to region and soil type;</i> <i>(b) use of low rate effluent irrigation technology;</i> <i>(c) use of appropriate irrigation technology to avoid irrigating over tile drains;</i> <i>(d) storing effluent when the soil is too wet or heavy to irrigate;</i> <i>(e) storing effluent when heavy pugging of stock has occurred;</i> <i>(f) sealed storage ponds to avoid leaching of nutrients to groundwater;</i> <i>(g) avoiding ponding of effluent on paddocks;</i> |

- (h) *monitoring of soils and groundwater;*
- (i) *developing contingency plans*

<i>Policy 9</i>	<i>Require that farm management plans include the location and extent of tile drains on the farm... [policy abbreviated].</i>
<i>Policy 11</i>	<i>Avoid any surface run-off/overland flow, ponding, or contamination of water resulting from the application of dairy shed effluent to pasture.</i>
<i>Policy 13</i>	<i>Require the establishment of appropriate buffer zones between discharge activities and waterways. The size of buffer zones should reflect local geography [policy abbreviated].</i>
<i>Policy 14</i>	<i>Require the establishment of buffer zones of at least 100m between discharge activities and bores.</i>
<i>Policy 15</i>	<i>All spray drift, as a product of spray irrigation of effluent, must be managed and contained within the boundaries of the consent area.</i>
<i>Policy 17</i>	<i>Advocate for duration not exceeding 25 years for discharge of farm effluent to land consent applications, with opportunities for review within that time. The duration of consents must reflect potential risk to soil and water.</i>

Comment

The application is consistent with Policy 2 of Te Tangi a Taurira, and the views of Te Rūnanga o Ngai Tahu and Te Ao Marama Inc. (representatives of the four rūnanga) have been taken into account in assessing the application. Te Ao Marama Inc. and Te Rūnanga o Ngai Tahu were both served copies of the application during the notification process of the application. Neither of these parties submitted on the application. Papatipu rūnanga have had the opportunity to effectively undertake their kaitiaki responsibilities in freshwater and land management.

Good practice methods for the application of effluent have been proposed by the Applicant. These are contrary with Policy 8(b) as the Applicant has only applied to discharge via high rate irrigation methods. The application may also be inconsistent or contrary to Policy 8(d)(e) and (f) as the Applicant has not provided evidence that the effluent storage pond was constructed according to the design plans or current standards. Therefore, the application may also be inconsistent with Policies 4 and 7.

The Applicant states that ponding and surface run off of effluent and subsequent contamination of surface water bodies will be avoided through the use of mitigation measures including low depth effluent irrigation, expanding the effluent discharge area, and observing Council buffer distances for the discharge of effluent. The Applicant has also proposed that they have sufficient storage of effluent after the pond was constructed without consent. No evidence has been supplied to Council to support the use of effluent storage as a mitigation measure despite being requested. Therefore, I do not have enough information to conclude that the application is consistent with Policy 11.

The application is consistent with Policy 14, as the Applicant is proposing to adhere to a buffer of 100 metres between any water abstraction point and the disposal area. It is also consistent with Policy 13 with buffers of 20 metres proposed between the disposal area and any waterways. The proposed buffer distances from property boundaries also align with the intent of Policy 15.

The farm map provided indicates the presence of tile drains within the proposed discharge area.

Water Quality (Section 3.5.13)

- Policy 4* *Avoid compromising water quality as a result of water abstraction.*
- Policy 5* *Avoid the use of water as a receiving environment for the discharge of contaminants. Generally, all discharge must be first to land.*
- Policy 6* *Avoid impacts on water as a result of inappropriate discharge to land activities.*
- Policy 7* *When assessing the effects of an activity on water quality, where the water source is in a degraded state, the effects should be measured against the condition that the water should be, and not the existing condition of the water source.*

Comment

The groundwater abstraction and use is a medium scale activity, in an aquifer that is well within allocation limits and at a rate that is reasonable for the intended use. Therefore it is consistent with Policy 4.

The effluent will be discharged to land and the Applicant has outlined that the discharge to land rather than to water will minimise adverse effects on water quality.

I cannot determine if the application is contrary to Policy 6 as evidence that the constructed effluent storage pond is suitable to hold effluent has not been provided despite requests from Council.

Water Quantity - Abstractions (Section 3.5.14)

- Policy 1* *Adopt the precautionary principle when making decisions on water abstraction resource consent applications, with respect to the nature and extent of knowledge and understanding of the resource.*
- Policy 4* *In the Southland Plains region, the preference of Ngai Tahu ki Murihiku is for water takes from bores, as opposed to surface water abstractions.*
- Policy 11* *Avoid excessive drawdown of aquifer levels as a result of groundwater abstractions, and to ensure that abstractions do not compromise the recovery of groundwater levels between irrigation seasons.*
- Policy 16* *Encourage the installation of appropriate measuring devices on all existing and future water abstractions, to accurately measure, report, and monitor volumes of water being abstracted, and enable better management of water resources.*
- Policy 17* *Advocate for durations not exceeding 25 years on resource consents related to water abstractions.*
- Policy 18* *Require, where necessary, a consent condition providing for a review of the volumes able to be abstracted from the bores on the basis of the observed reasonable recovery of groundwater levels.*
- Policy 19* *Require that Ngai Tahu are provided with the opportunity to participate through pre hearing meetings or other processes in the development of appropriate consent condition including monitoring conditions to address our concerns.*

Comment

The application is consistent with the above provisions. This is because the proposed volume is in line with best practice volumes, the water take will be metered and the taking of the water should

not result in the over allocation of the groundwater zone as the zone is not facing over allocation issues.

3.7 Section 105 matters relevant to discharge or coastal permits

Section 105 matters need to be considered as the application is for a discharge that would contravene Section 15. Under Section 105, the consent authority must have regard to:

- (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects;
- (b) the Applicant's reasons for the proposed choice; and
- (c) any possible alternative methods of discharge, including discharge into any other receiving environment.

The nature of the discharge is dairy shed effluent, feed pad effluent, and some wash down water. In 2000, a literature review¹⁹ established the mean chemical concentration in farm dairy effluent of: nitrogen (400 mg l^{-1}), phosphorus (70 mg l^{-1}), and potassium (370 mg l^{-1}). The effluent also contains other nutrients, such as phosphorus, and gut organisms. Effluent from feed pads are typically stronger in concentration than the dairy shed effluent. This is due to the absence of wash water to dilute the effluent.

When applied to soils in an appropriate manner the effluent can act as a nutrient. The proposed storage capacity could allow for the scheduling of effluent irrigation based on soil moisture deficits, decreasing the potential for nutrient loss to water²⁰ although evidence has not been provided to show that this storage is suitable to be used. The consent conditions on the discharge permit mean that effluent should not be entering waterways or affecting adjoining landowners.

The Applicant has applied for a travelling irrigator, slurry tanker and umbilical system as possible effluent irrigation methods. The Applicant has not identified any alternative effluent disposal systems. Discharging farm dairy effluent to an alternative receiving environment (i.e. surface water or off-site) is considered unsustainable. The Applicant initially applied for a Cobra rain-gun as an irrigator type which is considered low rate. Low rate discharge methods offer greater control than high rate methods for the proposed discharge. The Applicant advised that it would like to remove this low rate discharge irrigation method on the site visit and has provided this amendment in writing without further explanation on 25 January 2018.

3.8 Section 107 restriction on grant of certain discharge permits

The potential for the effects listed under Section 107(1) of the RMA are not discussed in the application. Section 107(1) states that a discharge permit should not be approved if, after reasonable mixing, the contaminant is likely to give rise to adverse effects. The application is not for a discharge to water permit. Provided the adverse effects of the discharge do not cause contamination of groundwater resources and if good management practices are adhered to, contaminants should not be directly discharged to water.

¹⁹ Longhurst, R. D., A. H. C. Roberts, and M. B. O'Connor. "Farm dairy effluent: a review of published data on chemical and physical characteristics in New Zealand." *New Zealand Journal of Agricultural Research* 43.1 (2000): 7-14.

²⁰ Houlbrooke, D. J., et al. "A review of literature on the land treatment of farm-dairy effluent in New Zealand and its impact on water quality." *New Zealand Journal of Agricultural Research* 47.4 (2004): 499-511.

3.9 Part 2 of the RMA 1991

This hearing report has been completed in accordance with recent Davidson case law²¹ with greater focus on the planning provisions in lower order documents. I do not consider that there is any invalidity, incomplete coverage or uncertainty of meaning in the relevant plans. However, in the interest of completeness, it is my view that the application is likely to be contrary to Part 2 of the RMA.

The application of Section 5 involves an overall broad judgement of whether a proposal will promote the sustainable management of natural and physical resources. The enabling and managing functions found in s5(2) should be considered of equal importance and taken as a whole. Section s6, 7 and 8 provide further context and guidance to the constraints found in s5(2) (a) (b) and (c). The commencing words to these sections differ, thereby establishing the relative weight to be given to each section.

With the current knowledge I have, I am unable to determine if the discharge activity and both land use activities meet all of the relevant provisions of Part 2 of the RMA, as discussed above. I can therefore not determine if the discharge activity and both land use activities achieve the purpose of the RMA. Therefore, I conclude that the application is likely to be contrary to Part 2 of the RMA.

4. Recommendations

4.1 Whether to grant

The activities applied for have been considered together, and as such the highest consent test applies, the application is therefore considered to be a discretionary activity. Under Section 104B the Council may grant or refuse consent for a discretionary activity, and if it grants the application, may impose conditions under Section 108 of the RMA.

The application is largely inconsistent with the RMA, and the objectives and policies of the relevant Regional Plans. Council plans outline policies which are used to inform and determine the level of adverse effects associated with the proposed activity, as the direction of the policies help establish what effects are acceptable and therefore whether the adverse effects of the proposed activities are less than minor, minor or more than minor.

Land Use Consent for an expanded dairy farm

The existing use of land for dairy farming is taken into account when determining the existing environment for the site. The Applicant has provided three separate representations of the existing environment. The relevant planning provisions for the intensification of a dairy farm look at the effects of the proposal on the existing environment. The effects that are acceptable under Policy 16(1)(b) of the pSWLP, above those occurring in the existing environment, are zero. Therefore, it is crucial to determine which, if any, of the three scenarios provided through the application process represents the existing environment.

²¹ *RJ Davidson Family Trust v Marlborough District Council* [2017] NZHC 52, NZRMA 227

- **Scenario 1**

This scenario represents the most recent year as the status of the existing environment, prior to lodging the consent application (year 2016/17), and has a modelled a nitrogen loss below the root zone of 32 kg/ha/year. This scenario did not include any cropped area and not stock wintered on farm over June with 32 cows wintered in July.

The most significant uncertainty regarding the budget lies whether the timeframe it covers is appropriate. The preparation for the farm system change (to add cows) needs to be planned in advance, with two years being considered an appropriate planning horizon for farm decision making. Therefore, a budget reflecting just the most recent year is assessing the period of transition, rather than steady state. I consider that there is a valid argument that this budget does not reflect the previous steady state of the farm.

Using this starting point, the addition of cows to the farm produce a modelled increase in contaminant losses. As the bar for the environmental effects set through the relevant policy provisions is zero, it is my view that any increase in losses is contrary to the relevant planning provisions and represents effects that are more than minor. I recommend that if you accept this scenario as the most appropriate representation of the existing environment and the proposed change, consent for an expanded dairy farm should be refused.

- **Scenario 2**

This scenario represents the three years prior to the transitional year (years 2013/14, 2014/15, and 2015/16) and shows a modelled nitrogen loss below the root zone of 47 kg/ha/year. This scenario includes significant wintering of stock on site and also cropping area, and it does not take the transitional year into consideration.

There are some concerns regarding the inputs into this scenario as the pasture production values are very high (possibly modelling a non-viable farm system), and the number of stock wintered on site is higher than the average provided in the accompanying report. While this budget is much more reflective of the steady state of the previous farm system it does not give consideration to current farming practices at the site. I consider that it is not appropriate to overlook the current farm operating system when establishing the status of the existing environment.

This scenario suggests the expansion of the dairy farm reduces the contaminant losses relative to the existing environment. However, in my view the uncertainty created by the high pasture production values identified above do not allow for sufficient certainty that the application is consistent with the policy provisions. I recommend that if you accept this scenario as part of the existing environment, consent for an expanded dairy farm should be refused.

- **Scenario 3**

This represents the most recent three years prior to the date of lodgement of the application (years 2014/15, 2015/16, and 2016/16) and shows a modelled nitrogen loss below the root zone of 47 kg/ha/year. This scenario includes some wintering of stock although less than scenario 2, although a larger cropping area than scenario 2.

There are also some interesting modelled changes between scenario 2 and scenario 3 which further increases the uncertainty in the budgets provided. The increased cropping area is confusing as scenario 1 modelled no cropped area and scenario 2 had a lower cropped area modelled. There are also changes between scenarios 2 and 3 regarding crop rotation and management including whether stock were fed on crop or if the crop was cut and carried, the timing and volume of fertiliser applied, and the volume of imported feed.

While the pasture production values were much more reasonable in this budget, there were two blocks with very high pasture production values. Overseer calculates pasture production values by working backwards from the volume of feed needed for the amount of stock, and detracts the volume of imported feed from this total. All other feed requirements must then be serviced through pasture production. This does not take into account whether or not the pasture production values present a viable farm. No explanation has been provided to address the increased crop area or the change in crop rotation and management.

Despite the irregularities with the figures used in this budget, the theory of using the most recent three years is, in my view, most appropriate as it balances the current situation with the transitional year, and also a period of steady state farming. However, I consider that the uncertainty created by the changes to the crop area and management of this area against scenario 2 create uncertainty about the suitability of this budget provided. I recommend that if you accept this scenario as part of the existing environment, consent for an expanded dairy farm should be refused.

Discharge Permit and Land Use Consent for the construction of effluent storage

The effluent discharge activity and the land use activities are potentially inconsistent and contrary to some policies, in relevant plans and policy statements. Therefore I am unable to determine if the discharge activity meets all of the relevant provisions of Part 2 of the RMA. I can therefore not determine if the discharge activity and the effluent construction activity achieves the purpose of the RMA.

The effects of the discharge of farm dairy effluent to land and the use of land for the construction of effluent storage need to be considered carefully. The Applicant has built an effluent storage pond without consent and to date of writing this report, has not provided evidence that it was constructed in a manner consistent with the design plans provided to Council or Practice Note 21. Without this evidence, I am not confident that the pond has been constructed in accordance with standards. If the structure has not been constructed appropriately, the risks to the environment are significant. The use of deferred storage is also a key mitigation measure for the discharge of effluent to land. With the uncertainty of the construction of the storage pond, I am not confident that the Applicant has the ability to deferred effluent irrigation. If this mitigation measure is not available to the Applicant, the discharge of effluent would need to occur regardless of the soil moisture deficit and the effects on the environment would be more than minor.

I also note that the Applicant is applying to discharge effluent via high rate irrigation methods only. This is inconsistent with good management practice for the discharge of dairy effluent to land and contrary to Policy 8(b) in Te Tangi a Taura. Therefore, based on the application in front of me, I recommend that consent for the discharge of dairy shed and feed pad effluent to land and the retrospective construction of effluent storage is refused.

If the evidence that the pond has been constructed in a manner consistent with Council standards is provided to Council, and if the adverse effects of the discharge were shown to be sufficiently mitigated to avoid adverse effects on water quality, it is likely the effluent discharge activity and

construction of effluent storage activity would then be consistent and not contrary to relevant objectives and policies.

Water Permit

I hold no concerns about the granting of the water permit. The water abstraction activity is consistent with the relevant policy provisions in the Regional Plan. It is also considered to meet the relevant provisions of Part 2 of the RMA as the proposal achieves the purpose of the RMA.

4.2 Recommendation

Subject to new or contrary evidence being presented at the hearing I recommend under Section 104B of the RMA that consent is **refused**.



Emily Allan
Consents Officer



Michael Durand
Consents Manager

RECOMMENDATIONS IN COUNCIL REPORTS ARE NOT TO BE CONSTRUED
AS COUNCIL POLICY UNLESS ADOPTED BY COUNCIL