

The Hearing Panel

3 February 2020
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 Hearing Panel will hear and consider.

Hearing of Application – APP-20181765
T J & J A Driscoll for the T & J Driscoll Family Trust
 Compiled by Alex Erceg, Senior Consents Officer

Hearing: The hearing is scheduled to commence at 9.00 am on Monday, 3 February 2020 in Environment Southland’s Council Chambers, Cnr North Road and Price Street, Invercargill.

Application: T J & J A Driscoll for the T & J Driscoll Family Trust have applied for the consents shown in Table 1. The activity type is discretionary activity.

Table 1: Consents Sought by the Applicant

Consent Type	Purpose	Property Address
Land Use Consent	To use land for farming including an increase in cow numbers beyond what was authorised as at 3 June 2016 and an increase in the size of the dairy platform above what was authorised as at 3 June	266 O’Shannessy Road, RD 1, Winton
Discharge Permit	To discharge agricultural effluent to land where contaminants may enter water from up to 700 cows.	266 O’Shannessy Road, RD 1, Winton
Water Permit	To take and use up to 84,000 litres of groundwater per day from Bore E46/1067 and Bore E46/1089 for stock drinking water and dairy shed purposes.	266 O’Shannessy Road, RD 1, Winton

Notification: The application was publicly notified on 26 July 2019. Two submissions were received; one in opposition and one was neutral.

Recommendation: I recommend that the application is granted, subject to the recommended conditions of consent (attached), for the reasons that are detailed in this s42A Hearing Report.

EXECUTIVE SUMMARY

The application is a proposal for a dairy farm in which the cow numbers and the milking platform are increasing above what was authorised as at 3 June 2016.

The application proposes to increase cow numbers and land, consequently triggering Rule 20 of the proposed Southland Water and Land Plan. This plan sets out very clear and directive policies, as does the Regional Water Plan. The key objectives of both the operative Regional Water Plan and the proposed Southland Water and Land Plan is to maintain water quality where it is not degraded, or improve water quality in areas where it is degraded. The proposed plan takes a “hold the line” approach.

The water quality in the receiving environment is degraded and for some parameters exceeds standards described in the proposed Southland Water and Land Plan. As such, when considering the application and the effects of the proposed activities, there must be, more likely than not, an improvement in water quality as a result of the activities occurring.

The applicant has offered a number of mitigations and the continued use of good management practices. Provided these are implemented in reality, then it is likely that the modeled reduction in losses could be achieved in reality.

I consider that the key issues that the hearing panel need to consider when making the decision on the proposal are:

- the adverse effects from the proposed activities on water quality;
- the level of contaminant losses within the Oxidising physiographic zone;
- the cumulative effects of the proposed activities;
- certainty as to whether the modelled reduction in losses can be achieved; and
- if an improvement in water quality is more likely than not to occur.

I do not consider that the following are areas of concern in relation to the proposed activities:

- effects on groundwater quantity;
- the effects of the proposed activities on soil health; and
- effects from odour.

1.0 REPORT STATUS, AUTHOR AND FORMAT

1. This report is a section 42A report prepared under the Resource Management Act 1991 (RMA). It provides an assessment and recommendations on the application made by T J & J A Driscoll for the T & J Driscoll Family Trust (*the applicant*).
2. This section of the RMA allows for provision of a report to the decision maker on a resource consent application and allows the decision-maker to consider the report at the hearing.
3. In accordance with s42A(1A) and (1B), where possible, material contained within the application documentation is referenced rather than repeated in this report.
4. This report does not represent any decision on the application and only provides the professional assessment and opinions of the report author. This report is not binding on the Hearing Panel and will be considered by the Hearing Panel along with all other technical evidence and submissions. This report and its recommendations do not carry any greater weight than any other evidence or submissions that is considered by the Panel.
5. This report has been prepared by Alex Erceg. I am a Senior Consents Officer at Environment Southland (*the Council*). I have been employed as a Consents Officer at the Council since 10 September 2018. I have experience in processing a range of consents, including land use for farming consents, discharge and water permits, and have previous experience in compliance and enforcement for the Council also.
6. I hold a Bachelor of Environmental Management from the Southern Institute of Technology, a Certificate in Sustainable Nutrient Management in New Zealand Agriculture and a Certificate in Regulatory Compliance (Core Knowledge). I also hold a Student Membership with the New Zealand Planning Institute and I hold a Making Good Decisions Certificate.
7. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Notes (2014). I agree to comply with this Code of Conduct. This report is given within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

1.1 Application Involvement and Site Visit

8. The application was lodged on 10 August 2018 and I have been involved in the application since 25 January 2019.
9. On 17 December 2019 I undertook a site visit. During this site visit I looked at the effluent system, effluent infrastructure, the block known as the “East Block”, the waterway and culvert crossings and gained a firsthand overview of the property and the operation.

1.2 Report Format

10. In preparing this report I have referred to and have been guided by the technical advice from:

Document Name	Author	Date
T J & J A Driscoll being trustees of the T & J Family Trust: Resource Consent Application to Environment Southland (Superseded by T J & J A Driscoll being trustees of the T & J Family Trust: Resource Consent Application to Environment Southland: Updated with additional mitigation post notification)	Tanya Copeland – Landpro Limited	9 October 2018
Section 91 (Partial Response)	Tanya Copeland – Landpro Limited	6 November 2018
Response to Request for Further Information under s92(1)	Tanya Copeland – Landpro Limited	19 December 2018
Further information: T and J Driscoll Family Trust consent application	Mo Topham	19 December 2018
Driscoll Farm Expansion: Technical Water Quality Assessment	Dr Mike Freeman – Landpro Limited	23 July 2019
T J & J A Driscoll being trustees of the T & J Family Trust: Resource Consent Application to Environment Southland: Updated with additional mitigation post notification	Tanya Copeland: Updated by Dr Mike Freeman – Landpro Limited	13 September 2019
File Note: T and J Driscoll Family Trust consent application	Mo Topham	23 August 2019
File Note: T and J Driscoll Family Trust consent application – updated budgets including the 18-19 season	Mo Topham	13 December 2019
Overseer Nutrient Budget Review	Nicky Watt – Irricon Resource Solutions	4 September 2019
P Loss Calculation Review	Nicky Watt – Irricon Resource Solutions	6 September 2019
Overseer Nutrient Budget review For: Environment Southland –Driscoll Family Trust- Current 1819 modelling added	Nicky Watt – Irricon Resource Solutions	21 December 2019
Review of Resource Consent application by TJ and JA Driscoll	Abigail Lovett – Earth and Environmental Science	13 December 2019

11. I have also referred to the following statutory documents:

- Resource Management Act 1991;
- National Policy Statement for Freshwater Management 2014;
- Southland Regional Policy Statement 2017;
- Regional Water Plan for Southland 2010;
- Proposed Southland Water and Land Plan (decisions version) 2018;
- Te Tangi a Tauria (Iwi Management Plan) 2008; and
- Interim Decision of the Environment Court 20 December 2019.

12. This report is presented as follows:

- Details of the Application
- Existing Consents
- New Consents Sought and Classification of the Activities
- Current and Proposed Farm System
- Existing Environment
- Adverse Effects Assessment
- Positive Effects Assessment
- Compliance History
- Procedural Matters
- Recommendations

2.0 DETAILS OF THE APPLICATION

2.1 *The proposed Activities*

13. The applicant owns and operates an existing dairy farm (*the existing platform*) on O'Shannessy Road, Winton. The applicant has purchased a 14 hectare block of land (*the East block*) adjacent to the existing platform. The proposal includes to expand the existing operations to incorporate the new block of land into the dairy platform and increase the number of dairy cows above the number that is currently authorised by existing resource consents and permitted activities.
14. The proposal includes an application for resource consents to renew existing discharge and water permits to authorize the discharge of agricultural effluent and take and use of groundwater.
15. Subsequent to the application being publicly notified, a number of changes to the application were submitted. These changes supersede the original application and an updated assessment of environmental effects was supplied (attached). (*Note: The original application as lodged is no longer relevant and has not been assessed for the purposes of this report*).
16. Taking into consideration these changes, the proposal now includes:
- reduction [from the original application (700 cows)] in peak cows milked to 680;
 - reduction in young stock numbers to align with the reduction in milking cows;
 - reduction in Nitrogen applied as fertiliser overall;
 - increased use of barley as supplementary feed;
 - increase in area utilised for bailage grass wintering; and
 - Aareduction in Olsen P to 30 on the milking platform.
17. In regards to the East block specifically, these changes include:
- no wintering on this block (June and July)
 - no grazing of livestock in the months of May to August;
 - reduction in fertiliser to correspond with the reduction in pasture cover requirements;
 - no supplements fed on block;

- baleage made on the East block due to distance from cowshed;
 - low solubility P fertiliser is applied.
18. As such, at the time of writing this report, the proposal is for the following activities:
- an increase in cow numbers from 599 to 680;
 - an increase in the size of the dairy platform from 210.6 hectares to 224.5 hectares;
 - the discharge of agricultural effluent from the milking of up to 680 cows up to twice per day;
 - the take and use of 81,600 groundwater per day for stock drinking water and dairy shed use which is made up of:
 - ◆ 120 litres per cow per day over summer; and
 - ◆ 70 litres per cow per day over winter.
19. With regard to all overseer modelling (including the modeling supplied supplied on 13 December 2019 for the 18/19 season), the proposal includes:
- a **modelled** decrease in Nitrogen loss from 52 kgN/ha/yr to 47 kgN/ha/yr (9.2% reduction); and
 - a **modelled** decrease in Phosphorus loss from 1 kgP/ha/yr to 0.9 kgP/ha/yr (7.4% reduction).
20. The proposal also includes the following offsite activities:
- intensive winter grazing of dairy cows, dry stock and young stock at a third party grazier; and
 - grazing of young stock for the remainder of the year at a third party grazier.
21. The number of stock grazed and intensively winter grazed at off-site locations will increase under the proposal to correspond with the increase in the size of the milking herd.
22. The off-site activities are assessed in this report and within the application to ensure all adverse effects of the farming activities have been considered. The activities themselves are outside the control of the applicant and will be able to occur as a permitted activity or a resource consent (if required) held by the third party grazier.

2.2 Particulars of the Proposal

23. Table 2, which has been taken from the application, summarises matters relevant to the applicant's proposal.

Table 2: Summary of the Application (see over)

Property Details	
Property address	266 O'Shannessy Road, RD1, Winton
Property owner(s)	T J, J A, J P and C A Driscoll
Legal Description	Pt Sec 30 Blk I Winton Hundred
	Pt Sec 29 Blk I Winton Hundred
	Sec 43 Blk I Winton Hundred
	Sec 44 Blk I Winton Hundred
	Sec 45 Blk I Winton Hundred
	Sec 54 Blk I Winton Hundred
	Lot 1 DP 449518
	Lot 2 DP 449518 (new block)
Property area (ha)	224.5 ha (previously 210.6 ha)
Change in scale/intensity/farm boundary?	Increase in farm area and cow numbers
Discharge Permit Details:	
Replacement of permit no.	AUTH-301043
Number of dairy cows	680
Stocking rate (cows/ha)	3.0
Winter milking?	No milking between 20 June and 20 July other than slipped cows
Wintering barn?	No
Feed pad/standoff pad?	Two impervious pads that don't drain into the effluent pond
Other sources of effluent?	Vat stand, tanker apron
Type of shed	50 bale rotary (only 6 yrs old – recent conversion)
Effluent treatment	Stirrer in the pond (no need for weeping wall)
Storage available (m ³)	3,261 m ³ lined pond
Storage required (m ³)	2,670 m ³ (as per attached dairy effluent storage calculator ¹)
Disposal area (ha)	93.3
Irrigator proposed	RX Plastics Maxi Pods. Slurry tanker may be used rarely, such as when desludging the pond.
Application rate and depth	10 mm/hr rate and 25 mm depth per application 5mm depth for the slurry tanker
Monitoring proposed	None other than that which will be provided for in CAEMP/FEMP
Water Permit Details:	
Replacement of permit no.	AUTH-301044
Freshwater Management Unit	Lower Oreti and Makarewa
Groundwater Zone	Bore is located in the Lower Oreti groundwater management zone
Average rate of take over 24 hrs (L/s)	1

Daily volume (L)	81,600
Allocation per cow (L/cow/day)	120
Location of point of take	Well Number E46/1067, which is located at the house, is currently used for the shed and troughs. There is another well, E46/1089, which is located at the dairy shed but is not currently used.
Freshwater storage onsite?	4 x 30,000 L tanks
Yearly volume (m ³ /year)	25,173 (120 L/cow/day for 680 cows over summer, 70 L/cow/day for 86 cows over winter)
Discretionary allocation limit for groundwater zone (m ³ /year)	20,700,000
Amount currently allocated from groundwater zone, including current permit (m ³ /year)	4,106,038 (20% of allocation limit)
Land Use Consent (use land for dairying)	
Area of new block (ha)	13.9 ha
Use of land pre-May 2016	Sheep grazing
When was it converted to dairying?	Yet to happen – need to wait until consent is granted
Proposed use of land	Incorporation into the dairy platform

3.0 EXISTING CONSENTS

24. The applicant currently holds two existing resource consents issued by the Council that relate to the subject site. These are set out in Table 3.

Table 3: Existing Consents Held by the Applicant

Consent Number	Consent Type	Expiry Date	Purpose
AUTH-301043	Discharge Permit	20/12/2021	To discharge dairy shed effluent to land from 599 cows via low rate application pod system at O'Shannessy Road, Winton
AUTH-301044	Water Permit	30/12/2021	To take up to 72,000 litres of groundwater per day for a dairy operation at O'Shannessy Road, Winton

4.0 NEW CONSENTS SOUGHT AND CLASSIFICATION OF THE ACTIVITIES

Table 4: Consents Sought and Classification – proposed Southland Water and Land Plan (Decisions Version)

Consent Type	Purpose	Activity Status
Land Use Consent	To use land for farming including an increase in cow numbers beyond what was authorised as at 3 June 2016 and an increase in the size of the dairy platform above what was authorised as at 3 June 2016.	Discretionary Activity under Rule 20(e)
Discharge Permit	To discharge agricultural effluent to land where contaminants may enter water from up to 700 cows.	Discretionary Activity under Rule 35(c)
Water Permit	To take and use up to 84,000 litres of groundwater per day from Bore E46/1067 and Bore E46/1089 for stock drinking water and dairy shed purposes.	Permitted Activity under Rule 54(a)

Table 5: Consents Sought and Classification – Regional Water Plan

Consent Type	Purpose	Activity Status
Land Use Consent	To use land for farming including an increase in cow numbers beyond what was authorised as at 3 June 2016 and an increase in the size of the dairy platform above what was authorised as at 3 June 2016.	Not Applicable – No relevant rule
Discharge Permit	To discharge agricultural effluent to land where contaminants may enter water from up to 700 cows.	Restricted Discretionary Activity under Rule 50(d)
Water Permit	To take and use up to 84,000 litres of groundwater per day from Bore E46/1067 and Bore E46/1089 for stock drinking water and dairy shed purposes.	Discretionary Activity under Rule 23(d)

25. Overall, the application is considered to be a **Discretionary Activity**.

5.0 CURRENT AND PROPOSED FARM SYSTEM

5.1 Farming Activities

26. The existing 210.6 hectare platform is located approximately 5 km south of the township of Winton and has been subject to a discharge permit for the discharge of dairy shed effluent and a water to take and use groundwater since 20 December 2011. These permits, along with permitted activities authorised activities that allowed for the operation of a dairy platform.

27. The current discharge permit (AUTH-301043) which expires on 20 December 2021 authorises the discharge of dairy shed effluent from up to 599 cows and the current water permit (AUTH-301044) which also expires on 20 December 2021 authorised the abstraction of 72,000 litres per day of groundwater for a dairy operation.
28. The East Block was purchased in April 2017. The 13.9 hectare block was a sheep grazing block. As part of this proposal, should consent be granted, this block will form part of the existing dairy platform. Additional mitigations provided indicate the intention to exclude the use of the block from grazing by stock from June to July (inclusive).
29. The applicant proposes to continue grazing their young stock and intensive winter grazing their young stock and dairy cows at a third party grazier. Under this proposal, the applicant will graze and intensive winter graze more stock at the grazier to correspond with the increase in the number of cows in the milking herd.

5.2 *The Landholding*

30. The proposal relates to farming activities on the “landholding”. The proposed Southland Water and Land Plan defines the landholding as:

- “(a) any area of land, including land separated by a road or river or modified watercourse, held in one or more than one ownership, that is utilised as a single operating unit, and may include one or more certificates of title; except*
- (b) for land with a residential, commercial, industrial, infrastructural or recreational zoning or designation in the relevant district plan means any area of land comprised wholly of one Certificate of Title or any Allotment as defined by Section 218 of the RMA.*

Note: *For the purposes of this definition, a “single operating unit” may include, but is not limited by, the following features:*

- (a) it has effective control by any structure of ownership of the same group of people (for example, land that is controlled by a family trust, or beneficiaries of that family trust or a related group of companies, or an estate, or partner, or individual/s or a combination of); and*
- (b) it is operated as a single business entity.”*

31. In this case the landholding includes the proposed dairy platform which is made up of three blocks (*refer Figure 1*):

- the first block being the existing dairy platform (black outline);
- the second block is a block of land that was incorporated into the dairy platform prior to 3 June 2016 (red outline);
- the third being the east block (yellow outline), which is proposed to be incorporated into the existing platform under this proposal.

(Note: For the purposes of this report and the proposal, the dairy platform (black outline) and the second block (red outline) are considered to be the existing platform.

5.3 Effluent Infrastructure

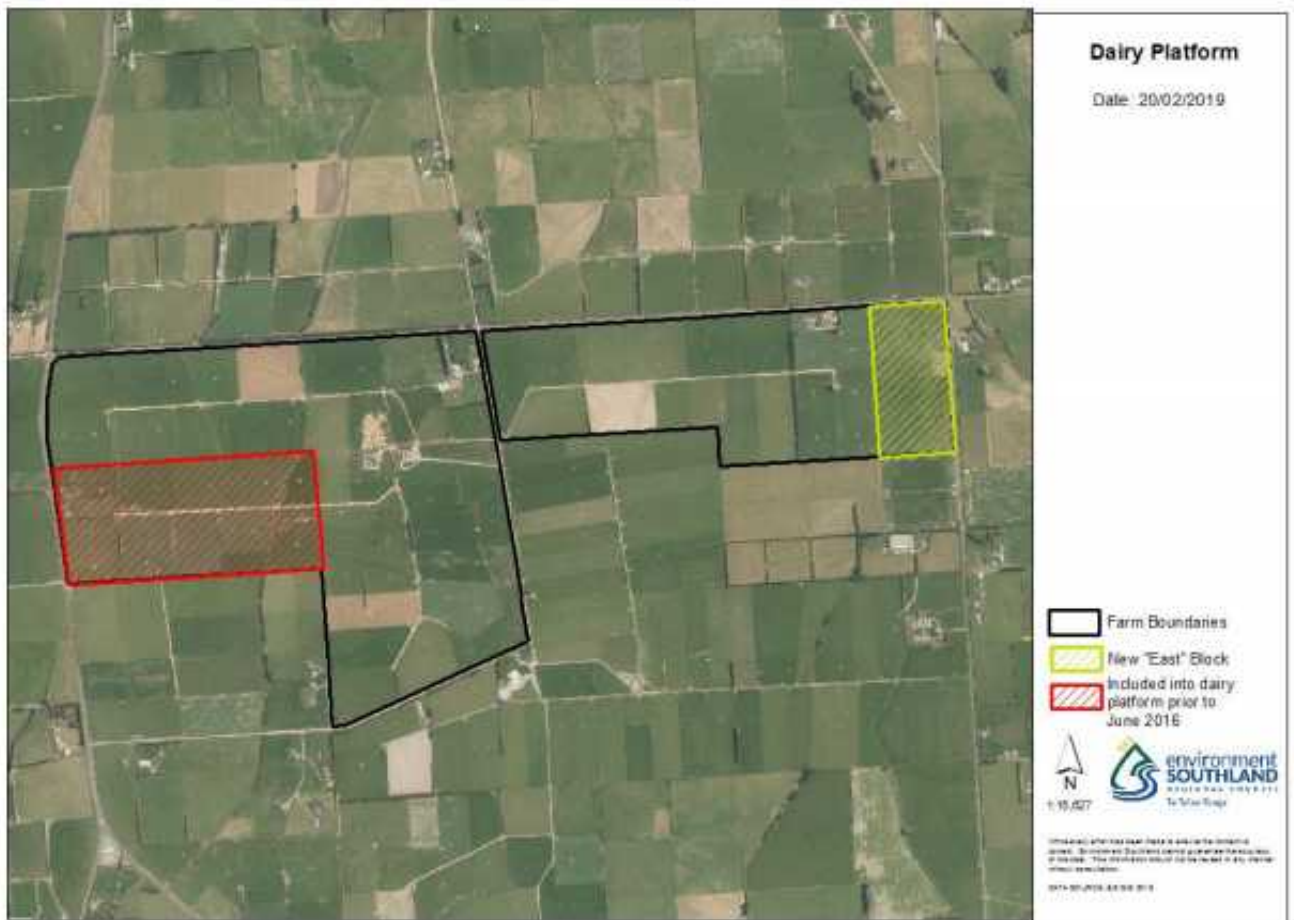


Figure 1: Proposed Landholding Map

32. Effluent generated in the dairy shed flows via gravity to a stone trap and then to a synthetically lined effluent storage pond. The system relies on a mechanical stirrer to allow the effluent to be of a consistency that it can be discharged to land via the irrigation systems.
33. The construction of the synthetically lined effluent pond was authorised by land use consent AUTH-301045. The pond construction report, confirming completion of the pond, was received by Council on 11 January 2013. The pond has a leak detection system, which the application states showed no signs of incidental discharge at the time the application was submitted.
34. The ongoing use and maintenance of the effluent storage pond, at the time of writing this report, is a permitted activity under Rule 32D of the proposed Southland Water and Land Plan.

5.4 Irrigation System

35. The irrigation system includes the use of low rate maxi pods. This is the main irrigation system proposed to be used on the property for the discharge of effluent and will occur at an instantaneous rate of 10 millimetres per hour with a maximum depth per application of 25 millimetres.

36. The proposal also includes the use of a high rate slurry tanker. This is proposed to be used rarely, such as when the pond requires desludging. The high rate slurry tanker is proposed to be used at a maximum depth per application of 5 millimetres.

5.5 Discharge Area

37. Appendix 1 of Discharge Permit AUTH-301043 shows the applicants discharge area as applied for. The total current consented discharge area is approximately 108 hectares. Page 6 of the application, it is stated that this area “has not been fully utilised” and further goes on to say that effluent is “rarely applied to the east of O’Shannessy Road”.

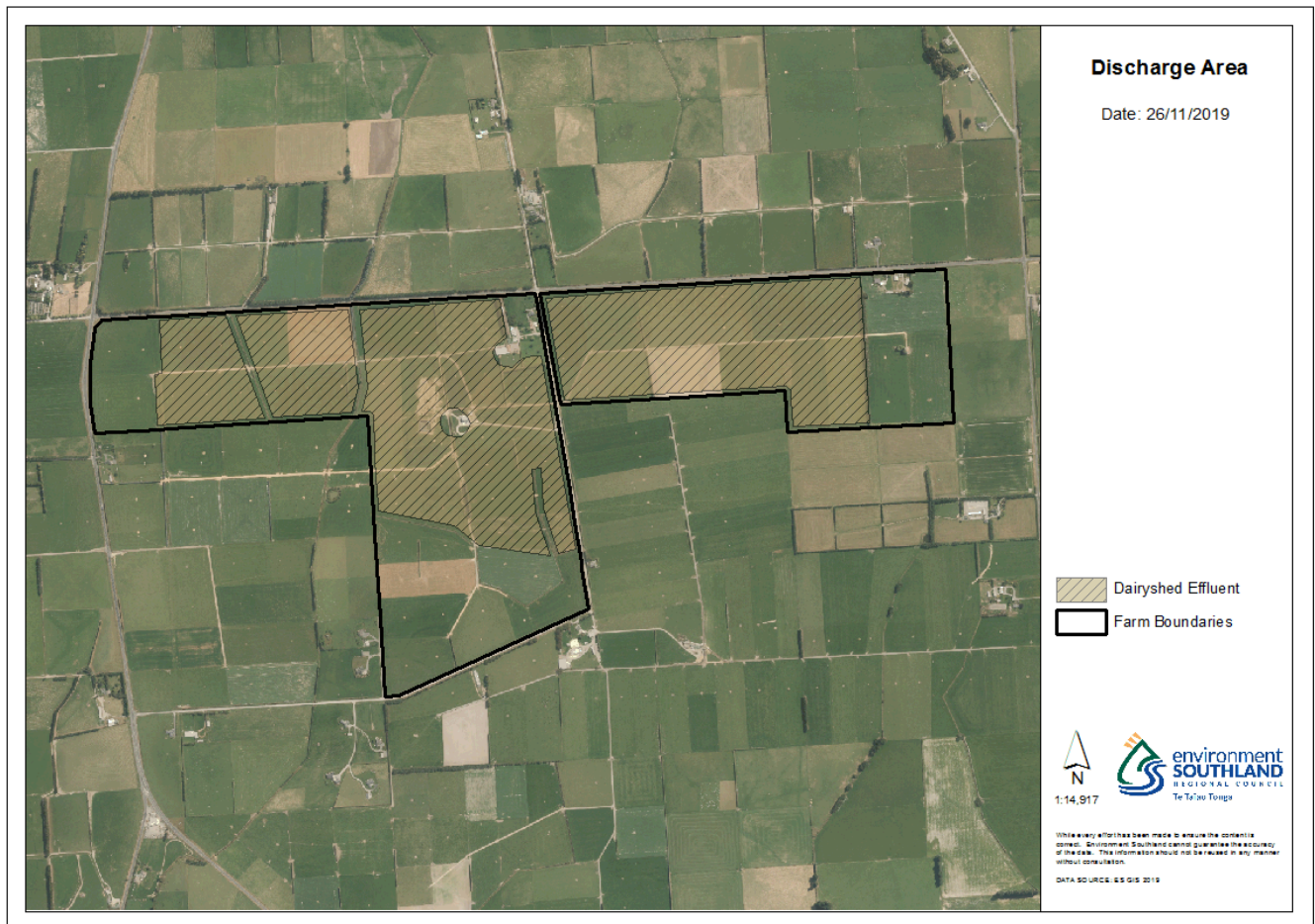


Figure 2: AUTH-301043; Current Consented Discharge Area

38. Page 6 of the application then states that “Effluent can be applied over a larger area if the effluent disposal field is extended to the south instead”. The proposed extension to the actual effluent area (as opposed to the consented discharge area) is proposed by the applicant to reduce contaminant loading in any particular paddock.



Figure 3: Proposed Discharge Area (taken from the application)

39. The implications of this will be discussed further down in Section 7.1.3.1.1 of this report.

6.0 EXISTING ENVIRONMENT

40. The existing environment embraces the environment as it exists, as well as the reasonably foreseeable environment. Existing activities that can lawfully occur form part of the existing environment and cannot include unlawful activities. When considering an application, I am required to consider the environment as it is at the time of the application. Activities that can occur as of right (such as permitted activities) or with a granted resource consent also form part of the existing environment.
41. The actual and potential effects from the proposal on the environment can then be considered through an evaluation of the changes that will likely occur, should consent be granted, within the existing environment.
42. The applicants Overseer modelling of the current land use will constitute their “baseline” losses. The baseline loss must represent the actual and lawful use of land. It is considered that the baseline modelling does represent the actual and lawful use of the land and as such the baseline losses provide an indication of the contaminant loss from the subject properties that can form, and be considered to be a part of, the existing environment. As such, the modelling for the proposed scenario can be considered against the baseline model for which the effects of the proposal should be assessed again.
43. The application provides a description of the existing environment, however there are areas in which this description is lacking, such as the omission of drinking water supplies, statutory acknowledgement areas and Maitaitai reserves within the receiving environment. The following section outlines what is considered to form the existing environment. Where possible, I have not duplicated the information contained within the application.
44. However for clarity and as it is a key issue for this application, I have outlined *the degraded state of the receiving environment* in this report. I have also addressed the areas that are missing from the description of the existing environment within the application.

6.1 Current Activities Occurring in the Catchment

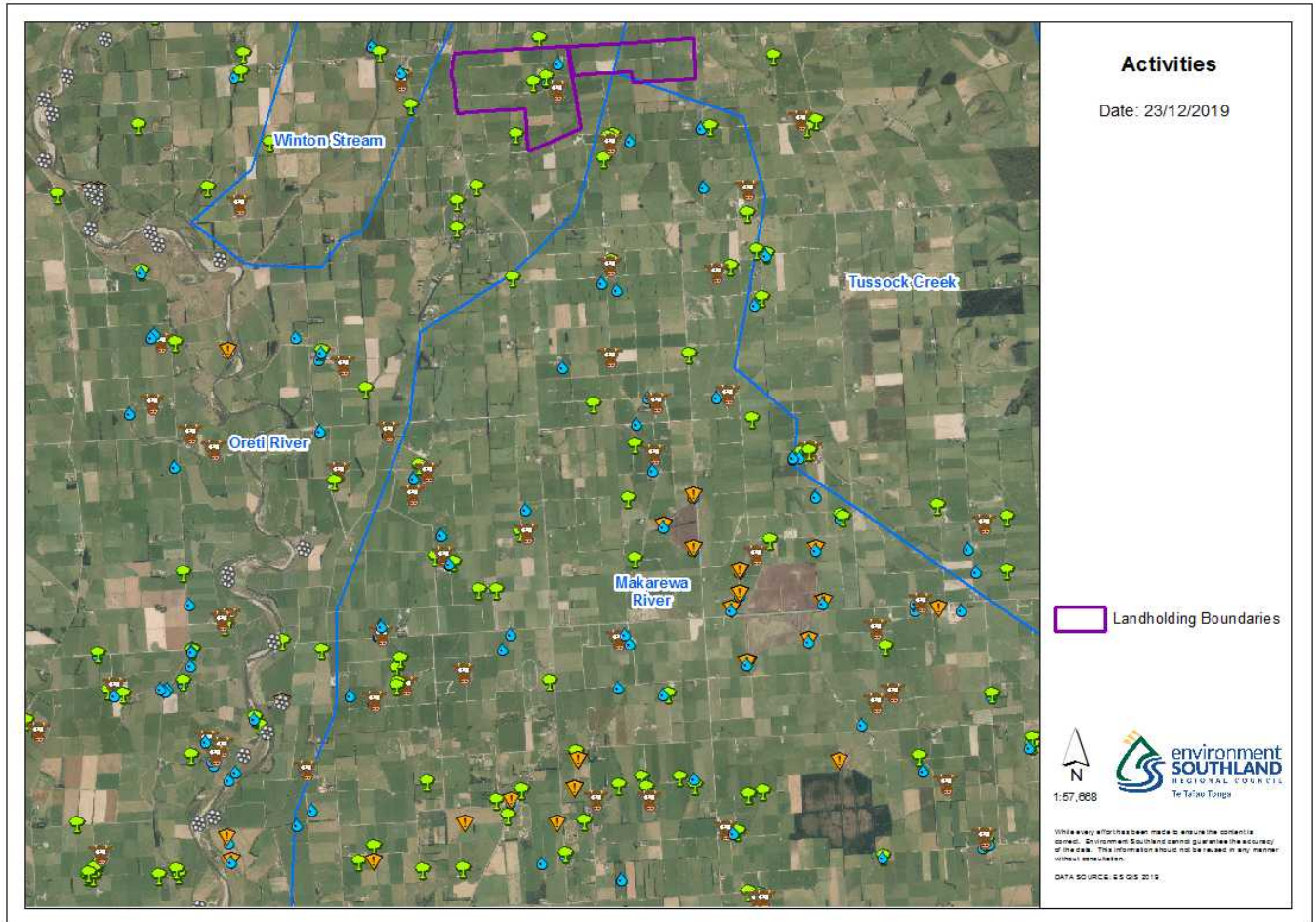


Figure 4: Map illustrating (consented) activities occurring in the surrounding environs

- 45. A majority of the western side of the Oreti River sub-catchment is largely in agricultural land, including dry stock farms and dairy farms. The properties directly around the site are largely dairy farms, with the exception of north of the property.
- 46. The Oreti River has a total of 46,278 consented cow numbers across the sub-catchment, of which the applicant has a consent for a maximum of 599 cows currently which makes up 1.2% of the consented cow numbers.

6.2 Topography

- 47. The topography of the site is largely flat. The topography on the existing platforms, especially around the waterway moves from flat to undulating or rolling, where overland flow towards the waterway would be a concern. The east block does show a preferential flow path toward Tussock Creek and Makarewa River (see Figure 8 further below).

6.3 Catchment-Scale Environment

6.3.1 Overview of Receiving Environment

48. The proposed dairy platform lies within the Oreti freshwater management unit and overlies both the Lower Oreti and Makarewa groundwater management zones. There is a slight variation in the groundwater management zone boundaries between the operative Regional Water Plan and proposed Southland Water and Land Plan. The proposed dairy platform has one marked waterway flowing through the eastern side of the platform. Council internal mapping software shows a second waterway on the property on the south western boundary, however, a site visit to the property determined that the waterway no longer exists. It is likely that this waterway has been tiled and nor forms part of the artificial drainage network beneath the property. Both waterways are unnamed tributaries of larger rivers. The property lies across three sub-catchments; Oreti River, Tussock Creek and Makarewa River.

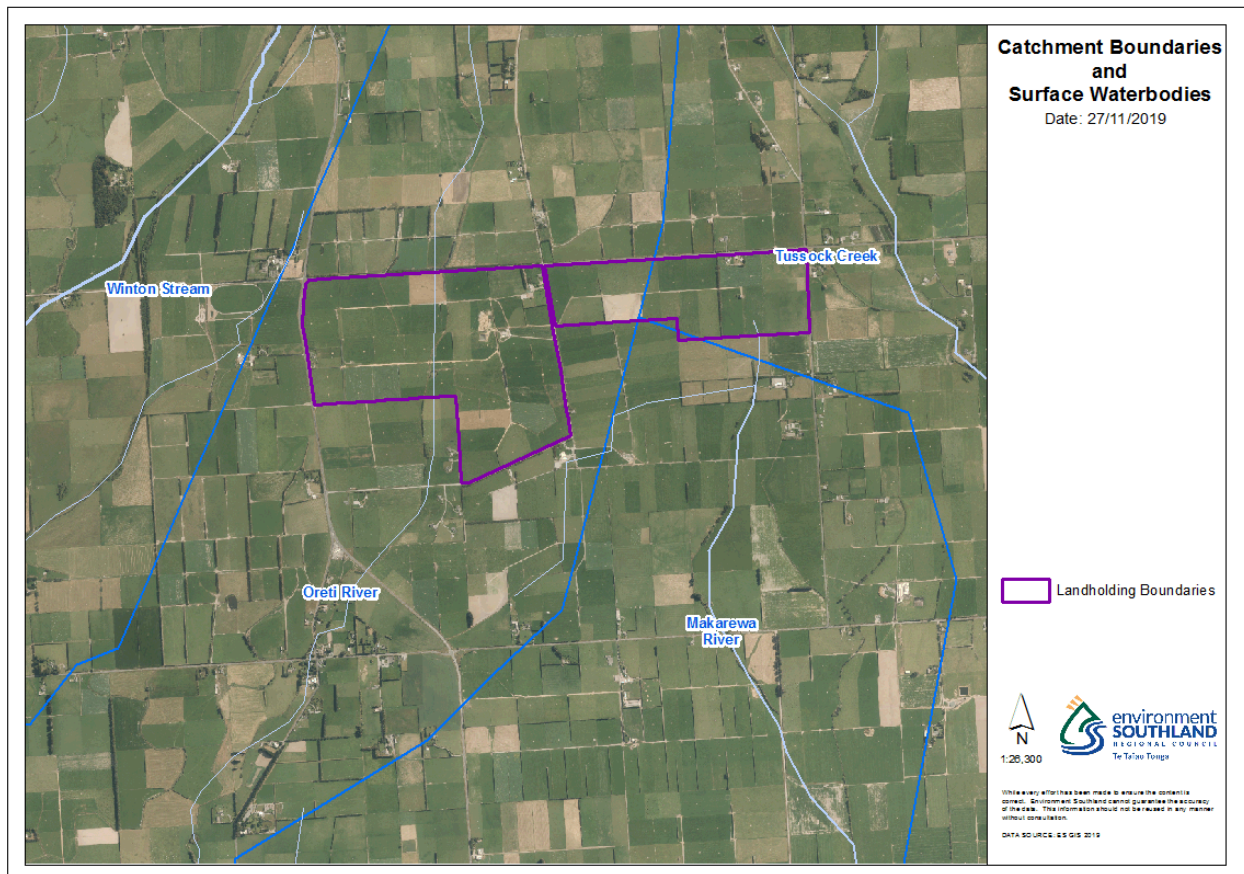


Figure 5: Surface Water in the Receiving Environment

49. A majority of the existing dairy platform sits within the Oreti River sub-catchment with a small portion of the existing platform and the entirety of the new block sitting within the Tussock Creek sub-catchment. A very small, and likely insignificant portion of the existing platform lies within the Makarewa River sub-catchment, however there is artificial drainage on the western side of the property which is likely to flow into the Makarewa River sub-catchment.

50. Due to the surface waterways present and the artificial drainage on the property all of the three catchments (Oreti, Makarewa and Tussock Creek) are determined to be within the receiving environment and will be affected by the proposed activities. The application does not identify the Makarewa River or Tussock Creek sub-catchments as being in the receiving environment, but rather suggests all pathways will direct water and contaminants to the Oreti River sub-catchment.
51. The waterway on the western side of the property, which is within the Oreti River sub-catchment, and flows from North of the property and continues through the property to the South. The waterway originates from a dairy platform approximately 4km to the North of the property and continues through a number of dry stock farms and other agricultural areas. The waterway flows south through the Oreti River sub-catchment until it flows into the Oreti River, which sits within the wider Oreti River parent catchment. The waterway flows into the Oreti River approximately 620 m directly upstream of a registered drinking water supply for Invercargill City Council which services more than 501 people. The Oreti River then flows into the New River Estuary which flows out into the Oreti Beach Embayment.
52. Council mapping software indicates the presence of a second waterway on the property on the Eastern Side (*refer Figure 6*, however, the application does not show that such a waterway exists on the property. The site visit undertaken in December 2019, confirmed that an above ground waterway is **not** present on the property. It could be concluded that at some point the waterway has been tiled. An above ground waterway is visible to the South of the property, and crosses under Forest Hill Crossing Road, and is likely to be the waterway indicated in Council mapping software (*refer Figure 6*), whereby the portion of that waterway on the applicants property (and other properties) has been tiled. This waterway flows into the Makarewa River.

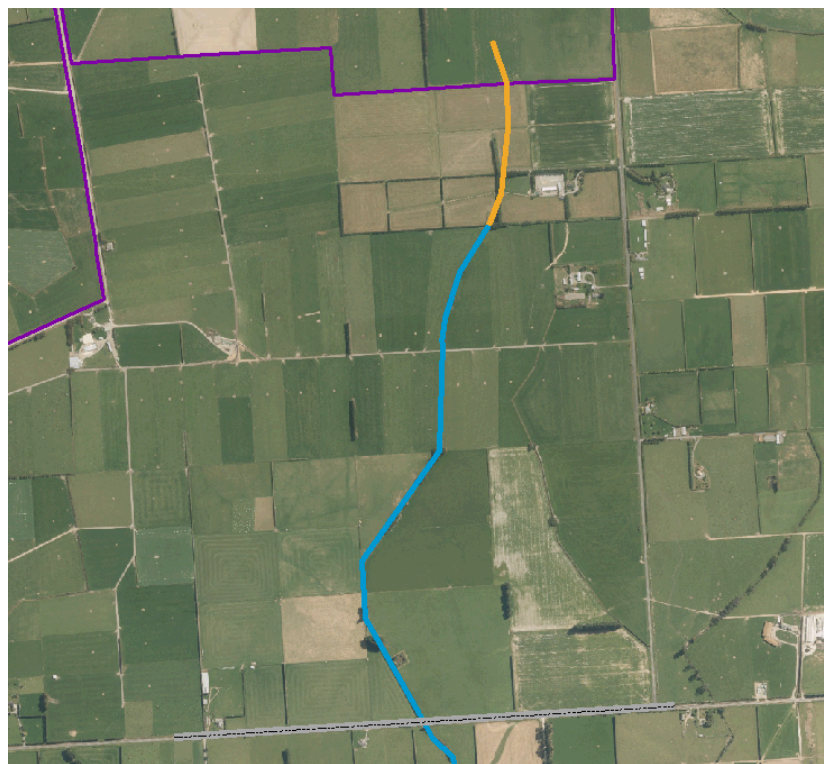


Figure 6: Snip of waterway (blue) crossing under Forest Hill Crossing Road (grey) and tiled section (orange)

53. The eastern portion of the property that lies within the Tussock Creek sub-catchment is approximately 625 metres east of Tussock Creek. Depending on where the artificial drainage flows to, contaminants will be able to enter Tussock Creek via this pathway. However, the application states the location of tile drains is unknown.
54. There are a number of critical source areas (CSAs) on the property, as indicated in the application. These are high risk areas for contaminant loss, allowing for the movement of contaminants into surface watercourses.



Figure 7: Waterways (blue lines) and Critical Source Areas (orange lines) (taken from application)

55. There are no wetlands in the receiving environment.

6.3.1.1 Statutory Acknowledgement Areas and Mātaimai Reserves

56. There are two Statutory Acknowledgement Areas within the receiving environment. These are the Oreti River Statutory Acknowledgment Area which stretches the length of the Oreti River and the Rakiura/Te Ara a Kiwa (Rakiura/Foveaux Strait CMA) Statutory Acknowledgment Area which covers the New River Estuary and the Oreti Beach Embayment.
57. The Oreti Beach Embayment is also covered by the Oreti Mātaimai Reserve set under the Fisheries (Notification of Tāngata Tiaki/Kaitiaki for Mātaimai Reserve at Oreti Beach) Notice 2015.

6.3.1.2 Registered Drinking Water Supplies

58. There are three registered drinking water supplies within the receiving environment. The closest of which is the water site at Lochiel School, located approximately 1.2km down gradient of the property. The water is sourced from a bore within the Lower Oreti groundwater management zone and it services 25 to 501 people. The second site is located approximately 11.7km south of the property on the Oreti River and services more than 501 people as a town drinking supply for Invercargill City Council. The water is sourced from the Oreti River. The third site is located a further 4.3 (approximately) km downstream on the

Oreti River. This site services more than 501 people also and supplies the Alliance Lorneville processing plant.

59. The application makes no consideration of the drinking water supplies other than the supply located at Lochiel School supply.

6.3.1.3 Bathing Water Sites

60. There are three bathing water sites in the receiving environment. One in New River Estuary at the Water Ski Club which analyses Enterococci (MPN). There is a second site in New River Estuary at Whalers Bay which analyses Faecal Coliforms (mf) and a third is in New River Estuary at Omaui and analyses Enterococci (MPN).

6.3.2 Water Resources in the Receiving Environment

61. The water resources within the Receiving Environment are described in the application and the Lovett report. The following section will not repeat that information in detail but will highlight the key points of the groundwater and surface water within the receiving environment.

6.3.2.1 Hydrological Setting of the Receiving Environment

62. The freshwater receiving environs that will be potentially affected by the proposed activities include the Oreti Freshwater Management Unit and the Makarewa and Lower Oreti Groundwater Management Zones. The site sits within the Oreti River parent catchment which is bounded by the Thomson Mountains in the north, with all water flowing south and discharging into the ocean at the New River Estuary.

6.3.2.2 Surface Water Quality

63. As mentioned, the proposed platform spans the Oreti River, Makarewa River and Oreti River sub catchments. The flow paths of these have been detailed earlier in this report. The application states *“ES staff have acknowledged that these sub catchment maps are not that accurate and in any regard, this is not critical except to focus downstream water quality attention on the Oreti River water quality monitoring site at Wallacetown”*. Irrespective of the accuracy of the catchment boundaries, large portions of the proposed platform are situated well outside the Oreti River sub-catchment. The application itself does not provide an analysis of either the Makarewa River or the Tussock Creek catchment and only identifies the Oreti River catchment as being within the receiving environment. Such a statement is incorrect, and leads to an inadequate assessment of the quality of the receiving environment and does not wholly identify the receiving environment.
64. On 9 January 2020 communication with the consultant for the applicant to discuss the waterbodies in the receiving environment. It appeared there was an agreement between both parties that Tussock Creek and Makarewa River were within the receiving environment and would be potentially affected by the proposed activities. It is important to note that this conversation was had, however, at the time of writing this report the information before me still lacked an assessment of the proposed activities on Tussock Creek and Makarewa River. As such my discussion in this report has been based on the information before me at the time of writing. Figure 8 was supplied on 9 January 2020, by the consultant for the applicant, indicating the proportion of the proposed platform considered to flow into the respective catchments. I largely agree with this assessment.



Figure 8: Surface water flow (supplied by the consultant for the applicant) – Orange Arrows show direction of flow.

65. Although, the proposed platform only has one waterway, the soil types and physiographic zones indicate there is an extensive network of artificial drainage on the property. Without the provision of a tile map, there is no way to determine with certainty the surface waterbodies these would be discharging into, however, due to the catchment boundaries, it should be assumed that these will feed waterways within all three catchments. It should not be assumed nor accepted that the only surface water in the receiving environment would sit solely in the Oreti River catchment. As such, consideration must be had to the Oreti River, Makarewa River and Tussock Creek as waterbodies in the receiving environment.

66. The application provides the following table (*Table 6*) which provides a summary of the state and trend of water quality parameters at the Oreti River Wallacetown Water Quality Monitoring Site. This data indicates that the water quality is degraded and in some cases does not meet the standards set in Appendix E of the proposed Southland Water and Land Plan.

Table 6: Water Quality – Oreti River at Wallacetown

Primary WQ indicators	State	LAWA National Objective Framework (NOF) Band, Annual Median (2008 – 2017) PSWLP Maximum (2009 -18)	Trend	PSWLP water quality standard (Lowland Hard Bed) & ANZECC [™] trigger values
<i>E. Coli</i>	In the worst 50% of all lowland rural sites	D – 20-30% of the time, the estimated risk is >=50 in 1000 (>5% risk). The predicted average infection risk is >3%*. 5-year median = 130 n/100ml Maximum = 10,000 cfu/100ml	Likely Improving	≤1,000/100ml Faecal coliforms [†] Highly unlikely to meet standard
Clarity (Black Disc)	In the best 50% of all lowland rural sites	No NOF attribute band set 5-year median = 1.815 metres Seven results during 2009 – 2018 did not comply with PSWLP WQ standard	Indeterminate	≥ 1.6 m when flow below median flow (27.4 m ³ /s), Does not meet standard
Total Oxidised N	In the worst 25% of all lowland rural sites	B – Some growth effect on up to 5% of species. 5-year median = 0.94 g/m³ Maximum = 2.5 g/m³	Not assessed	≤0.444 g/m ³ (ANZECC, 2000)* Greater than this trigger value
Ammoniacal N	In the best 25% of all lowland rural sites	A – 99% species protection level. No observed effect on any species tested. 5-year median = 0.005 g/m³ Maximum = 0.04 g/m³	Not assessed	<2.5-0.9 (pH 6.0-8.0) Meets standard
Dissolved Reactive P	In the best 50% of all lowland rural sites	No NOF attribute set 5-year median = 0.006 g/m³ Maximum = 0.04 g/m³	Not assessed	≤0.01 g/m ³ (ANZECC, 2000)* Greater than this trigger value
Macroinvertebrate Community Index	Poor	MCI 5-year median = 95. Fair ecological condition. Indicative of only fair water quality and/or habitat condition.	Likely degrading	>90 Meets standard
Additional PSWLP Water Quality Stds		Observed WQ range Jan 2009 – Dec 2018		PSWLP water quality standard (Lowland Hard Bed)
Temperature		4.2 – 21 °C		≤23°C Meets standard
pH		7.0 – 7.8		6.5 – 9.0 Meets standard
Sediment cover		Not assessed by ES		
Dissolved oxygen		82 – 132% (7.4 – 14.2 g/m ³) NOF Attribute B band		> 80 % sat. Meets standard
Bacterial/fungal slime		Not assessed by ES		
Periphyton		4.5 – 361 mg chl <i>a</i> /m ² (annual sampling, 2004 - 2018) NOF Attribute possibly C band? (92%ile = 158) (see page 9 comments)		<120 mg chl <i>a</i> /m ² filam. algae < 200 mg/m ² diatom/cyanob. Does not meet standard
Fish		Not assessed by ES		

67. The water quality in all three catchments within the receiving environment is degraded. This is detailed in the Lovett report and to some extent, with regards to the Oreti River, the application, and is not repeated here.
68. All water within all three catchments flows into the Oreti River within the Oreti River parent catchment. The mid to lower reaches of the Oreti River have been impacted, in some cases heavily, via modifications for drainage, flood control and channel clearance work. Impacts on the Oreti River largely occur come from artificial drainage networks, point and non-point source discharges, and stock access to waterways, drainage maintenance and gravel extraction activities¹. Tributaries of the Oreti River, including the Makarewa River, are subjected to non-point source discharges from land use activities such as farming and intensification, point source discharges from industry effluent and municipal sewage treatment.
69. There are a number of state of the environment monitoring sites (SOE) located within the Oreti Catchment. The following table's (*Table 7 and Table 8*) provides a summary of the key water quality parameters for the Oreti River and its tributaries, including the Makarewa River.

Table 7: Summary of Water Quality Parameters – Oreti River Catchment and Tributaries (taken from Lovett report)

	Parameter	<i>E. coli</i>	Faecal Coliform	Nitrate	Nitrite	Dissolved Reactive Phosphorus	TP	Suspended Sediment
	Unit	cfu/100 mL	cfu/100 mL	mg/L	mg/L	mg/L	mg/L	mg/L
Bog Burn d/s Hundred Line Rd	Min	40	40	0.083	0.003	0.005	0.019	-
	Max	21,000	22,000	6.30	0.035	0.210	0.490	-
	Mean	1,544	1,809	1.18	0.009	0.027	0.062	-
	Median	800	900	0.91	0.008	0.023	0.051	-
	Count	213 (1)	192 (1)	82	81	207	206	-
Oreti River (Branxholme)	Min	10	10	0.36	0.002	0.004	0.004	11
	Max	5,000	7,000	3.10	0.020	0.13	0.58	4400
	Mean	432	523	1.11	0.002	0.02	0.14	206
	Median	130	160	0.96	0.007	0.01	0.08	136
	Count	52	52	274	258 (16)*	207 (67)*	273 (1)*	175 (66)*
Oreti River (Wallacetown)	Min	6	6	0.34	0.002	0.004	0.004	10
	Max	24,000	24,000	2.5	0.01	0.04	0.32	144
	Mean	592	661	1.1	0.004	0.008	0.028	36
	Median	150	190	0.94	0.003	0.007	0.012	13
	Count	240 (3)*	242 (3)*	75	69 (6)*	50 (26)*	73 (3)*	7 (42)*

¹ Lovett Report.

Table 8: Summary of Water Quality Parameters – Makarewa River Catchment and Tributaries (taken from Lovett report)

	Parameter	<i>E. coli</i>	Faecal Coliform	Nitrate	Nitrite	Dissolved Reactive Phosphorus	TP
	Unit	cfu/100 mL	cfu/100 mL	mg/L	mg/L	mg/L	mg/L
Makarewa (Counsell Rd)	Min	70	70	0.01	0.002	0.006	0.03
	Max	190,000	190,000	3.40	0.032	0.112	0.42
	Mean	7,713	8,184	0.94	0.009	0.018	0.08
	Median	445	510	0.93	0.008	0.015	0.05
	Count	78	78	129 (2)	108 (5)	129 (1)	133
Makarewa (Wallacetown)	Min	30	30	0.11	0.005	0.005	0.017
	Max	140,000	140,000	4.60	0.030	0.230	0.680
	Mean	3,506	3,771	1.22	0.012	0.027	0.091
	Median	360	470	1.14	0.010	0.018	0.053
	Count	238	240	134	97	245 (4)	249
Tussock Creek (Cooper Rd)	Min	50	70	0.02		0.004	0.01
	Max	98,000	100,000	8.90		0.25	1.05
	Mean	4,279	4,609	1.66		0.03	0.09
	Median	970	1,100	1.60		0.03	0.06
	Count	211	214	221		206 (5)	211

70. The parameters indicate the water quality within these catchments is significantly degraded both upstream and downstream of the proposed dairy platform. The Lovett report covers this and it will not be repeated here. However, it is important to note that water quality results indicate impacts from and use in the immediate catchment, most likely occurring as a result of soil drainage and/or run-off events from intensive agriculture.
71. The degraded quality of surface water here may be explained by the physiographic zone characteristics and contaminant pathways present on the proposed platform (discussed further below). These characteristics suggest that land use impacts on water quality are primarily from bacteria, sediment, and nitrogen and phosphorous transported directly to waterbodies by overland flow and/or sub-surface drainage.

6.3.2.3 Groundwater Quality

72. There is very limited groundwater monitoring within the vicinity of the property. Groundwater to the east and west of the property is indicative of nitrate levels classified as being between modern day background and moderate to high land use impacts. To the south of the property groundwater nitrates are elevated and are indicative of moderate to high land use impacts and nearing drinking water limits.

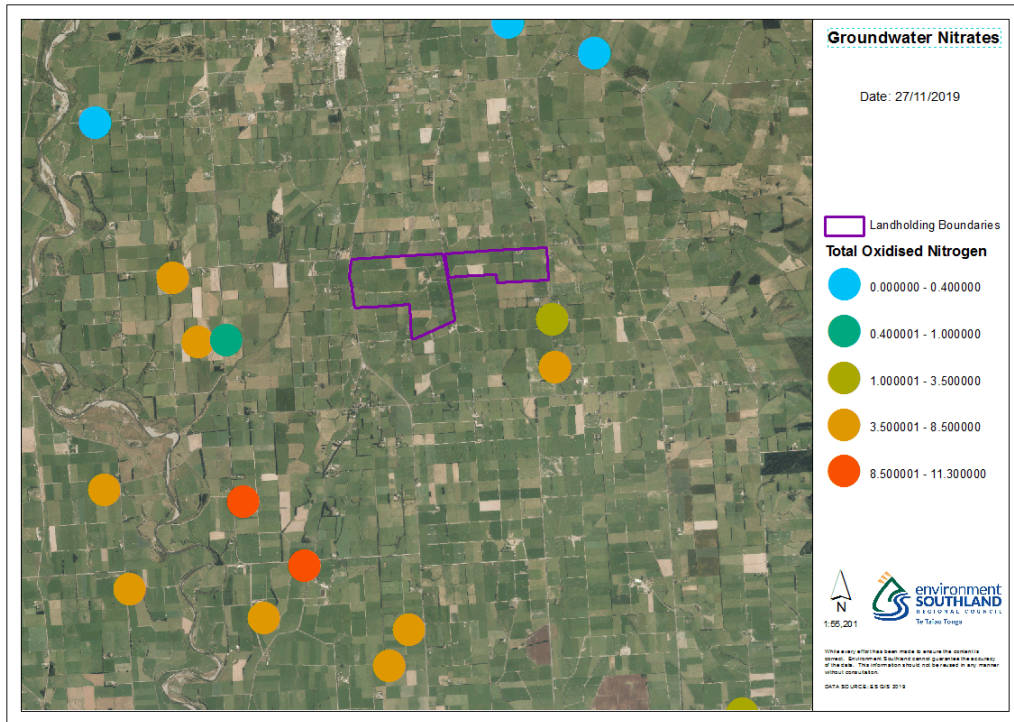


Figure 9: Groundwater Nitrates

6.3.2.4 Coastal Waters Quality

- 73. All surface water and drainage from artificial drains will flow into the Oreti River which will flow into the New River Estuary and then into the Oreti Beach Embayment.



Figure 10: Potentially Affected Coastal Environment

- 74. The New River Estuary is significantly degraded. It is the discharge point for both the Waihopai River and Oreti River which are both subject to discharges (point and non-point source) from intensive agriculture and urban activities such as industrial discharges, municipal wastewater discharges and stormwater run-off and discharges. The estuary drains a catchment of 4,314 km².

75. The following table (Table 9) summaries the condition of the estuary:

Table 9: Estuary Quality²

RATINGS		CONDITION RATINGS			CHANGE RATINGS
Major Estuary Issue	Indicator	2001	2007	2012	2001-2012 Change
Sediment	Soft mud area	POOR	POOR	POOR	LARGE INCREASE
	Macroalgal Coefficient	GOOD	GOOD	GOOD	TRENDING UP = WARNING
Eutrophication	Dense (>50%) macroalgal cover	VERY LOW	MODERATE	HIGH	VERY LARGE INCREASE
	Gross eutrophic condition area	FAIR	POOR	VERY POOR	VERY LARGE INCREASE
Habitat Modification	Seagrass Coefficient/area	POOR	POOR	POOR	VERY LARGE DECREASE
	Saltmarsh area	MOD-HIGH	MODERATE	MODERATE	SMALL DECREASE
	Densely vegetated margin area	not measured	GOOD	GOOD	NO CHANGE

76. The overall quality of the Estuary is discussed in the Lovett report, however the key points for consideration are:

- monitoring has indicated a significant decline in estuary quality, particularly over the last five years;
- large areas of macro algal growth has been evident which has resulted in the loss of seagrass;
- increased sedimentation resulting in smothering, muddiness and decreased sediment oxygenation; and
- the estuary is considered eutrophic with conditions worsening since monitoring began in 2001.

77. The quality of the Estuary is degraded and continues to degrade, largely related to increased sediment and nutrients entering the estuary environment. Studies indicate that nutrient inputs into the estuary must be reduced significantly in order to reverse the continuous deterioration of the estuary.

6.4 Local Environment

6.4.11 Soils and Physiographic Zones

78. Vulnerability of the subject land and the receiving environment to effects of farming and effluent irrigation can be examined by reference to soil types, physiographic zones and to FDE land classifications. These are summarised in Table 10 below.

² New River Estuary – Fine Scale Monitoring of Highly Eutrophic Arms – B.M Robertson & L.M Stevens (2013)

Table 10: Soils and Physiographic Zones

Soils	Soil Type	Vulnerability Factors		
		Structural Compaction	Nutrient Leaching	Waterlogging
	Edendale + Pukemutu	Slight	Moderate	Slight
	Pukemutu	Severe	Slight	Severe
Physiographic Zones	Physiographic Zone	Variant Type		
		No Variant	Overland Flow	Artificial Drainage
	Gleyed	√		
	Oxidising	√		
FDE Land Classification (Discharge Area)	Category A – Artificial Drainage or Coarse Soil Structure			

6.4.2 Contaminant Pathways

79. The soils, physiographic zones and FDE land classification detailed in Table 10, can be used to determine the contaminant pathways present on the site and describe how contaminants move through the land and into the receiving environment. The properties of the soil types and physiographic zones can be used determine what is of most risk in the receiving environment.
80. The soil types present within the proposed dairy platform have a slight to moderate risk of nutrient leaching, which indicates the contaminant pathways will pose a greater risk to surface water as opposed to groundwater. Furthermore, the soil types have a slight to severe risk of waterlogging, again posing a higher risk to surface water.
81. The proposed Southland Water and Land Plan introduced the concept of physiographic zones, which are spatial zones defined by their geological, topographical, soil, and climate characteristics. Physiographic zones provide an understanding of why land use impacts upon water quality vary between locations with similar land uses.
82. The physiographic zones on the property are Gleyed and Oxidizing. The zones indicate that the main contaminant pathways on this property will be via artificial drainage and overland flow, with the main risk being transfer of contaminants directly to surface waterbodies. This is an important point, as these surface water bodies **are already degraded**. However, the proposed activities also pose some risk to ground water.
83. The dairy platform sits largely on the gleyed physiographic zone. This zone has characteristics such as higher risk to waterlogging and therefore have extensive artificial drainage networks to drain water from the land surface to surface waterbodies. This creates a contaminant pathway whereby water and contaminants are directed to surface waterbodies. In steeper areas there is also a risk of overland flow to surface waterbodies, however the topography of the site is largely flat, so the main contaminant pathway will be artificial drainage and overland flow when soils are saturated. The gleyed physiographic zone is also known to have denitrifying potential. As such, there is a greater risk to surface water as opposed to groundwater. The nutrient of most concern at being lost to the receiving environment is phosphorous.
84. The eastern portion of the proposed dairy platform sits on the oxidizing physiographic zone. There is variation within zone as to the contaminant pathways which relates to the soil types and as such the soil types present need to be understood and can be used to inform the

contaminant pathways that are present in this case. The oxidizing physiographic zone has high phosphorous retention capabilities. As such the nutrient of most concern at being lost to the receiving environment is nitrogen. Phosphorous would be of greater concern should the mobilization of sediment occur and be lost to waterways, which, generally would require heavy rainfall and steeper topography. As the oxidizing zone is well aerated, with plenty of oxygen, nitrogen can build up and accumulate in the soil water and ground water. This means that in this zone, groundwater in the receiving environment can contain high levels of nitrogen. The Oxidizing Zone, especially in flatter areas where the soils are free draining can result in direct drainage of contaminants to groundwater. In this case, there is a moderate risk of nutrient leaching, which can be attributed to the mix of soil types (soil made up of Edendale and Pukemutu). Slowly permeable soils can experience seasonal waterlogging, which is unlikely at this site, but when considering the FDE risk, the area could be subject to artificial drainage creating a contaminant pathway to surface water.

85. The FDE land classification provides a risk matrix for the discharge of effluent to land. The FDE risk for the proposed discharge area is classed as Category A which is typified by artificial drainage and coarse soil structure. This means that the main contaminant pathway and risk for the discharge of effluent to land is artificial drainage which provides a mechanism for effluent to flow via the drainage network to surface waterbodies. This is of concern where the effluent discharge is mismanaged and/or the rate and/or depths of application do not match the level risk associated with Category A land.
86. In summary, the property is subject to a number of contaminant pathways; overland flow to surface water, artificial drainage to surface water and to some extent deep drainage to groundwater. The risk of most concern of this proposal is largely due to the change in land use on the east block and the increase in stock numbers “on paddock” which creates more dung and urine patches which have the ability to leach high concentrations of nutrients and other contaminants.

6.4.3 Groundwater Quantity

87. The property overlies the Lower Oreti and Makarewa Groundwater Management Zones under both the Regional Water Plan and the proposed Southland Water and Land Plan. The application proposes to abstract groundwater from Bore E46/1089 and E46/1067, which are both located in the Lower Oreti groundwater management zone.
88. There are no issues with the proposed quantity of groundwater to be abstracted due to the allocation still available to be allocated in the aquifer. The allocation is detailed in Table 11 below.

Table 11: Groundwater Availability and Allocation

Groundwater Zone	Lower Oreti (RWP)	Lower Oreti (proposed Southland Water and Land Plan)
Discretionary Allocation	20,700,000	19,310,000
Amount Currently Allocated	4,101,222	1,702,177
Mean Annual land Surface Recharge	138,100,000	N/A
Percentage Currently Allocated (%)	20	8.8

7.0 ADVERSE EFFECTS ASSESSMENT

7.1 *Actual and Potential Adverse Effects*

7.1.1 Adverse Effects to be Considered (RMA s104(1))

89. Section 104(1) of the RMA requires the decision maker to have regard to any actual or potential effects on the environment from the proposed activity. Consideration of the following effects has been undertaken and is required:

- effects on water quality, including potential for contamination of groundwater and surface water, and effects on sources of human drinking water;
- effects on water quantity (including stream depleting effects);
- cumulative effects;
- effects of the use of groundwater;
- soil health; and
- odour.

7.1.2 Adverse Effects not in Contention

90. The assessment of environmental effects provided with the application has provided an assessment of environmental effects. The applicants have provided a number of good management practices and/or mitigations to address the effects.

91. The effects detailed below are not in contention and due to the good management practices and/or mitigations provided in the application, the below adverse effects are considered to be at a level that is acceptable.

7.1.2.1 *Effects on Water Quantity (including stream depleting effects)*

92. The application is for abstraction from a groundwater management zone with a significant amount of unused allocation, and therefore over-allocation will not occur as a result of the proposed activity.

93. The rate of take is less than 2 litres per second and therefore stream depletion effects are not expected to arise from the exercise of the proposed activity.

7.1.2.2 *Odour*

94. The treatment, storage and discharge of effluent can result in offensive and/or objectionable odour.

95. If 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 be little risk of adverse effects from odour and spray drift on surrounding land owners and occupiers.

96. Effluent storage facilities can cause problems with odour, however, the closest dwelling on another property is located over 700 metres from the effluent storage facility and the facility is located more than 400 metres from the property boundary.
97. 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 through a condition that specifies there is to be no offensive or objectionable odour beyond the property boundary. Buffers from the boundary for effluent discharge are also used to mitigate any odour and prevent spray drift beyond the property boundary.

7.1.2.3 Effects associated with the use of Groundwater

98. The applicant proposes to take and use groundwater and as such, the effects of the use of groundwater must be considered. The use as proposed by the applicant is for stock drinking water and dairy shed purposes, such as dairy shed wash down.
99. The proposed increased abstraction of groundwater would permit the applicant to increase the stock numbers. The effects of this relate to further intensification of the dairy platform including increased stock “on paddock” with an increase in urine and dung patches. The effects of this will be discussed more in the “Adverse Effects of Concern” section of this report below.
100. The increased number of cows will also result in an increase in the volume of water used for dairy shed wash down. This will result in higher volumes of effluent being produced. The applicant has demonstrated that they have sufficient storage in the effluent storage pond to allow for the increased volume of effluent which includes the dairy shed wash down water. The effects of discharging the increased volume of effluent will be discussed more in the “Adverse Effects of Concern” section of this report below.

7.1.2.4 Effects on Soil Health

101. The effluent disposal field will be larger 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. It is also more than the 8 hectares per 100 cows as recommended in the Best Practice Guidelines Booklet.
102. There are two different soils in the disposal area with the predominant risks for contaminant losses to the environment being via artificial drainage. The main risk factor for the property for the discharge of effluent is artificial drainage to surface waterways. The application details ways in which these effects will be mitigated through the use of good management practices such as deferred irrigation and only applying effluent when there is a soil moisture deficit. The applicants have also provided irrigation depths which match the level risk.
103. Provided the effluent is applied at the appropriate rate and depth effluent can act as a fertiliser providing nutrients to aid pasture growth and therefore soil health and available nutrients should be maintained and enhanced.
104. The flat topography of the priority reduces the risk of sediment loss to waterways, allowing for sediment to be retained on the paddock. The soil types present have a slight to severe risk of structural compaction and waterlogging. When considering the effects of soil health on the dairy platform, activities such as intensive winter grazing, which have the highest impact on soil health by causing structural compaction and pugging of soils which increases the

waterlogging risk, are being, for the most part, undertaken at a third party grazier. The effects at a third party grazier cannot be ignored however, and are covered below.

7.1.2.5 Effects from Off-Site Activities

105. When viewing the proposed activities broadly, a consequence of the applicants' proposal will be that additional or further intensified grazing and intensive wintering of cows will occur elsewhere. The applicants graze young stock off-farm from weaning until they are due to calf. They will also be intensively winter grazed at a third party grazier outside of the applicants' landholding along with the dairy herd.
106. While not in direct control of the applicant, the adverse effects of this activity must be considered, especially when taking into account Policy 39 of the proposed Southland Water and Land Plan and the use of the permitted baseline (this is discussed further down in this report). The activities will be covered by a permitted activity rule or a resource consent should one be required, and the grazier is responsible for operating in accordance with any permitted activity criteria or resource consents held for the activities. The application makes a consideration of these effects. Although all areas of the modelling have been "made-up", the scenario is not entirely fanciful, as such, the consideration of off-site effects is not in dispute and is adopted. I do not find this to be a matter of contention for this application and agree with the consideration and conclusions in the application and consider the effects from this activity are acceptable and will be controlled by way of a permitted activity or Resource Consent.

7.1.3 Adverse Effects of Concern

107. I have a number of concerns relating to the proposed activities. These issues largely relate to effects on water quality, including potential for contamination surface water, and effects on sources of human drinking water. The following issues are discussed below.

7.1.3.1 Water Resources Management

108. Within the Southland Region, the continued use of freshwater resources, both ground and surface water, is entirely reliant on the availability of water. The availability and allocation of these water resources is based upon its quality as well as quantity. Current pressures on the water resources, with regard to quality, relate to the increased contaminant loadings which is largely due to land use change and intensification as well as population increases and urban discharges.
109. In accordance with the National Policy Statement for Freshwater Management 2014 (NPS-FM), including the 2017 amendments is the development of Freshwater Management Units, of which the Southland region has developed 5 Freshwater Management Units. The proposed platform lies within the Oreti Unit. The concept of the freshwater management units was developed to maybe freshwater resources and is defined as the "*the water body, multiple water bodies or any part of a water body determined by the regional council as the appropriate scale for setting freshwater objectives and limits and for freshwater accounting and management purposes*".³

³ NPSFM 2014

110. The Council has not yet set limits in relation to contaminant or/and nutrient loadings of water bodies, however the proposed Southland Water and Land Plan provides direction for managing these resources in the meantime, with further direction provided in the Environment Court Interim Decision on the plan. This will be discussed further down in this report.

7.1.3.1.1 Effects on Water Quality from Effluent Discharge

111. The increased number of milking cows and the increased use of groundwater for dairy shed wash down will result in higher volumes of effluent to be stored and discharged to land. When applied to soils in an appropriate manner, the effluent can act as a nutrient.
112. The proposed storage capacity will allow for the scheduling of effluent irrigation based on soil moisture deficits, decreasing the potential for nutrient loss to water. Deferred irrigation is a good management practice that all dairy farmers are expected to have the ability to do. The purpose of deferred irrigation is to ensure that effluent discharge only occurs when weather conditions are suitable for irrigation, and plant uptake can allow for the uptake of nutrients from the effluent. If effluent is applied when conditions are not suitable this can lead to a number of issues such as over application of effluent, overland flow of effluent and nutrient leaching.
113. 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. Where effluent is applied and the nutrient concentrations exceed the plant uptake capabilities, this can lead to increased nutrient leaching beyond the root zone. If such circumstances were to occur, the losses as modelled in Overseer could no longer be considered to be reliable.
114. The effluent irrigation area must, at a minimum be of sufficient size. This is estimates as being that there is at least 4 hectares per 100 cows of available area. This is calculated to achieve a maximum loading of 150 kg of nitrogen/hectare/year from effluent irrigation. If the discharge area does not meet this size, then there is increased risk that a nitrogen loading rate of 150 kg of nitrogen/hectare/year would not be able to be achieved, as such exceeding this rate. The Best Practice Guidelines Booklet recommends that the discharge area is more than 8 hectares per 100 cows.
115. AUTH-301043 is the current discharge permit held by the applicant and authorises the discharge of effluent to approximately 108 hectares of the existing dairy platform which equates to approximately 18 hectares per 100 cows. However, the application states that the total area of the consented discharge area has not been fully utilised by the applicant, nor is it fully being utilised currently. The area that the application states is currently being utilised is approximately 67 hectares in size. This equates to approximately 11 hectares per 100 cows of discharge area. This is still in excess of both the 4 hectare and 8 hectare requirements.
116. The applicant's proposed discharge area is 73.5 hectares in size, which has been proposed as an increase in the size of the discharge area. This equates to approximately 11 hectares per 100 cows. This is in excess of both the 4 hectare and 8 hectare requirements. However, this needs to be considered in context as to the applicant's proposal and the effectiveness of the mitigations proposed. As mentioned earlier in the report, page 6 of the application states that *"effluent can be applied over a larger area if the effluent disposal field is extended to the south instead"*. The proposed extension to the actual effluent area is proposed by the applicant to

reduce contaminant loading in any particular paddock. This would be expected to accommodate the increased volume of effluent that will be produced.

117. While I accept that the application is correct in that extending the discharge area *“is an effective way of ensuring that nutrients are distributed over a larger area, thus reducing the intensity of loading in any particular paddock”*. The proposed discharge area is, in reality, smaller than the current consented discharge area. However, I also acknowledge how the proposed discharge area is located more conveniently by being closer to the effluent storage and all on the same side of the road, rather than being spread across paddocks on opposite sides of a road. The proposed discharge area itself is larger than the discharge area that has been utilised in reality by the applicant, however this is effectively cancelled out by the increase in cow numbers. This is an important consideration when considering the increase in the discharge area and its acceptability as an additional mitigation to the proposed effluent discharge. Although, the discharge area is increasing in land area, the hectares per 100 cows remains the same and as such the nutrient loading will be no less than what is currently occurring, but rather be spread over a larger area, which will facilitate the increase in cows.
118. It is also uncertain as to the extent that effluent infrastructure will be increased to accommodate the proposed change in the discharge area. If the effluent infrastructure is not extended then the entirety of the proposed discharge area may not be able to be fully utilised, or utilised as proposed. If effluent infrastructure is not increased to include the new areas of the discharge area, then the low rate pods will not be able to be used on those areas, as such reliance would have to be had on using contractors to discharge effluent to these areas via slurry tanker and/or umbilical systems. Although, there is no issue with this, it would mean that the new areas would only be used for the discharge of effluent on an irregular basis.
119. The increase/change on the discharge area is in line with good management practice and the nutrient loading will be in line with what is expected. However, it must be considered in context and may not be as effective and reducing contaminant loadings and nutrient losses as described in the application.
120. The farm environmental plan details how effluent irrigation will not occur when soil conditions are not suitable, such as during periods where soil moisture is above field capacity (saturated soils). The application fails to detail how this is managed and how soil moisture is determined. When considering the discharge of effluent application it is important to consider Land Surface Recharge, and how that correlates to adverse effects and the risk of contamination from discharging effluent when soil moisture is at or near field capacity. The Lovett report covers this in detail in section 4.3 and will not be repeated here, but consideration should be had to that section when determining the adverse effects from the effluent discharge.
121. In the farm environmental management plan, one of the good management practices proposed to mitigate the adverse effects of the discharge of effluent is to avoid irrigating over tile drains. However, the application also states the location of tile drains is not known, as such, in reality it is unclear how this will be achieved. This increases and highlights the importance of ensuring that the recommended conditions of consent are adhered to should consent be granted, as the consent conditions restrict the application rates and depths as well as exclude over application of effluent, including the ponding and pooling of effluent on the land surface. This ensures that should discharge occur over a tile drain, the pasture should be able to uptake the nutrients and avoid a situation where effluent enters the tile drain.

122. Attached to this report are recommended conditions of consent relating to the discharge of effluent to land where contaminants *may* enter water. The proposed discharge is for a discharge to land and is not for a discharge to water or a discharge to land where contaminants will enter water. It also follows all good management practices and as such, the adverse effects resulting from the discharge of effluent are considered to be acceptable. However the discharge would have to occur in adherence to the recommended conditions of consent, particularly those that relate to mismanagement of the effluent system and ponding, pooling and overland flow of effluent and those that require that the discharge must not result in effluent entering water in anyway, including directly and indirectly.
123. Should the recommended conditions of consent not be agreed or/and adhered to, it is likely that the discharge of effluent will result in adverse effects. The recommended conditions of consent ensure that the effects from the discharge of effluent are acceptable and do not give rise to the effects as per s107 of the Act.

7.1.3.2 Effects on Water Quality from Land Use Activities from the proposed Dairy Platform

124. When considering the adverse effects resulting from the land use activities it is not sufficient to take a broad approach to the assessment. When assessing effects of the proposed activities all effects must be considered. The approach taken in this assessment begins by assessing the effects of the activities over the entire landholding, before looking at the effects on a block by block basis. This approach ensures an adequate assessment of the adverse effects on the environment is undertaken whereby all adverse effects of the proposed activities have been considered. To take a broad or “unders and overs” approach effectively results in adverse effects on some blocks being ignored and an insufficient assessment and consideration of those effects being undertaken. This section will focus on the effects on the receiving fresh waters (ground and surface); the effects on the coastal receiving environment will be covered further down in this report.
125. The application has included a modelled reduction in nutrient losses, which were recalculated subsequent to notification (*as shown in Table 12*) over the entire landholding combined. The application then uses this modelled reduction to infer that an improvement in water quality will arise. However this over simplifies the issues as well as reality and this approach is unacceptable. The reasons for this are detailed in the “*Overseer Nutrient Modelling*” section of this report below. It should also be noted that this modelling only shows the modeled losses of Nitrogen and Phosphorous but Sediment and Microbe losses cannot be modelled in Overseer, of which, the consequences of this approach is also discussed later on in this report.

Table 12: Overseer Modelled Nutrient Losses (Recalculated)

	Current System	Proposed System	Percentage Change (kg/ha) (%)
N loss/ha (kgN/ha/yr)	52	47	-9.2
P loss (kgP/ha/yr)	1.0	0.9	-7.4

126. The land use activities to be considered include the dairy farming of cows including the grazing of stock on the dairy platform. This includes the effects resulting from the increased number of cows in the milking platform and the change in land use on the east block. Whilst the discharge of effluent creates some control around nutrient losses from the discharge of collected and stored effluent, the effects from “cows on paddock” including [increased] urine and dung

patches. Urine and dung patches are of higher concern due to the concentrated nature of the discharge to small patches of land, where leaching is of high risk.

127. The proposed land use change, in the absence of targeted mitigation measures, will result in an increase in losses on the Tussock Creek sub-catchment and to some extent the Makarewa sub-catchment. It is important to highlight that these losses have not been present in the Tussock Creek catchment previously, as the existing dairy platform has not been part of this catchment to the scale it is now proposed to be. The East Block has a tributary to the Makarewa River beginning close to the southern boundary which would be subject to any increased losses that will occur as a result of the land use intensification. The intensification will also have effects on Tussock Creek if the artificial drainage networks drain to the Tussock Creek, however due to the location of these being unknown, it is uncertain to what extent this will occur.
128. The east block sits within the Gleyed physiographic zone with no variant. Soils in this zone are poorly drained and are typified as having subsurface artificial drainage, which provide the main contaminant pathway. The tile drains have not been mapped for this block therefore it is not known to what extent the transfer of contaminants will occur. However, tile drains are known to be present through much of Southland and are a characteristic of the Gleyed physiographic zone.
129. When considering the contaminant pathways on the east block, artificial drainage is of most concern. It should also be noted that nitrogen loss is of less concern when compared to phosphorous loss due to the denitrifying potential of the soils within this gleyed physiographic zone.
130. The Overseer budgets supplied in the application predict that nutrient losses will decrease as a result of the proposed activity. This is largely due to the “offsetting” of effects by assessing the nutrient losses across the landholding, within increases in some areas and decreases in others. As the landholding is expanding there is a larger area to spread nutrient loads over. As policy directs me to consider all effects, I do not consider it to be appropriate to accept that the spreading of effects over a larger land area or transporting effects to another location, landholding or catchment as an argument to infer an improvement in water quality. As discussed earlier, the east block sits entirely in the Tussock Creek catchment with surface water flow into the Makarewa River sub-catchment, whilst a majority of the existing platform sits in the Oreti River sub-catchment. At face value, this means that due to the change in land use occurring in the Tussock Creek sub-catchment, a decrease in modelled losses over the entire landholding does not take into account, nor allow for consideration of an increase in losses on the east block.
131. The application does not model the east block separately under the proposed scenario and as such no consideration can be made of what expected losses from that block are likely to be, however an overseer audit undertaken has calculated the losses from this block alone⁴. This allows for an assessment of the effects from the change in land use, particularly as that is the issue of most concern in regards to the proposal.

⁴ Overseer Audit – N Watt (Irricon) – 4 September 2019

Table 13: Modelled Nutrient Losses – East Block Only

	Current System	Proposed System
N loss/ha (kgN/ha/yr)	17	13
P loss (kgP/ha/yr)	0.7	0.7

132. The estimated losses calculated in Figure 13 do not include the 2018/19 season as modelled in December. If the 18/10 season was to be included in the above calculations it would show a slight increase in the modelled losses. After a phone call with the consultant for the applicant on 9 January 2020, the losses as modelled on the east block for the 2019/20 season are significantly low⁵. This was said to be because the applicant had under-utilized that block as the application was in process. This meant the block was simply used as a cut/carry block. I appreciate that the applicant did not use the block intensively over this period, and had it been used as the applicant intended or used as they had previously the losses would have been higher. As a result, including the 18/19 season would bring the average losses down to a level below what would typically be expected. I do not consider that is an issue, and consider the modelled losses in Figure 13 should be used when assessing the application as these demonstrate a more realistic picture of the modelled losses within the existing environment when compared to including the 18/19 season in the assessment, with regards to the east block only.
133. When considering the proposal as a whole, although localized effects are being spread out, the intensification and land use change results in greater effects overall. These effects are largely considered in the section on cumulative effects later in this report. It is important, however, to highlight that although effects are being offset, there is still a resulting increase in effects from the increased number of cows. This is especially prevalent when considering the effects from dung and urine patches, and the introduction of more concentrated nutrient loads as a result.
134. An improvement in water quality in one receiving waterbody cannot cancel out further degradation of another waterbody. The proposed activities must improve water quality in all receiving waterbodies. This approach has also been discussed in the Interim Decision from the Environment Court on the proposed plan, and is consistent with the findings within that decision. As such, the activities occurring on the east block require specific and targeted mitigations to ensure that there will be an improvement in water quality. The initial application provided no mitigations for the change in land use of the east block, however subsequent to notification, mitigations were provided which have been detailed earlier in the report. This has resulted in a modelled reduction in losses on the east block.
135. When considering the level of adverse effects, the mitigations proposed need to be assessed as to their level of effectiveness accompanied with the certainty that these mitigations are to be implemented. The importance of this is further discussed in section 7.2.1 further down in this report. However, to simply rely on the modelled reduction in losses, provides little to no certainty as to the significance of the adverse effects, as this is only an indicator of what losses may result from the proposed activities. The modelled loss does not inform what the actual adverse effects of the proposed activities will be.

⁵ Dr Freeman – Pers Comm – 9 January 2020

136. The adverse effects to be considered are the increased nutrients in water (including groundwater) which can lead to algal blooms and human and animal health issues. Furthermore, the loss contaminants such as sediment and microbes, result in excess sediment in water bodies affecting oxygen levels in aquatic ecosystems and have effects on turbidity and water clarity as well as effects on human and animal health from the increased pathogens.
137. As the initial application provided very little mitigation measures to avoid, remedy or mitigate the adverse effects, comparing the modeled losses at this stage with the modeled losses provided once targeted mitigation measures were proposed highlights the need for these mitigations to actually be implemented.

Table 14: Comparison of Modelling (Initial Application v Subsequent Modelling with Mitigations)

	Current System	Proposed System (without additional mitigations)	Proposed System (with additional mitigations)
N loss/ha (kgN/ha/yr)	51	51	44
P loss (kgP/ha/yr)	1.0	1.0	0.9

138. The initial modelling indicated that the losses from the current activity when compared to the proposed activity would remain unchanged on a per hectare basis. As such, it could be said that water quality would at a minimum be maintained and further degraded at worst. The application was subsequently amended to proffer additional mitigations, with most relating to the use of land on the east block. This resulted in a modelled reduction in losses. This shows that for the modelled reduction in losses to be achieved the proffered mitigations must be implemented. Furthermore, to conclude with confidence that the modelled reduction in losses and any inferred improvement in water quality is more than likely to occur, there needs to be certainty that the proffered mitigations are implemented. This is represented in the recommended conditions of consent that sets out the implementation of these targeted mitigations.
139. Requiring certainty around mitigations actually being implemented is also supported by Ms Watt in her Overseer audit (appended to this report). In the audit she states (my emphasis underlined):
- “It is vital that the Proposed changes (especially around changes to the East block with the 154kgN/ha of N fertiliser applied which less than all other blocks; the grazing of stock on this block which excludes cows from start May to end of August; relative productivity of East Block be 0.97 in all models and there is no effluent applied) to the future farm system are effectively measured and monitored as if these are not adhered to then the reductions in N loss proposed may not occur.”*
140. As overseer is just a model and cannot predict what happens to the losses beyond the root zone, to ensure the adverse effects of the proposed activities are avoided, remedied or mitigated, consideration of the effectiveness and appropriateness of the mitigations should be given more weight than simply relying on the modeled losses.

7.1.3.2 Effects on the Coastal Environment

141. The proposed activities have the potential to increase the contaminant loadings of the receiving environment including the New River Estuary. This is from the additional stock numbers and the intensification and land use change associated with the proposal. Without adequate mitigations to address the losses occurring from the land use change, additional contaminants will be lost from the property and into the receiving environment. As mentioned earlier, significant reductions of nutrients entering the estuary must be made to reverse the continuous deterioration of the estuary.
142. Increased nutrient loads into the estuary result in nuisance algal growth which is of significant concern for the New River estuary. Where excessive algal growth has been evident within the estuary, this has led to a corresponding decline in seagrass within the estuary. Increased sediment into the estuary has resulted in increased muddiness and has the potential to result in reducing the oxygen within the sediment within the estuary as well as suffocation of aquatic life living within the estuarine environment.
143. The application has shown a **modelled** reduction in nutrient losses and an **inferred** reduction in sediment and microbes lost beyond the root zone of the property into the receiving environment. The discussion regarding this is in Section 7.1.3.2 in this report is also relevant to this section, and as such is not repeated, however it is still important to highlight that the proposed mitigation measures and good management practices used to achieve these losses must be implemented to avoid, remedy or mitigate the effects on the coastal environment.

7.1.3.3 Effects within the Oxidizing Physiographic Zone

144. The western portion of the proposed platform lies within the oxidizing physiographic zone (*refer Figure 11*). The characteristics of this zone have been detailed in Section 6.4.1 and Section 6.4.2 of this report.



Figure 11: Map showing Oxidizing Zone

145. The area of concern relating to the proposed activities within the oxidizing zone is whether or not “contaminant losses will increase as a result of the proposed activity”⁶ in the Oxidizing Zone specifically.
146. The Overseer modelling shows a modelled reduction in losses across the entire platform but does not demonstrate whether or not losses will increase or decrease within the Oxidizing Zone. While I accept that blocking this area separately is not simple, a determination must be made, especially when it comes to assessing the proposed activities against the policies of the plans, specifically Policy 10 of the proposed Southland Water and Land Plan.
147. When considering the proposal, the area of the platform that is within the oxidizing zone is part of the existing dairy platform and will be subjected to the increase in stock numbers which could potentially lead to an increase in contaminant losses, largely from urine and dung patches. Factors that could mitigate this and lead to a decrease in contaminant losses, or at the least create a scenario whereby the losses remain neutral, include the change in discharge area and the increase in the size of the platform.
148. Taking into account the proposal, it could be concluded that the increase in area of the platform and the change in discharge area could result in a decrease in contaminant loss from the Oxidising Zone. However, with the information before me, such a conclusion cannot be

⁶ Policy 10 – proposed Southland Water and Land Plan.

made with certainty. Further information is required in order to determine that contaminant loss will, more likely than not, not increase from within the Oxidising Zone. Such a conclusion is important, particularly in regards to Policy 10 of the proposed Southland Water and Land Plan (refer Section 10.5.3).

7.1.3.4 Cumulative Effects

149. Section 104 of the Resource Management Act requires that the consent authority must have regard to, among other things, the *“actual and potential effects on the environment of allowing the activity”*. Section 3 of the Act defines “effect”, as, among other things (with my emphasis underlined), *“any cumulative effect which arises over time or in combination with other effects...regardless of the scale, intensity, duration, or frequency of the effect”*.
150. The application estimates that the contaminant loading from the site would amount to approximately 0.2% of the overall catchment loading. Although this may appear to be an insignificant or *“extremely small”* contribution, the Act requires that this, in combination with other effects must be considered, regardless of the scale or intensity. The application has not assessed the adverse effects of the applicant’s contribution to the overall contaminant loading on the receiving environment, but has rather stated that it simply highlights the importance of a catchment wide approach. Whilst such a statement maybe correct, it is superfluous and does not negate the need to assess the cumulative effects of the activity. I acknowledge this is difficult, especially where limits are yet to be set, however, although the contaminant loading may be small, this does not necessarily correlate to its significance. The receiving environment is significantly degraded and as such even a small contribution could tip the cumulative loading above the carrying capacity of the receiving environment or, for lack of a better metaphor, be *“the straw that breaks the camel’s back”*.
151. The main contaminant pathways for the property are overland flow and artificial drainage, therefore cumulative effects on the surface waterbodies and sensitive areas within the catchment is of most concern. The property is subject to significant artificial drainage networks, of which no map was supplied with the application. Nitrogen, phosphorus, sediment and microbial contaminants are of most concern to being lost into the receiving environment. Nitrogen poses a significant high risk when losses from urine and dung patches occur from the increased stock numbers.
152. The property sits across multiple catchments, of which all are a part of the wider Oreti catchment. All surface waterbodies on the property flow into smaller streams before discharging into the Oreti River. The Oreti River flows into the New River Estuary. As discussed earlier, surface waterbodies within the receiving environment are considered to be **degraded**. The estuary has been identified as being excessively muddy with elevated nutrient loads as well as the presence of nuisance macro-algal growths with significant reductions in aquatic life as a result.
153. Contaminant losses to surface waterbodies can have ecological health implications, result in nuisance plant growth and lead to eutrophication. It can also lead to shellfish in the estuary becoming unfit for human consumption Diffuse, non-point discharges from agricultural land use is a major contributor to nutrient loadings in Southland. It is difficult to quantify the contaminant load from a property and determine how much the site will contribute to the cumulative effects within the receiving environment.

154. The introduction of the East Block into the landholding may result in cumulative effects on the immediate receiving environment within Tussock Creek catchment, and to some extent the Makarewa River. The proposed activities have not previously occurred on that block, and therefore the previous effects from previous land uses would have contributed smaller nutrient loads to the cumulative loads on the sub-catchment, in the absence of targeted mitigation measures. The cumulative load on the sub-catchment(s) could now potentially increase as a result of the activity, especially in the short-term and in the absence of targeted mitigations measures being implemented. As this block has not been modelled in Overseer, what that loading will be is not fully certain, although this has been estimated.

7.2 Other Matters

7.2.1 Overseer Nutrient Modelling

155. For clarity, the overseer models provided have been audited on behalf of Council by a Certified Nutrient Management Advisor. The scope of this audit was limited to determining the robustness of the modelling. It has not been assessed against what has been applied for in any depth, nor has it assessed if the inputs are correct (other than assuming it all forms a viable farming system) and are actually what has been lawfully been occurring nor did it determine if all overseer assumed good management practices had been implemented on the property for the modeled periods.
156. The final audit, undertaken at the applicant's request, determined the modelling was of **high** robustness⁷. For completeness, **I raise no concerns as to the modelling itself.**
157. Modelling nutrient losses through Overseer is a helpful tool that aims to quantify the nutrient losses from a farming activity. A model, however, comes with a level of uncertainties, especially when modelling for a proposed scenario, as inherently the inputs are based on assumptions and proposed inputs. Overseer analyses the flow of nutrients through a farm and produces nutrient budgets for seven key nutrients including nitrogen and phosphorous but not contaminants.
158. To achieve the reduction in losses demonstrated, the applicant **must be able to operate in accordance with the inputs and the relevant good management practices and mitigations proposed.** This is where the issues lie, with specific regard to certainty around the inputs and proffered mitigations to achieve those losses, can in fact, and will be implemented in reality. Dr Freeman also states in the application that (with my emphasis underlined), *“Overseer modelling should be considered in conjunction with the specific farm systems and mitigation measures that are proposed to provide a reasonable level of certainty about nutrient loss estimates”*. I agree with such a statement, as without the “specific farm systems and mitigations measures that are proposed”, there would be no certainty that any modelled loss can be achieved in reality.
159. Although Overseer quantifies the losses, this does not correlate to what the actual environmental effect of those losses will be, nor does it actually identify what those effects will

⁷ During the December site visit, the applicant requested that subsequent overseer modelling provided be audited, as well as changes to the initial modelling to address the concerns raised in Ms Watt's audits. As such, this was audited by Ms Watt as requested. This audit came back and determined the robustness of the modelling to be **high**. This audit is also appended to this report.

be and the corresponding significance of those effects⁸. Overseer is unable to show what happens to the losses beyond the root zone, it simply indicates what will be lost beyond the root zone.

160. Overseer assumes that good management practices are being undertaken on-farm. As such, for the losses to be representative, all overseer assumed good management practices must be implemented. If the assumed good management practices are not being implemented, then lesser weight must be placed on what the model is showing as losses will be underestimated.
161. Due to Overseer assuming good management practice, mitigation measures that go beyond this must be employed in order to mitigate the effects of the proposed losses. The intent of Overseer is to provide outputs from farm-level nutrient models that form a basis in which nutrient stress on waterbodies can be investigated. As such, the modelled losses are a starting point to investigate measures that need to be implemented to avoid, remedy or mitigate the adverse effects of the proposed activity. However, a model is a simplification of reality.

“Overseer cannot estimate the environmental impacts of these nutrient losses, because these often occur far beyond the farm boundary in distant receiving waterbodies”⁹.

162. The Overseer model assumes average and constant management and site characteristics which allows for the nutrient flows on farm to be compared. In a farming situation this is, however, problematic for the fluid nature of a farming activity, especially when land use is changing and/or intensifying, which will occur under the proposed activities should consent be granted.
163. As Overseer uses annual averages, it also does not account for climate variation such as overly wet, or in contrast overly dry, years. Overseer provides an overarching view at block (and farm) scale, and does not account for the variation of landscape, soil and topography types within that block (and/or farm). This simplifies the complex processes that can be occurring within this block. Uncertainty within the model itself is also unavoidable. On average, this uncertainty for nutrient losses can equate to up to 30% over and above what is calculated¹⁰. I do accept however, this uncertainty is essentially *“balanced out”* as the uncertainty of the model will be the same for the current and proposed modelling, as such in that sense, the model is reliable. I do consider however, this is still an important consideration.
164. One important point to note is Overseer cannot *“accurately model situations when farm management is changing, which happens, for example, when a land use is changing”¹¹*. As such, the model does not accurately take into account the contaminant loss resulting from the land use change itself.
165. When considering Overseer, there are a number of uncertainties with the model itself, however for the purposes of considering the modelled losses in relation to the application, the uncertainties do not arise from the model in itself but in fact arise from the reliability of the

⁸ Overseer and regulatory oversight; Models, uncertainty and cleaning up our waterways, Parliamentary Commissioner for the Environment (December 2018).

⁹ Overseer and regulatory oversight; Models, uncertainty and cleaning up our waterways, Parliamentary Commissioner for the Environment (December 2018), page 29.

¹⁰ Overseer and regulatory oversight; Models, uncertainty and cleaning up our waterways, Parliamentary Commissioner for the Environment (December 2018).

¹¹ Overseer and regulatory oversight; Models, uncertainty and cleaning up our waterways, Parliamentary Commissioner for the Environment (December 2018).

inputs such as whether or not all assumed good management practices are and have been implemented and the certainty that proposed mitigations and farming practices, as applied for, will be undertaken in accordance with the application.

166. When considering the effects of the activity, the only way the proposed reduction in losses are going to be achieved with any level of certainty is that the mitigations proffered are implemented and the farming activity is undertaken in accordance with the application as proposed by the applicant.
167. That is why Overseer should be used as an indicator only and should only form the basis of any assessment on environmental effects of the proposed activities. Showing a modelled reduction in losses does not necessarily correlate to a reduction in adverse effects, nor does it mean that the adverse effects of the proposed activity should be considered acceptable. The proposed activities must result in an improvement in water quality as per the policy and rule framework and the intent of the proposed Southland Water and Land Plan. In this sense, more weight should be given to the proposed mitigations rather than the modelled reduction in losses to determine the certainty as to whether or not an improvement in water quality can be achieved in reality.
168. If the proposed mitigations in the application are not implemented as applied for, within any specified timeframes, then there is no certainty that the modelled reduction in losses will occur in reality. As such, more weight should be placed on the assessment and consideration as to the effectiveness and appropriateness of the mitigations proffered and the overseer should be used as an indicator of what the likely contribution of contaminants from the proposed site to the receiving environment, including the cumulative contaminant loading will be.

7.2.2 Phosphorus Loss as a proxy

169. Contaminants such as sediment and microbes are not specifically modelled, nor are they estimated within Overseer. The application has used phosphorous loss as a proxy to demonstrate the level of sediment and microbial loss. Whilst there is no [cost effective] method for modelling these contaminant losses, using phosphorous loss as a proxy is of concern.
170. Sediment and microbes have similar contaminant pathways as phosphorus with the key pathway being overland flow driven by rainfall. The contaminants can also be lost during dry periods through strong winds. Fine sediment typically carries other contaminants such as phosphorous and microbes as these bind to the soil particles. Due to the fact that phosphorus binds to sediment and have similar pathways, the application concludes that all are lost at the same rate, however I have not seen evidence to support this.
171. It should also be noted, that Overseer itself has issues with modelling phosphorous and as such the applicant has had modelling done outside of Overseer to model the phosphorous loss. To then rely on the modelled loss of phosphorous for other contaminants, in my opinion, does not provide confidence that sediment and microbes are lost at the same rate and in the same quantity and as such it is inappropriate to rely on. Overseer is used as an estimate for

modelling nutrient losses and there is no reference to using these nutrient estimates as proxy estimates for other contaminant losses¹².

7.2.3 Mitigations and Good Management Practices

172. The applicant has proposed a number of good management practices and mitigations. For the purposes of the application a distinction must be made between the two. This is because good management practices are required as a bare minimum under the rules and policy framework of the proposed Southland Water and Land Plan. Basically, the applicant is expected that these practices are implemented, and in many cases, would be expected to already be implementing. It is also important to distinguish between the two because Overseer assumes some good management practices are in place on farm and if they were not in place over the period of the modeling, the modeling could not be relied on. Mitigations are considered to be “going above and beyond” good management practice. These mitigate the adverse effects of the proposed activities, and in some cases provide the certainty that the modelled reduction in losses can be achieved in reality.
173. The applicant was asked to show which good management practices were already implemented on the property. Table 15 has been taken from their response.

¹² Addendum Evidence of Nicole Phillips – Applications for Resource Consent by Woldwide One Limited and Woldwide Two Limited and Woldwide Four Limited and Woldwide Five Limited, 19 November 2019

Table 15: Good Management Practices (taken from application)

Good Management Practice	Rewarded in Overseer?	Effectiveness (range)	Implementation Timeframe
Fencing and planting of streams	Yes	52 – 61 %	Done on current platform. Not required on new block
Appropriate vegetated buffers from water ways	Not assessed	38 – 58 %	Done on current platform. Proposed increase in buffer area on the lane to the south of the dairy shed prior to the exercise of the consent. Not required on new block
Avoid working CSAs and their margins (leave vegetated areas around CSAs)	No	38 – 58%	Done on current platform and will be implemented in an ongoing manner going forward on the new block also
Providing sufficient effluent storage to enable deferred application	Partially	12 – 17 %	Done
Minimising run-off from tracks, lanes and stream crossings using cut-offs and shaping	No	Up to 30%	Done on current platform and will be implemented in an ongoing manner going forward on the new block also. Overall improvement to barge boards and cutoffs proposed prior to the exercise of the consent.
Using low rate effluent application	Yes	25 -32 %	Done
Spread fertiliser evenly and precisely	Yes	Unknown	Done and will be implemented going forward on the new block from first exercise of consent

Good Management Practice	Rewarded in Overseer?	Effectiveness (range)	Implementation Timeframe
Avoiding applying fertiliser directly to streams	No	Unknown	Done. Not applicable to new block
Targeting optimum Olsen P	Yes	Unknown	Done and will be implemented going forward on new block. Currently targeting an Olsen P of 32.
Restricted grazing	Unlikely	42 – 70 %	Done on current platform and will be implemented going forward on the new block
Shifting break fences strategically	No	86 % ³	Done on current block and will be implemented going forward on new block.

174. One comment regarding the above figure, there have been changes to the application since this was provided and some of these have changed, such as a proposed reduction in Olsen P to 30. As shown, many of the good management practices are said to have been implemented and there is proposed improvement to their effectiveness. In regards to reducing Olsen P to a hard target of 30 as is applied, setting a hard target is unachievable. As such, unless a range is proposed, the effectiveness of this is uncertain and how the mitigation will be achieved in reality is ambiguous.

7.3 Adverse Effects that have been disregarded

7.3.1 Permitted Baseline

175. Section 104(2) enables a consent authority to disregard the effects of proposed activities where those effects would be the same as the effects of a permitted activity. This is referred to in case law as the permitted baseline.
176. Disregarding effects forming part of the permitted baseline is a discretionary consideration to be had by the decision maker.
177. The permitted baseline assessment essentially enables a consent authority to disregard the effects of proposed activities where those effects would be the same as those of non-fanciful activities permitted on the site.
178. The permitted baseline provides the decision maker with a means of excluding adverse effects of that activity which would otherwise result from the activity.

7.3.2 Policy 39 of the Proposed Southland Water and Land Plan

179. The permitted baseline provides the decision maker with a means of excluding adverse effects of that activity which would otherwise result from the activity.
180. Policy 39 of the proposed Southland Water and Land Plan states:

“When considering any application for resource consent for the use of land for a farming activity, the Southland Regional Council should consider all adverse effects of the proposed activity on water quality, whether or not this Plan permits an activity with that effect”.

181. In my assessment of the proposed activities I have considered all effects on water quality even where a rule permits an activity with that effect. This is consistent with the policy of the Plan and aims to ensure that the policy direction of the Plan is achieved.
182. As disregarding the permitted baseline is a discretionary consideration, a decision maker can decide to do so, or can opt to not exclude the permitted baseline. The wording of the policy does not remove this discretion from a decision maker.

7.3.3 Effects that must be Disregarded (Section 104(2))

183. To ensure the assessment of effects is adequate and also to ensure it is consistent with the regulatory framework, including Policy 39 of the proposed Southland Water and Land Plan, **all effects** related to the use of land for farming and the associated activities undertaken as part

of the entire farming operation have been considered. Specific regard has been had to those adverse effects that will or will potentially affect water quality. As such, **no effects have been disregarded.**

7.4 Effects Conclusion

184. The applicants have applied to increase cow numbers and the size of their dairy platform. Alongside this the applicants have proposed a number of good management practices and mitigations. The proposed good management practices are expected to be implemented and operated in accordance with as a minimum requirement. This is clearly identified throughout the proposed Southland Water and Land Plan in several policies and rules, including Rule 20, of which the land use consent for farming is required.
185. When looking through the lens of the policies and objectives of the regional plans, the adverse effects arising from the proposed activity could potentially be unacceptable. This is especially relevant with regard to the cumulative effects and localized effects, particularly from the proposed intensification and land use change, specifically with regard to the East Block.
186. For the adverse effects from the proposed activities to be considered acceptable, the modelled reduction in losses must, with a high level of certainty, be able to be achieved in reality. This can only be done if the targeted mitigations are implemented as proposed by the application, and the good management practices, both proposed and assumed by Overseer, are operated in accordance with. This must then correlate to an improvement in water quality.

8.0 POSITIVE EFFECTS ASSESSMENT

187. Section 104 requires that the consent authority must also consider any positive effect of the proposed activities.
188. The proposed activities provide for the health and wellbeing of the applicants by allowing them to continue operating their business. The dairy farm is already established and has had been subject to significant investment. The purchase of the new block also required a level of investment on the applicant's behalf. The proposed activity will allow the applicant to utilize the additional block of land that has been purchased, by authorizing its inclusion into the existing dairy platform.
189. Provided the modelled reduction losses are achieved in reality, this will lead to a decrease in the contaminant loadings of the receiving environment. The application states that an improvement in water quality will be achieved, of which this will result in a positive effect.
190. Whilst there are positive effects on the environment of the proposed activity, the activity would have to occur as proposed for these to be able to be achieved in reality, and the proposed mitigations must be implemented. Without certainty that this is going to happen, it cannot be concluded with certainty that the positive effects on the environment will result.

9.0 COMPLIANCE HISTORY

191. The applicant has excellent compliance with Discharge Permit AUTH-301043, with no non-compliances recorded.

192. The applicant has compliance issues with Water Permit AUTH-301044, having received a number of non-compliance grades. These are largely technical in nature and are detailed in Table 16.

Table 15: Water Permit AUTH-301044 Compliance History

Date	Grade	Comment
5 June 2013	Non- Compliance	Monthly water take data (May 2012 to April 2013) submitted late.
3 September 2014	Non- Compliance	Monthly water take data submitted late.
8 September 2014	Non- Compliance	Over abstraction.
15 July 2017	Non- Compliance	Monthly water take data submitted late.
28 June 2016	Non- Compliance	Monthly water take data submitted late.

10.0 PROCEDURAL MATTERS

10.1 Regional Planning Framework

193. Environment Southland is currently operating under three Regional Plans; the Regional Effluent Land Application Plan for Southland, the Regional Water Plan and the proposed Southland Water and Land Plan (Decisions Version). The proposed activities require Resource Consent under the Regional Water Plan and the proposed Southland Water and Land Plan.

Table 17: Consents Sought and Classification – Regional Water Plan

Consent Type	Purpose	Activity Status
Discharge Permit	To discharge agricultural effluent to land where contaminants may enter water from up to 700 cows.	Restricted Discretionary Activity under Rule 50(d)
Water Permit	To take and use up to 84,000 litres of groundwater per day from Bore E46/1067 and Bore E46/1089 for stock drinking water and dairy shed purposes.	Discretionary Activity under Rule 23(d)

Table 18: Consents Sought and Classification – proposed Southland Water and Land Plan (Decisions Version)

Consent Type	Purpose	Activity Status
Land Use Consent	To use land for farming including an increase in cow numbers beyond what was authorised as at 3 June 2016 and an increase in the size of the dairy platform above what was authorised as at 3 June 2016.	Discretionary Activity under Rule 20(e)
Discharge Permit	To discharge agricultural effluent to land where contaminants may enter water from up to 700 cows.	Discretionary Activity under Rule 35(c)

194. An application for Resource Consents was lodged with Environment Southland in accordance with these requirements.

195. Subsequent to the application being received by Council, a request was made to the applicant to determine if the use of land for the use of feed pads and the use of land for the use and maintenance of existing agricultural effluent storage facilities were a permitted activity or required resource consent. The applicant provided information to demonstrate that resource consent was not required for those activities and the permitted activity criteria of the relevant rules was met (*refer Table 19*).

Table 19: Permitted Activity Rules – proposed Southland Water and Land Plan (Decisions Version)

Activity Type	Purpose	Activity Status
Land Use	To use land for a feed pad/lot	Permitted Activity under Rule 35A(a)
Land Use	The use of land for the maintenance and use of an existing agricultural effluent storage facility that was authorised prior to Rule 32D taking legal effect, and any incidental discharge directly onto or into land from that storage facility which is within the normal operating parameters of a leak detection system or the pond drop test criteria set out in Appendix P.	Permitted Activity under Rule 32D(a)

196. When considering the application, using the highest activity status consent, the application is considered to be a **Discretionary Activity**.

197. 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.

10.2 Further Information Requests and Additional Information Provided

198. On 2 November 2018 and 18 January 2019, requests for additional application was made under s91 of the Act for an application for resource consent. As discussed above, it was determined the activities met the permitted activity criteria and an additional application for resource consent was not required.

199. On 19 November 2018, 18 January 2019 and 7 February 2019, requests for further information under s92(1) of the Act were made for further information. The responses have been appended to this report.
200. On Friday 2 August 2019, the applicant advised they were making changes to the application. Once the changes to the application were received, another request for further information under s92(1) was issued on 25 August 2019, requesting that the following be provided:
- an updated Assessment of Environmental Effects that corresponds with the proposed activities as it stands subsequent to the changes that have been made;
 - an updated Management Plan that corresponds with the proposed activities; and
 - access to the OverseerFM files that relate to the proposed activities subsequent to the changes.
201. This information was received and is appended to this report. This information superseded the initial application as lodged in order to assess the proposed activities taking into account the changes made.
202. On 4 December 2019, Dr Freeman issued a memorandum to the Panel which requested the opportunity to provided additional Overseer Modelling for the 2018/2019 season which would be provided by 13 December 2019. This information was provided and is attached to this report.
203. At a site visit on 17 December, it was requested, on behalf of the applicant, that Council have the additional modelling and some clarifications of previous modelling be audited on behalf of Council. As requested, an audit was undertaken and this is attached to this report also.

10.3 Notification and Submissions

204. The application was publicly notified on 26 July 2019 under s95A(2). The reasons for public notification were that it was considered the adverse effects of the activity were more than minor, and in the absence of targeted mitigations, particularly in regard to the east block, there was a probability of the activities giving rise to those effects.
205. Two submissions were received, and these have been summarised below (*refer Table 20*).

Table 20: Summary of Submissions Received

Submitter	Response	Reasons	Outcome Wanted
Public Health South on behalf of Southern District Health Board	Neutral	To promote the reduction of adverse environmental effects on the health of people and communities, and to improve, promote and protect their health pursuant to the New Zealand Public Health and Disability Act 2000 and the Health Act 1956. This application has the potential to create	The decision sought in the event that consents are granted, is the imposition of adequate conditions related to the mitigation of potential human health risks

Submitter	Response	Reasons	Outcome Wanted
		adverse effects from contamination of ground water on the health of people and communities	
Ministry of Education	Oppose	Groundwater quality in the area/catchment is indicative of moderate to high land use impacts. Testing of groundwater sample collected from the school bore has been recently analysed and the School water supply seems not to be affected at present from the surrounding land use. However, the application does not appear to address comprehensively the potential adverse effects arising from the increased intensification. Furthermore, the application does not include specific measures to avoid and or mitigate potential effects from this proposal for example regular monitoring of groundwater quality on or down gradient of the applicant's site.	The Ministry of Education seeks the application is refused unless the applicant establishes that the water quality of Lochiel School will not be adversely affected or likely to be adversely affected by the discharge of contaminants from the proposed operation. This could include appropriate monitoring of the applicant's discharges in which the location, proposed depth and frequency of sampling and testing and the proposed trigger levels are specified.

10.4 Statutory Considerations

206. 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 Resource Management Act, 1991, states:

“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:*
 - iv. a regional or proposed regional policy statement:*
 - v. a plan or proposed plan; and**
- c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.”*

207. Those matters which are relevant will be discussed in the sections below. The assessment of the actual and potential effects and the description of the receiving environment have been discussed previously in this report and will not be repeated below.
208. Sections 108 and 220 provide for consent to be granted subject to conditions and sets out the kind of conditions that may be imposed.

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

209. Council is currently operating under three Regional Plans – the Regional Effluent Land Application Plan (RELAP), Regional Water Plan (RWP) and the proposed Southland Water and Land Plan (proposed Southland Water and Land Plan). The RELAP does not apply to this application.
210. 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 plan or any proposed plan. The relevant provisions of both plans are detailed below and are considered in turn. A discussion on weighting is had further down in this report.
211. It is important to mention at this stage of the report that on 20 December 2019, the Environment Court released an ‘Interim Decision of the Environment Court’ in relation to appeals on the proposed Southland Water and Land Plan (*attached*). This decision and its relevance to this application will be discussed further down in this report, as will the weight, if any, it should be given in regard to making a determination of the application.
212. The objectives and policies of the Regional Water Plan and the proposed Southland Water and Land Plan that are relevant to this application have been grouped according to topic, where possible.

10.5.1 Proposed Southland Water and Land Plan – Significant Policies

213. The policies below, in my opinion, are of the most significance in relation to the proposed activities. Therefore I have separated them out from the groupings below in order to highlight their significance.
214. **Policy 15B – Improve Water Quality where standards are not met** (my emphasis underlined)

Where existing water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines, improve water quality including by:

1. *avoiding where practicable and otherwise remedying or mitigating any adverse effects of new discharges on water quality or sediment quality that would exacerbate the exceedance of those standards or sediment guidelines beyond the zone of reasonable mixing; and*
2. *requiring any application for replacement of an expiring discharge permit to demonstrate how and by when adverse effects will be avoided where practicable and otherwise remedied or mitigated, so that beyond the zone of reasonable mixing water quality will be improved to assist with meeting those standards or sediment guidelines.*

215. It is important here to make a determination as to whether or not water quality standards are met, as this dictates whether or not the losses from the proposed activity are at such a scale that water quality is maintained, or whether the losses need to be mitigated to an extent where water quality is improved. The quality of the water in receiving environment, for most parameters, exceeds the guidelines defined in the Plan. Therefore water quality needs to be improved to meet the guidelines.
216. The applicants have offered mitigations in an attempt to mitigate the adverse effects. It is hard to quantify the effectiveness of these mitigations and when considering cumulative effects, it is difficult to determine with certainty whether or not water quality will actually improve as a result of the proposed activities occurring. The applicants' nutrient budget does demonstrate that losses over the entire landholding will decrease. It has also been estimated that, with the targeted mitigations, there will be a decrease in contaminant losses on the East block.
217. Provided, the mitigations and good management practices are implemented and the modeled losses can be achieved in reality, the proposed activities are consistent with the above policy as it does demonstrate how and when adverse effects will be avoided, but the effectiveness of such actions is uncertain. This is largely when considering the overall farming activities as opposed to just the discharge of effluent.
218. **Policy 16 – Farming activities that affect water quality** (my emphasis underlined)
1. *Minimising the adverse environmental effects (including on the quality of water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes, and groundwater) from farming activities by:*
 - a) *discouraging the establishment of new dairy farming of cows or new intensive winter grazing activities in close proximity to Regionally Significant Wetlands and Sensitive Waterbodies identified in Appendix A; and*
 - b) *ensuring that, in the interim period prior to the development of freshwater objectives under Freshwater Management Unit processes, applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities will generally not be granted where:*
 - i. *the adverse effects, including cumulatively, on the quality of groundwater, or water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes cannot be avoided or mitigated; or*
 - ii. *existing water quality is already degraded to the point of being overallocated; or*
 - iii. *water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines; and*
 - c) *ensuring that, after the development of freshwater objectives under Freshwater Management Unit processes, applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities:*
 - i. *will generally not be granted where freshwater objectives are not being met; and*

especially when considering Te Mana o Te Wai. As the proposal includes targeted mitigations, I do not consider that effects are being offset in regards to this proposal.

222. The proposed activities are fully consistent with point 2 as the proposal includes a Farm Environmental Management Plan and critical source areas have been identified.
223. The proposed activities are inconsistent with Policy 16. This is due to the state of the receiving environment and the water quality exceeding standards.

10.5.2 Regional Water Plan

224. The following policies from the Regional Water Plan are relevant to this proposal. They have been grouped according to topic.

225. **Water Quality**

- Policy 1** *Surface water body classes and apply water quality standards established under any WCO.*
This policy seeks to recognize the different characteristics of certain water body classes when managing discharges to ensure the management of various waterbodies depending on their existing water quality.
- Policy 3** *Water quality and zone of reasonable mixing.*
This policy directs that there is no reduction in water quality, whereby no discharges to surface waterbodies that result in a reduction in water quality beyond the zone of reasonable mixing are allowed.
- Policy 4** *Surface waterbodies outside of Natural State Waters.*
This policy seeks to ensure that for surface waterbodies of Natural State Waters, point and non-point source discharges are managed to meet or exceed water quality standards.
- Policy 7** *Prefer discharges to land over discharges to water.*
This policy prefers discharges to land over a discharge directly to water.
- Policy 13** *Avoid the point source discharge of raw sewage, foul water and untreated agricultural effluent to water.*
This policy directs the point source discharge of untreated effluent to water, of which there is none proposed under this activity.
- Policy 13A** *Transitional policy relating to the establishment of new dairy farms.*
This policy asks that it is recognised that the establishment of new dairy farms poses a risk to water quality.
- 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.*
This policy seeks to avoid, remedy or mitigate the adverse effects arising from point and non-point source discharges to ensure that there is no deterioration in groundwater quality.

226. The above policies all seek to avoid discharges to water, of which this is not proposed in the application. They also seek to recognize the different characteristics of the waterbodies and ensure that there is no reduction in water quality.
227. The proposal states that the operating is largely undertaken in accordance with good management practice, and have proposed a number of mitigation measures to ensure there is no reduction in water quality. It should be noted that the surface waterbodies in the receiving environment are degraded, and there should be no further degradation as a result of the proposed activity occurring.
228. It is noted that this is not a “new” dairy farm, but rather an expanded dairy farm. I believe Policy 13A is relevant and also provides an important consideration, as the expansion of the current dairy farming activity will also pose a risk to water quality. There are a number of factors to consider under this policy such as the need for resource consent to manage the risk posed, also the identification of the risk and the mitigations provided to address the risk as well as the timeframes for when these measures will be implemented. The application includes a description of the mitigations and good management practices and has identified which have already been implemented.
229. When considering the landholding as a whole, contaminant losses are modelled to decrease from the proposed activity when compared to the current activity, however, isolated losses, such as those from the East Block, will increase the risk of a reduction in the water quality within the Tussock Creek and Makarewa River in the absence of targeted mitigations. The proposal has identified a number of targeted mitigations on the East Block which show a modelled reduction in losses. These mitigations also address the adverse effects from the land use change on that block. On a wider scale, addition of the contaminant loadings from the proposed activity to the cumulative loading of the relevant catchments, in particular the Oreti River parent catchment are also at risk of causing a reduction in water quality.
230. The soil types have a risk of nutrient leaching, particularly within the western portion of the proposed platform. Whilst the eastern portion of the proposed platform, including the east block have denitrifying potential.
231. Overall, the application is generally consistent with the above policies. There are some concerns relating to the water quality of surface waterbodies, especially when considering non-point source discharges and their contribution to the catchment contaminant loadings when taking into account cumulative effects.

232. **Water Quantity**

Policy 21 *Reasonable use*

Policy 22 *Installation of water measuring devices.*

Policy 23 *Review conditions on all new water permits.*

Policy 28 *To manage groundwater abstraction to avoid significant adverse effects.*

Policy 29 *Stream depletion effects*

Policy 30 *Staged management approach to allocating groundwater and recognise and assess the different characteristics of aquifer types.*

233. The application is not from an over-allocated groundwater zone and the proposed groundwater take will not result in any over-allocation. Consent conditions will require that the water take is metered, and abstraction records provided to Council. The water take is also in line with reasonable and efficient use of water and is for less than 2 l/s therefore stream depletion effects are not expected.

234. The proposed activities are consistent with the above policies.

235. **Land and Soils**

Policy 31A *Match the level of management that is required for discharges of contaminants onto or into land to the level of environmental risk.*

This policy seeks to match the level of management that is required for the discharge of effluent to the level of environmental risk.

Policy 31C *Manage discharges of contaminants onto or into land to avoid, remedy or mitigate the listed (refer to full policy) adverse effects.*

This policy seeks to manage the discharge of contaminants onto or into land to mitigate adverse effects on landscape features such as soil quality and amenity values.

Policy 31D *Encourage the beneficial reuse of materials and promote discharges of materials onto or into land.*

This policy encourages the beneficial reuse of materials and promote discharges onto or into land to maximise the reuse of the nutrients contained in the discharge.

236. When assessing the application against the above policies, there are a number of risk factors to consider. The applicants have provided application rates and depths that do match the level of risk for all risk categories present, including sloping land. Council provides standardized buffer distances from certain risk locations such as waterways which the applicants have stated they will abide by, as well as matching the management of effluent to the level of risk aids in mitigating adverse effects. The size of the proposed discharge area is sufficiently sized to ensure that the effluent can act as a fertiliser, with the nutrients being available for uptake by vegetation cover, ensuring soil health and sufficient pasture production.

237. There is the management of contaminants appropriate for the level of risk as well as the reuse of the nutrients within the discharges. Provided the recommended conditions of consent, accompanied with the proposed discharge methods are abided by, the proposed activities will be consistent with the above policies.

238. Overall, the application is consistent with the above policies.

239. Agricultural Effluent

Policy 41 *Adverse effects of agricultural effluent ponds.*
 This policy seeks to avoid adverse effects resulting from agricultural effluent ponds.

Policy 42 *Avoid adverse effects on water quality and other adverse effects associated with the application of FDE to land by matching FDE management to receiving environment risk.*
 This policy seeks to avoid adverse effects on water quality and other adverse environmental effects associated with the discharge of effluent.

240. The applicants' effluent pond was suitably designed and constructed with a resource consent. The pond is also suitably located in terms of buffer distances. The pond is synthetically lined with a leak detection system beneath the structure. The leak detection showed no signs of leakage at the time the application was submitted as stated in the application.

241. The applicants have proposed to match the management of effluent to the level of risk aids in mitigating adverse effects. The size of the proposed discharge area is sufficiently sized to ensure that the effluent can act as a fertiliser, with the nutrients being available for uptake by vegetation cover, ensuring soil health and sufficient pasture production.

242. I do not consider that the proposed activities are contrary to the above policies, and determine that the activity is generally consistent with the above policies. However, the recommended conditions of consent will ensure the proposed activities are consistent with the above policies.

10.5.3 Proposed Southland Water and Land Plan

243. The following policies from the proposed Southland Water and Land Plan are relevant to this proposal. They have been grouped according to topic.

244. It is important to note that the Environment Court released an interim decision on the appeals on this plan on 20 December 2019 which may affect or/and alter some of the policies below. This will be addressed in Section 10.5.3.1 of this report. For the purposes of this section, the policies are written and assessed as they are in the proposed Southland Water and Land Plan (Decisions Version) 2018.

245. Ngai Tahu

Policy 1 *Enable Papatipua Runanga to effectively undertake their Kaitiaki responsibilities in freshwater and land management through the methods listed in the Policy.*

Policy 2 *Take into account Iwi Management Plans.*

Policy 3 *To manage activities that adversely affect Taonga species identified in Appendix M.*

246. Te Tangi a Tauira, and the views of Te Runanga o Ngai Tahu and Te Ao Marama Inc have been taken into account in assessing the application. Te Ao Marama Inc has not been directly involved in the application, but has been involved in the proposed Southland Water and Land Plan consultation phase and were notified on the application, with no submission received.

247. **Physiographic Zones**

Policy 6

*In the **Gleyed, Bedrock/Hill Country and Lignite-Marine Terraces** physiographic zones, 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 overland flow and artificial drainage where relevant;*
2. *having particular regard to adverse effects on water quality from contaminants transported via deep drainage, and overland flow and artificial drainage where relevant when assessing resource consent applications and preparing or considering Farm Environmental Management Plans; and*
3. *decision makers generally not granting resource consents for additional dairy farming of cows or additional intensive winter grazing where contaminant losses will increase as a result of the proposed activity.*

248. The physiographic zones relate to the classification of land and risks to water quality based on factors including soil types, landscape classification, climate, and topography and water chemistry. These have been developed to better understand Southland's water and why it is better quality in some areas than others.

249. When considering the proposal against the physiographic zone policies, the wording of these policies directs that the proposed activities should not be considered as a whole over the entire landholding, but rather be considered on a zone by zone basis. This is particularly important when assessing the proposed activities against policy 10.

250. Policy 6 encompasses managing the risks associated within the gleyed physiographic zone which lie on the eastern portion of the proposed platform. In assessing the actual and potential effects of the discharges to land and those discharges which may affect water quality, and the adverse effects from the land use, the applicants have, in part, addressed the factors listed in the above policies and the factors which contribute to the classification of the land into certain zones.

251. The applicants have implemented good management practices and have proposed a wide range of further good management practices and mitigations to mitigate adverse effects. The applicants have also had regard to the contaminant pathways, in particularly artificial drainage and overland flow associated with the site and have proposed a Farm Environmental Management Plan, which has been considered.
252. The application and the proposed activities are generally consistent with the policy 6 and have given regard to the direction of this policy. The effectiveness, however, of the good management practices and mitigation measures to avoid, remedy or mitigate adverse effects on water quality is hard to quantify. It should be noted that this policy requires the implementation of good management practices (as does Rule 20 of the proposed Plan) as a minimum requirement, as such when assessing the proposal more weight should be given to the proposed implementation of mitigation measures.
253. The western portion of the property lies within the Oxidizing Physiographic Zone, as such Policy 10 is also relevant to the proposal. This policy is more directive due to the increased risk of contaminant loss on within this zone as a result of the contaminant pathways present. Points 1 and 2 of Policy 10 are the same as those under Policy 6, and as mentioned above, the applicant has implemented good management practices and proposes to continue operating in accordance with these as well as additional targeted mitigation measures.
254. Where policy 10 has additional direction is point 3 of the policy. This states (with my emphasis underlined);
- “In the Oxidising physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by... decision makers generally not granting resource consents for additional dairy farming of cows or additional intensive winter grazing where contaminant losses will increase as a result of the proposed activity.”*
255. When considering this, the proposed activities to be undertaken, specifically the contaminant losses from those activities, within the oxidizing zone must be considered and assessed on an isolated basis within the oxidizing zone. It should be noted that this is risk based assessment rather than an effects based assessment. The overseer modelling does not isolate at a block level the area of the platform within the Oxidizing Zone, nor has a qualitative assessment been provided, therefore it is difficult to determine whether or not the contaminant losses would likely increase as a result of the proposed activities. I appreciate that modelling this within overseer is not simple. This has been discussed previously in Section 7.1.3.3 of this report.
256. The proposed activities are consistent with Policy 6. When considering Policy 10 the proposal is consistent with point 1 and 2 and is not contrary to the policy. However, there is some uncertainty as to whether or not the contaminant losses from the proposal will increase in the Oxidizing Zone and as such whether or not the proposal is consistent with point 3 of Policy 10.

257. **Water Quality**

Policy 13

Recognise that the use and development of Southland’s land and water resources, including for primary production, enables people and communities to provide for their social, economic and cultural wellbeing and manage land use activities and discharges (point source and non-point source) to enable the achievement of Policies 15A, 15B and 15C.

Policy 14 *Prefer discharges to land, rather than direct discharges to water.*

Policy 15A *Maintain water quality where standards are met*

Where existing water quality meets the Appendix E Water Quality Standards or bed sediments meet the Appendix C ANZECC sediment guidelines, maintain water quality including by:

- 1. avoiding, remedying or mitigating the adverse effects of new discharges, so that beyond the zone of reasonable mixing, those standards or sediment guidelines will continue to be met; and*
- 2. requiring any application for replacement of an expiring discharge permit to demonstrate how the adverse effects of the discharge are avoided, remedied or mitigated, so that beyond the zone of reasonable mixing those standards or sediment guidelines will continue to be met.*

Policy 15B *Improve water quality where standards are not met*

Where existing water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines, improve water quality including by:

- 1. avoiding where practicable and otherwise remedying or mitigating any adverse effects of new discharges on water quality or sediment quality that would exacerbate the exceedance of those standards or sediment guidelines beyond the zone of reasonable mixing; and*
- 2. requiring any application for replacement of an expiring discharge permit to demonstrate how and by when adverse effects will be avoided where practicable and otherwise remedied or mitigated, so that beyond the zone of reasonable mixing water quality will be improved to assist with meeting those standards or sediment guidelines.*

258. It is important here to make a determination as to whether or not water quality standards are met, as this dictates whether or not the losses from the proposed activity are at such a scale that water quality is maintained, or whether the losses need to be mitigated to an extent where water quality is improved. The quality of the water in the receiving environment, for most parameters, exceeds the guidelines defined in the Plan, and therefore water quality needs to be improved to meet the guidelines. As such Policy 15A is not relevant to this proposal. Policy 15B has been discussed in Section 10.5.1 of this report due to its significance.

259. The applicants have offered mitigations in an attempt to mitigate the adverse effects. It is hard to quantify the effectiveness of these mitigations and when considering cumulative effects, it is difficult to determine with certainty whether or not water quality will actually improve as a result of the proposed activities occurring. The applicants' nutrient budget does demonstrate that losses over the entire landholding will decrease. As such, it is of high importance that the proposed mitigations and good management practices are implemented to provide a reasonable level of certainty that the modelled reduction in losses as well as any improvement in water quality can actually be achieved in reality.

260. The application is consistent with these policies as it does demonstrate how and when adverse effects will be avoided, but the effectiveness of such actions is uncertain. This is largely when considering the overall farming activities as opposed to just the discharge of effluent.

261. Effluent Management

Policy 17

1. *Avoid adverse effects on water quality, and avoid as far as possible other adverse environmental effects from the use of effluent management systems.*
2. *Manage agricultural effluent systems and discharges from them by:*
 - (a) *designing, constructing and locating systems appropriately;*
 - (b) *maintaining and operating agricultural 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.*

262. This application proposes to discharge of effluent over a sufficiently sized area, even when considering the proposed changes to the effluent discharge area. Therefore, the discharge of effluent will allow for the use of the nutrients from the effluent by applying it to land in order to be utilised as a fertiliser. This reduces the chance of run-off when effluent is discharged appropriately. The effluent system was appropriately constructed and has been shown to be suitable for ongoing use and will allow for sufficient storage for deferred irrigation, ensuring effluent is only discharged at times when the conditions are suitable.

263. The proposed activities are consistent with the above policies.

264. Water Quantity

Policy B7

Policy B7 of the NPS for Freshwater 2014

Policy 20

Management of Water Resources

Policy 21

Allocation of water

Policy 22

Management of the effects of groundwater and surface water.

Policy 23

Manage stream depletion effects resulting from groundwater takes with a daily average rate of take exceeding 2 litres per second which are classified as having a Riparian, Direct, High or Moderate hydraulic connection.

265. The application is not from an over allocated groundwater zone and the proposed groundwater take will not result in any over allocation. Consent conditions will require that the water take is metered, and abstraction records provided to Council. The water take is also in line with reasonable and efficient use of water and is for less than 2 l/s therefore stream depletion effects are not expected.

266. The proposed activities are consistent with the above policies.

267. Freshwater Management Units

Policy 44 *Implementing Te Mana o te Wai*

Policy 45 *Priority of FMU policies and rules*

Policy 46 *Identified FMUs*

268. The above provisions relate to the identification of Freshwater Management Units (FMU) and the subsequent development of policies and rules. As part of this process it is likely that water quality and quantity limits will be set for each unit. This is part of the process of addressing water quality and the direction provided by the NPS for Freshwater Management 2014. The site is located within the Oreti FMU.

10.5.3.1 Interim Decision of the Environment Court

269. On 20 December 2019, an Interim Decision of the Environment Court ("**the decision**") was released. The Interim Decision was in relation to appeals on the proposed Southland Water and Land Plan and provides important discussions around the provisions of the Plan and their implementation as well as the intent of the Plan. The decision also makes a number of amendments and proposed amendments to the provisions of the Plan.

270. It is an important consideration as to whether or not the decision is binding. Binding Authority is a legal duty to evaluate legal provisions when making decisions. Section 104 of the Act must be applied when considering resource consent applications. S104 requires those considering consent applications to "*have regard to*" proposed plans (s104(1)(b)(vi)), and any other matters if they are considered to be relevant and reasonably necessary to determine the application (s104(1)(c)).

271. The Environment Court's interim decision is a decision on appeals on a proposed plan. This means that:

- if the interim decision has changed the proposed plan (discussed below), then decision makers are bound to consider the application as per section 104 through having due regard to the proposed plan in its revised form; or
- if this is not the case, a decision maker may still determine that the interim decision is relevant and reasonably necessary to determine the application. In that case the interim decision still has binding authority on a decision maker to consider the matter.

272. As the decision clearly identifies those provisions that are amended and are proposed to be amended, it is possible that the decision may be considered in both ways:

- those provisions that are to be amended effectively changes the text of the proposed Plan and as such must be given regard to under s104(1)(b)(vi); and
- the provisions that are proposed to amended should be considered "other matters" and given regard to under s104(1)(c).

273. The Environment Court’s interim decision concerns 10 of the 24 appeals to the proposed plan. The interim decision states:

“[2] [...] Unless otherwise indicated, the court has not made a final determination on the merits of any appeal”

274. The decision then clarifies in Annexure 1 that (with emphasis added) the court has made a final determination on some of the provisions (though subject to a caveat on their arrangement within the plan):

“In this attachment the court sets out its findings on the individual provisions. If a provision has been “confirmed” or “amended”, subject to submissions on the scheme architecture, the decision is final.”

“For some provisions the court has proposed alternative wording, in which case we indicate that the provision is “proposed to be amended.””

275. I consider that the court’s interim decision has the following suite of effects on the proposed plan:

- to “confirm” some of the appealed provisions (that is, determine that the provision “has been” unchanged by the court, will not be changed by the court in the future, and remains the same as in the decisions version of the proposed plan); and
- to “amend” some of the appealed provisions (to determine that the provision in question “has been” changed and will not be changed by the court any further); and otherwise;
- to “propose to amend” some of the provisions (in which case decisions have not been made and the court has suggested alternative sets of wording for future discussion between parties and the court).

276. Interpreting the words in the interim decision according to their usual meaning, I consider that that the confirmed and amended provisions are now “locked in” by the Environment Court and will not be changed further, in the absence of a further appeal to the proposed plan. As such, I consider that those provisions that are confirmed or amended should now be treated as if they were the wording within the proposed Plan¹³. The closer the proposed plan comes to its final

¹³ ¹³ This conclusion is supported by the High Court’s statements in a similar case concerning Plan Change 19 (PC19) of the Queenstown Lakes District Plan. Appeals to the decisions version of that plan were before the Environment Court concurrently with appeals to the Environment Court on consents granted to build a Mitre10 Mega and a Pak ‘nSave supermarket at Frankton Flats, Queenstown. These were both developments subject to land use controls, policies and objectives that were introduced by PC19 and were under appeal in the Environment Court.

To that extent the situation here is similar, in that decisions on consent applications were pending at the same time the Environment Court was deliberating on, and then released an interim decision on, a proposed plan which was highly relevant to the consent decisions.

In that case the Environment Court released its interim decision on PC19 on 12 February 2013 (Queenstown Airport Corporation Limited v Queenstown Lakes District Council [2013] NZEnvC 14), the same day as the commencement of the Environment Court hearing for the Mitre10 Mega and a Pak ‘nSave consents.

The interim decision on PC19 stated that:

“[3] the court has with the agreement of the parties focused in these proceedings exclusively on higher order matters.

“[4] this is an Interim Decision addressing Plan Change 19’s (PC19’s) higher order provisions including the resource management issues, objectives and policies.”

And:

“[6] In the second half [of the interim decision] we determine the competing provisions favoured by one or more of the parties.”

Those comments suggest the PC19 interim decision was of a very similar nature to the pSWLP interim decision of 20 December 2019.

content, the more regard is had to it. In this instance, significant weight should be given to those provisions confirmed and amended by the court. This is because the court confirmed and amended them in decisions that were stated as “final”. The provisions should not, however, be given the full weight of operative plan provisions. Further changes to the confirmed and amended provisions are possible, though could now only occur through further appeals lodged in higher courts, or by a variation to the proposed plan being instigated by the Council.

277. In respect of this proposal, there are no policies which have been confirmed or amended that are relevant to this application, however there are several objectives which have been confirmed or amended which are relevant.
278. The provisions that are “proposed to be amended” should be given less weight, and I do not think should be treated as if they are now within the proposed plan’s text. This is because they are still subject to input from the parties and the court’s deliberations and decision. These, I consider, are “other matters” and must still be given regard to.
279. In respect of this proposal, Policy 10 is proposed to be amended and is of relevance to the application. The decision proffers to proposed versions of the policy; a risk based policy or an effects based policy. Policy 10 is has two points, of particular relevance to this proposal is point 2 which is proposed to amended.
280. As it stands, point 2 of Policy 10 currently reads:

“In the Oxidising physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by... decision makers generally not granting resource consents for additional dairy farming of cows or additional intensive winter grazing where contaminant losses will increase as a result of the proposed activity.”

The court’s determinations on PC19 are set out (beginning on page 88) as tracked changed text of the district plan under the heading “The court’s revisions”. The introductory text to those sections states that (for example):

“[254] We find the following provisions to be generally appropriate and we direct their inclusion [in the proposed plan] with the following amendments.

“[271] ...we find that objective 1 and its supporting policies are to be as follows” (emphasis added)

And

“[301] ... we find that Infrastructure objective and its supporting policies should be as follows ...

The wording here is different to the wording in the court’s interim decision on the pSWLP. I refer back to the earlier referenced statements that the court “has ‘confirmed’ or ‘amended’ provisions” of the pSWLP with its decision. However they are similar in the sense that they make it clear the court’s decision has been made on changes to the plan’s text.

Following the release of the court’s interim decision on PC19, the court granted both consent applications for Mitre 10 Mega and Pak ‘nSave (Cross Roads Properties Ltd v Queenstown Lakes District Council [2012] NZEnvC 177; Foodstuffs (SI) Ltd v Queenstown Lakes District Council [2012] NZEnvC 135). Both decisions were appealed to the High Court. In his decision on the appeal on 19 April 2013, Fogarty J noted the relevance of the Environment Court’s interim decision on PC19 to future proceedings Queenstown Central Limited v Queenstown Lakes District Council [2013] NZHC 815):

“[164] ... The case is remitted back to the Environment Court. In case there be any doubt, the application now requires re-evaluation against the current terms of PC19, as they have been amended by the February 2013 decision [the interim decision of the Environment Court on PC19].”

It seems to me Fogarty J thought that the Environment Court’s interim decision on PC19 had the effect of altering immediately the text of the proposed Queenstown Lakes District Plan.

281. The decision proposes point 2 (under both proposed amendments) to state;

“In the Oxidising Zone... avoid dairy farming of cows and intensive winter grazing where contaminant losses will increase as a result of the proposed activities.”

282. This proposed amendment makes two significant changes to the policy; the first being the change from “generally not grant” to “avoid”; the second being the policy now relates to all dairy farming not just additional dairy farming. The change from the term “generally not grant” to “avoid” removes the discretionary consideration on whether or not to grant consent afforded by this policy currently.

283. As discussed, the decision proffered two proposed changes (risk or effects based) to the policy, and this new wording has been proposed by the court in both of their alternative options for the policy wording. This suggests that, irrespective of the court’s final decision, the decision will be to include this wording in the plan.

284. Overall, I consider that the “proposed to be amended” provisions are “other matters” but are of significant weight, and of most significant weight in the cases where parts of the alternative provisions contain identical text.

10.5.4 Regional Plan Policy Assessment Conclusion

285. The proposed activities have been considered against the relevant policies of the Regional Water Plan and the proposed Southland Water and Land Plan. The key policies in both plans relate to water quality and the maintenance and improvement of it. The application is not contrary to the policies of the plans, however at most it is inconsistent with certain policies, particularly under the proposed Southland Water and Land Plan.

10.5.5 Weighting of Regional Plans

286. As mentioned, Southland currently has three Regional Plans. The Regional Effluent Land Application Plan is not relevant to this proposal, as such only the policies within the operative Regional Water Plan and proposed Southland Water and Land Plan have been considered.

287. In this policy assessment greater weight has been given to the provisions of the proposed Southland Water and Land Plan. This is because it has been through the hearing process and has more specific policies and direction. It is also the only Regional Plan which has policies and rules associated with land use for farming. An interim decision of the Environment Court has also been released on some provisions of the proposed Plan. In relation to this proposal, there are no Policies in the Interim Decision which have been amended. Of relevance to this application, Policy 10 of the proposed Southland Water and Land Plan is proposed to be amended.

288. The proposed Southland Water and Land Plan also gives effect to the most recent National Policy Statement for Freshwater Management, whereas the Regional Water Plan and the Regional Effluent Land Application Plan do not as they were developed and made operative prior to the most recent National Policy Statement.

289. As such, I consider that it is appropriate for greater weight to be placed on the proposed Southland Water and Land Plan.

10.6 Relevant provisions of a regional policy statement (Section 104(1)(b)(v))

290. I consider that the proposed Southland Water and Land Plan gives effect to the Southland Regional Policy Statement, however for completeness I have identified and summarised the policies that are relevant to this proposal.

10.6.1 Southland Regional Policy Statement

291. The Southland Regional Policy Statement 2017 became operative on 9 October 2017.

292. The following objectives and policies in the Regional Policy Statement are of particular relevance to this application. In some cases below the policies have been abbreviated to exclude clauses that are not relevant to the application¹⁴.

Objective TW.3 *Mauri and wairua are sustained or improved where degraded, and mahinga kai and customary resources are healthy, abundant and accessible to tangata whenua.*

Objective TW.4 *Wāhi tapu, wāhi taonga and sites of significance are appropriately managed and protected.*

Policy TW.3 *Take iwi management plans into account within local authority resource management decision making processes.*

Policy TW.4 *When making resource management decisions, ensure that local authority functions and powers are exercised in a manner that:*

- (a) *recognises and provides for:*
 - (i) *traditional Māori uses and practices relating to natural resources (e.g. mātaihai, kaitiakitanga, manaakitanga, matauranga, rāhui, wāhi tapu, taonga raranga);*
 - (ii) *the ahi kā (manawhenua) relationship of tangata whenua with and their role as kaitiaki of natural resources;*
 - (iii) *mahinga kai and access to areas of natural resources used for customary purposes;*
 - (iv) *mauri and wairua of natural resources;*
 - (v) *places, sites and areas with significant spiritual or cultural historic heritage value to tangata whenua;*
 - (vi) *Māori environmental health and cultural wellbeing.*
- (b) *recognises that only tangata whenua can identify their relationship and that of their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga.*

Objective WQUAL.1 *Water quality in the region:*

- (a) *safeguards the life-supporting capacity of water and related ecosystems;*
- (b) *safeguards the health of people and communities;*

¹⁴ Full versions of the policies can be viewed at:

<https://www.es.govt.nz/Document%20Library/Plans,%20policies%20and%20strategies/Regional%20policy%20statement/Southland%20Regional%20Policy%20Statement%202017.pdf>

- (c) *is maintained, or improved in accordance with freshwater objectives formulated under the National Policy Statement for Freshwater Management 2014;*
- (d) *is managed to meet the reasonably foreseeable social, economic and cultural needs of future generations.*

Objective WQUAL.2 *Halt the decline, and improve water quality in lowland water bodies and coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands in accordance with freshwater objectives formulated in accordance with the National Policy Statement for Freshwater Management 2014.*

Policy WQUAL.1 (a) *Identify values of surface water, groundwater, and water in coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands, and formulate freshwater objectives in accordance with the National Policy Statement for Freshwater Management 2014; and*
 (b) *Manage discharges and land use activities to maintain or improve water quality to ensure freshwater objectives in freshwater management units are met.*

Policy WQUAL.2 *Maintain or improve water quality, having particular regard to the following contaminants:*
 (a) *nitrogen;*
 (b) *phosphorus;*
 (c) *sediment;*
 (d) *microbiological contaminants.*

Policy WQUAL.7 *Recognise the social, economic and cultural benefits that may be derived from the use, development or protection of water resources.*

Policy WQUAL.8 *Prefer discharges of contaminants to land over discharges of contaminants to water, where:*
 (a) *a discharge to land is practicable;*
 (b) *the adverse effects associated with a discharge to land are less than a discharge to water.*

Policy WQUAL.9 *Avoid the direct discharge of sewage, wastewater, industrial and trade waste and agricultural effluent to water unless these discharges have undergone treatment.*

Policy WQUAL.10 *Manage the siting and operation of activities that result in point source discharges of contaminants to land to ensure that adverse effects on groundwater, surface water and coastal water quality are avoided, remedied or mitigated.*

Policy WQUAL.11 *Avoid, as far as practicable, remedy or mitigate the risks that the adverse effects of land use activities and discharges of contaminants have on the sources of community water supplies.*

Policy WQUAL.12 *Integrate the management of land use, water quality, water quantity, coast and air, and the use, development and protection of resources wherever*

possible to achieve the freshwater objectives formulated in accordance with Policy WQUAL.1.

- Policy RURAL.1** *Recognise that use and development of Southland’s rural land resource enables people and communities to provide for their social, economic and cultural wellbeing.*
- Policy RURAL.5** *The effects of rural land development shall be sustainably managed and land management practices encouraged so that:*
- (a) soil properties are safeguarded;*
 - (b) soil erosion is minimised;*
 - (c) soil compaction and nutrient and sediment loss is minimised;*
 - (d) soil disturbance is reduced;*
 - (e) water quality is maintained or enhanced;*
 - (f) indigenous biodiversity is maintained or enhanced;*
 - (g) the mauri of water and soils is safeguarded.*
- Policy WQUAN.2** *Avoid over-allocation of surface water and groundwater, and resolve any historical instances of overallocation, while recognising the special provisions made for the Waiau catchment.*
- Policy WQUAN.6** (a) *Ensure that any water taken from surface water or groundwater is used efficiently.*
 (b) *Where fresh water bodies are approaching full allocation, consider establishing management provisions to maximise the efficiency of using any available water.*
- Policy WQUAN.8** *Integrate the management of land use, water quality, water quantity and use and development of resources wherever possible.*

293. I consider that the proposed activities are not contrary to the Regional Policy Statement. The proposal will maintain water quality and the application demonstrates that an improvement, and by consequence, an enhancement in water quality will be achieved. The application has proposed mitigation measures to mitigate the loss of contaminants such as nitrogen, phosphorous and sediment. The proposed activities will also not result in over allocation of groundwater.

10.7 Relevant Provisions of National Policy Statements (Section 104(1)(b)(iii))

294. I consider that the proposed Southland Water and Land Plan and the Southland Regional Policy Statement both give effect to the National Policy Statement for Freshwater Management, however for completeness I have identified and summarised the policies that are relevant to this proposal.

10.7.1 National Policy Statement for Freshwater Management 2014 (NPSFM 2014)

295. The NPSFM supports improved freshwater management in New Zealand. It does this by directing regional councils to establish objectives and set limits for fresh water in their regional plans.

296. The following objectives in the National Policy Statement for Freshwater Management (NPSFM) 2014 are of particular relevance to this application:

Objective A1 *To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and the health of people and communities, in sustainably managing the use and development of land, and of discharges of contaminants.*

Objective A2 *The overall quality of fresh water within a region is maintained or improved while protecting the significant values of outstanding freshwaterbodies; protecting the significant values of wetlands; and improving the quality of fresh water in waterbodies that have been degraded by human activities to the point of being over-allocated.*

Policy A3 *By regional councils imposing conditions on discharge permits to ensure the limits and targets specified pursuant to Policy A1 and Policy A2 can be met; and where permissible, making rules requiring the adoption of the best practicable option to prevent or minimise any actual or likely adverse effect on the environment of any discharge of a contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant entering fresh water.*

Policy A4 *When considering any application for a discharge the consent authority must have regard to 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 on the health of people and communities as affected by their secondary contact with fresh water. 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 the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided. This policy applies to the following discharges (including a diffuse discharge by any person or animal) a new discharge or a change or increase in any discharge.*

Objective B1 *To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water.*

Objective B3 *To improve and maximise the efficient allocation and efficient use of water.*

Policy B5 *By every regional council ensuring that no decision will likely result in future over-allocation – including managing fresh water so that the aggregate of all amounts of fresh water in a freshwater management unit that are authorised to be taken, used, dammed or diverted does not over-allocate the water in the freshwater management unit.*

Policy B6 *By every regional council setting a defined timeframe and methods in regional plans by which over-allocation must be phased out, including by reviewing water permits and consents to help ensure the total amount of*

water allocated in the freshwater management unit is reduced to the level set to give effect to Policy B1.

Policy B7

When considering any application the consent authority must have regard to the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem and 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. This policy applies to any new activity and any change in the character, intensity or scale of any established activity –that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity.

Objective D1

To provide for the involvement of iwi and hapū, and to ensure that tāngata whenua values and interests are identified and reflected in the management of fresh water including associated ecosystems, and decision-making regarding freshwater planning, including on how all other objectives of this national policy statement are given effect to.

Policy D1

Local authorities shall take reasonable steps to involve iwi and hapū in the management of fresh water and freshwater ecosystems in the region; work with iwi and hapū to identify tāngata whenua values and interests in fresh water and freshwater ecosystems in the region; and reflect tāngata whenua values and interests in the management of, and decision-making regarding, fresh water and freshwater ecosystems in the region.

297. The application is from a lowly allocated groundwater management zone. Adverse effects from the proposed groundwater abstraction are considered to be negligible, and it is not expected that effects that are more than minor will occur.
298. Iwi have not been involved with this application, however, they were involved with the development of the regional plans. Te Ao Marama Inc were notified of the application but did not submit.
299. The application is not inconsistent with the above policies. The proposal will implement good management practices and the applicant has proposed a number of mitigations to mitigate the adverse effects from the proposed activities. The effects of the discharge are not in contention and are not expected to give rise to adverse effects provided the applicant adheres to the proposed good management practices and mitigations as well as consent conditions.
300. The application consistent with the above policies.

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

10.8.1 National Environmental Standard (NES) for Sources of Human Drinking Water Regulations 2007

301. 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.
302. The activity is located approximately 11.7km north of a registered drinking-water supply that provides water to more than 501 people, with another site located downstream. The Invercargill City Council and Alliance Lorneville processing plant both abstract water from the Oreti River for >501 people.
303. The proposed activity is not expected to effect the registered drinking water supply should the proposed mitigations be implemented and the modelled reduction in losses is achieved in reality

10.9 Section 104 Matters

Value of investment of the existing consent holder if an application affected by Section 124 (Section 104(2A))

304. The proposal includes an application for the replacement of discharge and water permits for a dairy operation. The applicant has put significant investment into the site including the purchase of the East block.

10.10 Section 105 matters relevant to discharge or coastal permits

305. 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.
306. The applicants have taken into account the nature of the discharge and sensitivity of the receiving environment. This is shown through the use of multiple discharge methods. They have also proposed matching rates and depths of discharge to the farm dairy effluent risk categories. The applicants have demonstrated their existing effluent storage pond will provide sufficient deferred storage. The applicants have provided additional methods of discharge to allow for contingency should a failure of other systems arise.
307. The applicants have identified that a discharge to land over a discharge to water is preferred.

308. Deferring the discharge of effluent is a key good management practice and mitigation measure to address the risk of the event driven losses of nutrients to surface waterways.
309. A possible alternative for the discharge of effluent to land is the discharge of effluent to water. This is inconsistent with the policies of regional plans.
310. The applicants have proposed the use of low rate irrigation systems, of which the alternatives are high rate options have been included as contingency measures to account for the failure of other systems. There have also not been any improvements in technology which would achieve a better environmental result than the current system.

10.11 Section 107 restrictions on grant of certain discharge permits

311. The potential for the effects listed under Section 107(1) of the Resource Management Act are 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.
312. This activity should not contravene Sections 15 or Section 15A.
313. If carefully managed and the recommended conditions of consent are adhered to, the proposed effluent discharge should not give rise to the effects on surface water listed in Section 107.
314. While operating under their previous consent the applicant did not give rise to any adverse effects as per s107.

10.12 Part 2 of the Resource Management Act 1991

315. The correct approach to decision-making since the King Salmon and Davidson Family Trust Supreme Court decision is that a report to Part 2 of the RMA can be appropriate if the hierarchy of planning documents does not provide sufficient clarity and direction for decision makers. However, before resorting to Part 2 the decision-maker must give proper regard to the lower order documents and Part 2 cannot be used to by-pass direction given by the particularised policies these documents contain.
316. While I consider that the proposed Southland Water and Land Plan and the Interim Decision of the Environment Court give effect to the higher order documents, for completeness my assessment above was made against the hierarchy of documents, from the lowest order (proposed Southland Water and Land Plan), upwards.
317. However, for completeness, I consider it is appropriate to refer to Part 2 of the Act, although this is not required. Section 5 of the Act states the purpose of the Resource Management Act, whilst Sections 6,7 and 8 are principles intended to provide additional guidance as to the way the purpose is to be achieved.
318. Section 5 involves an assessment as to whether the proposed activities will promote the sustainable management of natural and physical resources. In relation to the matters outlined in Section 5, I consider the proposal is not contrary to promoting sustainable management of natural resources.

319. The matters set out in Section 6 have been covered within the various Council planning instruments and higher order documents. For the reasons outlined throughout this report, the proposal is generally consistent with and not contrary to those planning instruments. There is only one matter of national importance, as outlined in Section 6 of the Act that needs to be recognised and provided for in the context of this application. This is the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga. The receiving environment includes a number of Statutory Acknowledgment Areas under the Ngai Tahu Claims Settlement Act 1996 as well as Mataitai reserves.

320. For completeness, the proposal is not contrary to Part 2 of the Resource Management Act.

11.0 RECOMMENDATIONS

11.1 Consent Term

321. The application states that a consent term of 10 years is sought for all resource consents subject to this application. The application lists the following reasons for seeking a 10 year duration:

- substantial value of investments;
- having a common expiry date for all permits;
- the applicants overall good compliance history with existing resource consents;
- the low environmental risk of the proposed activities.

322. I largely agree with the reasons given in the application for the duration of the consent term of 10 years. However, I do not consider that the proposed activities pose a low environmental risk. The proposed activities pose a high environmental risk where there is a level of uncertainty as to the effects, largely through the potential further degradation of water quality. Although I consider the proposed activities pose a high environmental risk, the application details a number of good management practices and mitigations which aim to mitigate these effects. Provided these are adhered to, as well as the recommended conditions of consent, I consider that there is a low probability that the adverse effects of the proposed activities will eventuate.

323. When considering the term of consent, it is important to consider **Policy 14A** (*determining the term of a water permit*) and **Policy 43** of the Regional Water Plan and **Policy 40** (*determining the term of resource consents*) of the proposed Southland Water and Land Plan.

324. Policy 40 of the proposed Southland Water and Land Plan states:

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

- *granting a shorter duration than that sought by the applicant when there is uncertainty regarding the nature, scale, duration and frequency of adverse effects from the activity or the capacity of the resource;*
- *relevant tangata whenua values and Ngāi Tahu indicators of health;*
- *the duration sought by the applicant and reasons for the duration sought;*
- *the permanence and economic life of any capital investment;*

- *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;*
- *the applicant's compliance with the conditions of any previous resource consent, and the applicant's adoption, particularly voluntarily, of good management practices; and*
- *the timing of development of FMU sections of this Plan, and whether granting a shorter or longer duration will better enable implementation of the revised frameworks established in those sections.*

325. Policy 16(3)(b) of the proposed Southland Water and Land Plan is also an important consideration as it states that when considering an application for resource consent for farming activities, consideration should be given to granting a consent duration of at least 5 years. Effectively, the Plan expects that consent should be granted for no less than 5 years, and to do so, would be contrary to the Plan.

326. I consider (should consent be granted) a 10 year term would be consistent with the above policy. This recognizes the investments and permanence of the activity, whilst acknowledging the nature, scale, duration and frequency of the adverse effects of the proposed activities and the uncertainty.

11.2 Whether to Grant

327. The activities applied for have been considered together, and as such the highest consent test applies. In this instance the overall status of the application is a **Discretionary Activity**. Under Section 104B a Consent Authority may grant or refuse the application and should the consent be granted, impose conditions under Section 108.

328. Southland currently operates under three regional plans. I have applied more weight on the proposed Southland Water and Land Plan and the objectives, policies and direction of the plan. Greater weight has been given to the provisions of the proposed Southland Water and Land Plan because it has been through the hearing process, has more specific policies and direction and gives effect to the most recent NPS-FM, whereas the Regional Water Plan and the Regional Effluent Land Application Plan do not. As such, I consider appropriate that greater weight is placed on the proposed Southland Water and Land Plan.

329. On 20 December 2019 the Interim Decision of the Environment Court was considered. As per Section 10.5.3.1 of this report, this decision is relevant and as such I have applied the appropriate weight to this Decision.

330. The pSWLP is *"intended to provide direction and guidance regarding the sustainable use, development and protection of water and land resources in the Southland Region"*. The proposed Southland Water and Land Plan recognizes that adverse effects on water quality result from both point and non-point source discharges, of which non-point source discharges to water are of most concern under this proposal.

331. Non-point source discharges from agricultural land are the most significant contributors of contaminants to water and to-date has been subject to little regulation in Southland prior to the proposed Southland Water and Land Plan. This is an important matter to consider and should be emphasised as it clearly illustrates the intent of the plan and the overarching goal of improving water quality. This has led me to draw the conclusions detailed throughout this

report and will ultimately guide my recommendation on whether or not the application should be granted.

332. The proposed Southland Water and Land Plan also acknowledges that land use intensification tends to increase the amount of contaminants entering water, which in itself is contrary the objectives, policies and direction of that plan. As such at a bare minimum the proposed activities must be undertaken in accordance with good management practices to meet the minimum legal requirements and to “hold the line” on water quality. As the proposed activities include a level of intensification, the proposal must identify mitigations that improve water quality when intensification occurs. It should be noted that the improvements in water quality must occur in all affected waters in the receiving environment. An improvement in overall water quality is not sufficient, nor is it consistent with the proposed Southland Water and Land Plan.
333. Policy 39 of the proposed Southland Water and Land Plan provides a very broad scope when assessing application for the use of land for farming. It directs Council to consider all the effects that may impact on water quality regardless of whether or not the Plan permits an activity with that effect. This encourages a decision maker to take a very broad approach to the applications and the consequential adverse effects on water quality that will result from the proposed activities should a consent be granted. The assessment undertaken in this report was undertaken in accordance with this policy. Although a discretionary measure, I consider it appropriate to assess the activities regardless of whether or not the Plan permits an activity with that effects to ensure all adverse effects are appropriately considered and assessed.
334. When considering the adverse effects of the proposed activities and the proposed activities overall in determining whether or not to grant the consent application, a determination needs to be made, assisted by viewing the application and the adverse effects through the lens of the Regional Plans. In making my recommendation I have had particular regard to **Policy 10** (oxidising physiographic zone), **Policy 13** (*management of land use activities and discharges*), **Policy 15B** (improve water quality where standards are not met), **Policy 16** (*farming activities that affect water quality*) of the proposed Southland Water and Land Plan.
335. Both the Regional Water Plan and the Proposed Southland Water and Land Plan seek to avoid further degradation of water quality, and in particular the proposed Southland Water and Land Plan seeks to improve water quality where it exceeds standards. Policy 16 of the proposed Southland Water and Land Plan seeks that resource consents for further intensification of existing dairy farms “*generally not be granted*” where the adverse effects, including cumulatively, on the quality of groundwater and surface water cannot be avoided or mitigated or where water quality or bed sediments do not meet standards. Policy 10 of the proposed Southland Water and Land Plan also seeks that decisions makers “*generally not grant*” resource consent for additional dairy farming of cows where contaminant losses in the oxidising zone will increase as a result of the proposed activities.
336. The term “*generally not grant*” affords a decision maker a level of discretion as to whether or not to grant resource consent. In respect of Policy 16, the proposed activities provide mitigation measures as to the adverse effects, including cumulatively on water quality, however water quality standards are not met. Consequently, the application meets the standard for “*generally not grant*”. I consider that when determining when it is appropriate to use discretion and grant resource consents, it is appropriate to consider whether the proposal is consistent with the other relevant provisions of the plan, in particular Policy 13 and Policy 15B. Policy 13 requires recognition that the use and development of land and water resources,

including for primary production, enables people and communities to provide for their social, economic and cultural wellbeing. I consider that the proposed activities does provide for the social and economic wellbeing of the applicant. However, Policy 13 also requires that land use activities and discharges (point source and non-point source) are managed to enable the achievement of Policy 15B. In this case, provided the targeted mitigations measures are implemented and the modeled reduction in losses is achieved in reality as a result, the proposal will achieved Policy 15B, as such being consistent with both Policy 13 and 15B. With respect to Policy 10, the application cannot result in an increase in contaminant losses in the oxidising zone to avoid the trigger for the resource consent to generally not be granted. For reasons detailed in this report, I consider that it is unlikely that contaminant losses will increase in the oxidising zone, however there is insufficient information within the application to conclude this with certainty. As such, the precautionary principle should be applied unless further evidence is obtained to provide certainty losses will at the least remain unchanged in the oxidising zone.

337. When considering Policy 10, the Interim Decision on the Environment Court has made a proposed amendment to the wording of this policy. The proposed new wording seeks to “*avoid dairy farming of cows and intensive winter grazing where contaminant losses will increase as a result of the proposed activity*”. This should be a matter to consider when determining whether or not to apply discretion to grant a consent should contaminant losses be increasing in the oxidising zone. In this case, although this a proposed amendment to the wording, as discussed in Section 10.5.3.1, it is likely that this wording will be included in the Plan, irrespective of the Courts decision. As such, this proposal must avoid increased contaminant losses from dairy farming of cows in the Oxidising Zone.
338. For the reasons are detailed in this report, I consider that provided the proposed good management practices and mitigations are implemented the adverse effects will be acceptable and the modelled reduction in losses will more likely than not be achieved in reality. I consider that this will achieve an improvement in water quality and is consistent with the overall aims of the statutory documents. For completeness, I also consider the proposal will achieve the purpose of Part 2 of the Resource Management Act 1991.
339. For the reasons detailed in this section, and the rest of this report, I recommend that the application for Resource Consents be **granted, subject to the recommended conditions (attached)**.



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Acting Consents Manager

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