

IN THE MATTER

of the Resource Management Act 1991

AND

IN THE MATTER

**of an Application to ENVIRONMENT
SOUTHLAND (Southland Regional
Council) by T.J. and J.A. Driscoll for the
Driscoll Family Trust**

(APP 20181765)

**DECISION OF COMMISSIONERS ROBERT NIXON AND BIANCA SULLIVAN
APPOINTED BY ENVIRONMENT SOUTHLAND**

The Hearing and Appearances

Hearing Date: Monday, 3 February 2020 at the offices of Environment Southland, Invercargill

Appearances for the Applicant: Mr Tim Driscoll, Applicant
Dr Michael Freeman, Senior Scientist, Landpro Ltd
Ms Monique Topham, Farm Appraiser

Appearances for the Environment Southland Mr Alex Erceg, Senior Consents Officer
Ms Abigail Lovett, Consultant Scientist, Earth and Environmental Science Limited

Submitters

A letter was tabled from Morgan Fallowfield of Beca Ltd (Consultants to the Ministry of Education)

We declared the hearing closed on Tuesday, 18 February 2020 following the time period for the applicant's right of reply.

Abbreviations

The following abbreviations are used in this decision:

T.J. and J.A. Driscoll and the T. and J. Driscoll Family Trust	"the Applicant"
Environment Southland	"the Council"
The Proposed Southland Water and Land Plan Part A (Decisions Version)	"the Proposed Plan"
The Operative Regional Water Plan	"the RWP"
The Operative Southland Regional Policy Statement	"the RPS"
The National Policy Statement for Freshwater Management 2014	"the NPSFM"
The Resource Management Act 1991	"the RMA"
Farm Environmental Management Plan	"FEMP"
Good Management Practices	"GMP's"

The land subject to this application is referred to as "the site".

THE PROPOSAL

1. The applicant owns and operates a 210.6 ha dairy platform located at 266 Thompsons Crossing Road East, south of Winton. (The applicant's dwelling is located in O'Shannessy Road). The applicant seeks to add an additional 13.9 ha block (the 'East Block') adjoining the eastern boundary of the existing property and purchased in 2017 to extend the dairy platform. This block was formerly used for sheep grazing purposes¹. The property has an elongated shape extending west – east between State Highway 6 and Norman Road.
2. The site has a legal description of Part Sec 29 and Part Sec 30, Block 1, Winton Hundred; Secs 43, 44, 45, and 54 Block 1 Winton Hundred; Block 1 DP 449518 and Lot 2 DP 449518. The latter comprises the additional 13.9 ha block.
3. The application was amended from the time of notification. As amended, it seeks the following:
 - an increase in cow numbers from 599 to 680;
 - an increase in the size of the dairy platform from 210.6 to 224.5 ha;
 - the discharge of agricultural effluent from the milking of up to 680 cows up to twice per day;
 - the take and use of 81,600L of groundwater per day for drinking water and dairy shed use².
4. The proposal also includes intensive winter grazing of dairy cows, dry stock and young stock off-site at the property of a third party grazier, located on a property near Fortrose in eastern Southland. Mr Driscoll explained that he had had an arrangement to this effect for the last five winters.
5. There were a number of iterations relating to anticipated nutrient losses from the time the application was lodged. The data relied on at time of the hearing was calculated using the most recent version of the now widely applied *Overseer* model³. We accept that Dr Freeman and Ms Topham are both experts on the application of *Overseer*. Based on the results of the most recent modelling undertaken by Ms Topham and contained in her Memorandum dated 30 January 2020, it is anticipated that, resulting from the proposal:
 - there would be a decrease in Nitrogen loss from 52 kgN/ha/yr to 48 kgN/ha/yr, a decrease of 8.6 %;
 - there would be a decrease in Phosphorus loss from 1 kgN /ha/yr to 0.9 knN/ha/yr, a decrease of 7.8 %.
6. We understand that any consents required for grazing activities off-site would be obtained separately as required of the third party grazier.
7. The applicant currently holds a Discharge Permit to discharge dairy shed effluent to land from 599 cows (AUTH 301043) and a Water Permit to take up to 72,000 L of groundwater per day (AUTH 301044) from Bores E 46/1067 and E 46/1089.

¹ Evidence Dr Freeman, paragraph 11 and S42 report para 18

² S 42 a report, paragraph 18

³ *Overseer FM 6.3.2*, Evidence Marie Topham, page 7

8. Effluent from the dairy shed is discharged to a synthetically lined storage pond with a mechanical stirrer to enable the effluent to be discharged to land via irrigation systems which utilise low rate 'Maxi pods' with an instantaneous discharge of 10 mm/h with a maximum depth per application of 25mm. A high rate slurry tanker is used on occasions, such as when the pond requires desludging, with effluent applied to a maximum soil depth of 5 mm. We were advised that the ongoing use and maintenance of the storage pond was a permitted activity under Rule 32(d) of the Proposed Plan⁴.
9. The discharge area approved under AUTH 301043 is identified as covering approximately 108 ha, but this area has not been fully utilised by the applicant. Dr Freeman's pre-circulated evidence stated that the effluent will be discharged over total area of 93 ha, although the actual application area would be 73 ha once 'exclusion areas' were taken into account⁵.
10. This required subsequent clarification from the applicant to explain the effect of the 'exclusion areas' on the modelling that had been undertaken. In her subsequent memorandum of 30 January, Ms Topham stated that the 'effluent management area', comprised the area of the paddocks that received effluent, which was 93 ha. However, within these paddocks setbacks from waterways, setbacks from water abstraction points, and setbacks from neighbouring properties and dwellings reduced the total area of the effluent application to 73.5 ha⁶.
11. She further explained that updating the discharge area through *Overseer* made little difference to modelled nutrient losses, stating that:

*"The relatively minor differences in expected nitrogen and phosphorus losses are expected. This is due to the size of the effluent area in comparison to the number of cows farmed in both models. At 13.7 and 10.8 ha per 100 cows in the effluent management area and effluent application area budgets respectively, the effluent area is well above the minimum of 4 ha per 100 cows and the best practice guidelines of 8 ha per 100 cows"*⁷.
12. Attached to the application was a draft 'Farm Environmental Management Plan' (FEMP) prepared in accordance with 'Appendix N' of the Proposed Plan.
13. At this point we note a correction required to paragraph 29 of the section 42A report, identified by Ms Topham for the applicant. In her evidence she stated that as set out in the hearing appendices, the number of cows wintered off farm will slightly *decrease* as measured over an average of four years in the months of June and July, from 526 to 516, and 483 to 459 respectively.
14. The existing bore 46/1089 to be used for taking additional groundwater was located within the Lower Oreti Groundwater Management Zone. From questioning, we understand this is a shallow bore screened between a depth of 12.5m and 13.5m. Mr Erceg noted that there would

⁴ *ibid*, paragraph 34

⁵ Evidence Dr Freeman, paragraph 22

⁶ Memorandum M Topham, Part 3.0

⁷ *Ibid*, Part 5.0

be no issues with the quantity of groundwater to be abstracted, as under the Proposed Plan only 8.8 % of the available water in the aquifer had been allocated⁸.

THE RECEIVING ENVIRONMENT

15. The application site falls within the Oreti River Sub- catchment which drains to the New River Estuary north of Invercargill. A small part of the recently acquired 'East Block' is contained within the Tussock Creek Catchment/Makarewa Surface Water Management Zone. Tussock Creek and the Makarewa River also drain into the New River Estuary. The applicant's site is one farm in an area of central Southland dominated by dry stock farms and particularly dairy farms, and the sub- catchment is described as containing a total of 46,278 consented cows⁹. The topography of the site is largely flat, although with a slightly undulating character in places.
16. Surface waterways are present within the western half of the site and run in a generally north/south direction. There are also a number of 'Critical Source Areas' (CSA's) in the form of tile drains over parts of the property¹⁰. There are apparently other tile drains present, but the location of these is currently unknown. These features are significant, as they are pathways for potential contaminants.
17. Soils on the property comprise Edendale soils which have a slight vulnerability to structural compaction and waterlogging, and of moderate vulnerability to nutrient leaching. The Pukemutu soils are described as having a severe vulnerability to structural compaction and waterlogging, and a slight vulnerability to nutrient leaching¹¹. The Edendale soils comprise 62.3ha of the application site and underlie its western end¹², with the larger balance of the site comprising Pukemutu soils.
18. Southland has been divided into nine physiographic zones, each of which represents areas with common attributes that influence water quality, such as climate, topography, geology and soil type¹³. The property was described as falling under two of these physiographic zones, being 'Gleyed' and 'Oxidising'. In his evidence Mr Erceg made the following observation:

"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 water bodies. This creates a contaminant pathway whereby water and contaminants are directed to surface water bodies. In steeper areas there is also a risk of overland flow to surface water bodies, 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

⁸ S42A Report, Table 11

⁹ S42A Report, paragraph 46

¹⁰ Ibid, Table 7

¹¹ Ibid, Table 10

¹² Evidence Dr Freeman, Figure 2

¹³ Proposed Southland Water and Land Plan, pp 19 – 22

*groundwater. The nutrient of most concern at being lost to the receiving environment is phosphorus”.*¹⁴

19. Turning to the western portion of the proposed dairy platform, he said this was located within the oxidising physiographic zone¹⁵, which he described as having the following characteristics:

“The oxidising physiographic zone has high phosphorus retention capabilities. As such the nutrient of most concern at being lost to the receiving environment nitrogen”.

and:

*“As the oxidising zone is well aerated, with plenty of oxygen, nitrogen can build up and accumulate in the soil water and groundwater. This means that in this zone, groundwater in receiving environment can contain high levels of nitrogen. The oxidising zone especially in the flatter areas where the soil is 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”*¹⁶.

20. In summary, Mr Erceg noted the property contained a number of contaminant pathways, including overland flow to surface water, artificial drainage to surface water, and to some extent drainage to groundwater. In his opinion the risk of most concern was due to the change in land use on the ‘East Block’, and the increase in stock numbers which created more dung and urine patches, which had the ability to leach high concentrations of nutrients and other contaminants.
21. The applicant’s dairy platform is located primarily within the Oreti River catchment, but also extends into the Makarewa River catchment. He was concerned that the application had only identified the Oreti River catchment as being within the receiving environment and was firmly of the view that this was incorrect¹⁷.
22. He made reference to information contained in the application relating to water quality at the Oreti River Wallacetown Water Quality Monitoring Site¹⁸. This indicated that with respect to the Proposed Plan, water quality standards were not met, or were unlikely to be met, with respect to *E.Coli*, water clarity, Total Oxidised N, Dissolved Reactive P, and Periphyton. He said that water quality within the Oreti River, Makarewa River, and Tussock Creek catchments was degraded. Some of this could be attributed to both point and non— point discharges, including some unrelated to agriculture.
23. The New River Estuary is the coastal receiving environment, primarily for the Oreti River, and other smaller waterways. It would be the eventual receiving environment for any effluent transported beyond the boundary of the application site.

¹⁴ S42A Report, paragraph 83

¹⁵ Ibid, Table 11

¹⁶ Ibid, paragraph 84

¹⁷ Ibid, paragraph 63

¹⁸ Applicant's AEE, Table 6

24. Mr Erceg's report contained a table which set out changes in the environmental quality of the Estuary between 2001 and 2012¹⁹. He added that the quality of the Estuary had continued to degrade, especially over the last five years. There was no dispute at the hearing that the quality of the New River Estuary as a receiving environment was degraded. It is perhaps illustrative that as reported very recently in the media, restrictions on gathering shellfish in the Estuary were imposed by Environment Southland on 12 February 2020 following freshwater discharges into the Estuary after a period of substantial rainfall and flooding in the region²⁰.
25. In summary, Table 9 of Mr Erceg's report noted that between 2001 and 2012:
- Sediment, as indicated by soft mud areas, revealed that the quality of the estuary was poor and there had been a large increase in sedimentation;
 - The macroalgal coefficient remained 'good' but was trending upwards;
 - Dense (> 50%) macroalgal cover had increased from very low to high;
 - The gross eutrophic condition area had changed from fair to very poor;
 - The Seagrass Coefficient/area was poor and had experienced a very large decrease;
 - The Saltmarsh area had changed from moderate – high to moderate;
 - There was little change in the densely vegetated margin area.
26. As we will go on to discuss further in this decision, we accept that the Oreti and Makarewa Rivers, and the New River Estuary are the receiving environments, and that they are degraded. This has major ramifications in terms of our assessment, having regard to the NPSFM and the objectives and policies of the Proposed Plan.
27. There are two Statutory Acknowledgement Areas within the receiving environment, one being the Oreti River Statutory Acknowledgement Area, and the other being the Rakiura/Foveaux Strait CMA Statutory Acknowledgement Area which includes the New River Estuary and Oreti Beach.
28. We acknowledge that the take and use of water is a key concern to Ngai Tahu and their mana whenua. This requires protection of the mauri and wairua of rivers lakes and wetlands, avoiding adverse effects on mahinga kai, the protection of wahi tapu, and recognition of the special significance of particular rivers and lakes.
29. We note that the Proposed Plan has been developed taking account of the National Policy Statement for Freshwater Management 2014 (the NPSFM), included as amended in 2017. The NPSFM imposes requirements on Regional Councils to protect the life supporting capacity of water, to maintain water quality, to improve it where it is degraded, and avoid over allocation of water.
30. These matters are specifically set out in the 'Introduction' to the Proposed Plan, under the heading of 'Purpose of this Plan'²¹.

¹⁹ S42A Report, paragraph 75 and Table 9. Derived from 'New River Estuary – Fine Scale Monitoring of Highly Eutrophic Arms – B.M. Robertson and L.M. Stevens (2013)'.

²⁰ 'Stuff News', 12 February 2020

²¹ Proposed Southland Water and Land Plan, pp 7 – 9

NOTIFICATION AND SUBMISSIONS

31. The application was publicly notified on 26 July 2019. Two submissions were received as follows:
- Public Health South – ‘Neutral’ submission seeking imposition of adequate conditions to mitigate potential human health risks.
 - Ministry of Education – Request that the application be declined or that the applicant establish that the water quality of the Lochiel School bore not be adversely affected, including appropriate monitoring of the applicant’s discharges.
32. We did not hear from Public Health South at the hearing. While no witnesses appeared for the Ministry of Education, a letter was tabled which included proposed conditions which were accepted in part, but rejected in other respects, by the applicant. We will go on to discuss this later.

STATUTORY MATTERS

(1) The Proposed Southland Water and Land Plan - Decisions Version (the Proposed Plan)

33. The applicable consents required are identified in the officer’s report²². From questioning at the hearing, it is our understanding that the parties are agreed as to the relevant plan provisions under which consent is required.
34. Consent is required in terms of the following rules:
- A **Discretionary Activity** under Rule 20 (e) for Land Use Consent to use land for farming including an increase in cow numbers and in the size of the dairy platform beyond that authorised under the consent granted on 3 June 2016.
 - A **Discretionary Activity** under Rule 35(c) to discharge agricultural effluent to land where contaminants may enter water from up to 680 cows.
35. Rule 32D of the Proposed Plan permits the use of land for the maintenance and use of an existing agricultural effluent storage facility. It is our understanding that the existing effluent storage facility on the property complies with the conditions of Rule 32D.

(2) The Operative Regional Water Plan (the RWP)

36. Consent is required in terms of the following rules:
- A **Restricted Discretionary Activity** to discharge agricultural effluent to land where contaminants may enter water from up to 700 cows.

²² *ibid*, paragraph 24

- A **Discretionary Activity** under Rule 23 (d) to take and use up to 84,000 L of groundwater per day from Bores E 46/1067 and E 46/1089.
37. There is no relevant rule for increasing cow numbers or an increase in the size of the dairy platform under the RWP.
 38. Overall, the activity is to be assessed as a ***discretionary activity***.

THE EVIDENCE

Evidence for the Council

39. In addition to the pre-circulated S42A reports (dated 3 February 2020) and the pre-circulated applicant's evidence from Mr Driscoll, Dr Freeman and Ms Topham (dated 20 February 2020) we also received some subsequent material.
40. This material included a Memorandum provided to Mr Erceg on the subject of 'Groundwater Monitoring' dated 28 January 2020. This was authored by Ewen Rodway (Environmental Scientist) and Sarah Yeo (Science Assistant). A letter from the Ministry of Education noted earlier and dated 27 January 2020 was received in response to matters raised by Dr Freeman and his pre-circulated evidence concerning possible conditions of consent.
41. We also received two brief Memoranda from Dr Freeman and Ms Topham dated 30 January. The former addressed the letter from the Ministry of Education, and the latter provided an explanation relating to the effect of effluent exclusion areas.
42. Finally, we received two further brief 'Memoranda' from Dr Freeman and Ms Topham dated 14 February 2020 addressing matters raised in the hearing, and which we will go on to discuss later in this decision. We had initially assumed that these were part of the applicant's right of reply, although they were not described as such. However in an email dated 17 February 2020 from Dr Freeman, he indicated that he did not think that any significant new issues had been raised during the hearing, although he had no objection to Mr Erceg responding to the two memoranda.
43. While we appreciate that Dr Freeman and Ms Topham were undoubtedly attempting to be helpful, it is not appropriate to provide additional evidence following the public hearing unless this is specifically requested by the Commission. Any such material should form part of the right of reply. We have adopted a pragmatic approach here and have accepted the memoranda as being part of a right of reply, noting that to do otherwise means it would have to be disregarded.
44. A draft set of 'agreed' consent conditions were received on 14 February 2020. There was still a significant degree of disagreement between the parties, mostly on what appeared to us to be detailed matters, rather than fundamental issues.
45. We have begun by describing the Council's evidence first, given that the applicant's evidence has – to a significant degree – focused responding to the content of the officer's reports.

46. **Mr Alex Erceg** presented an extensive and detailed report. He noted that changes made to the original application included reducing proposed cow numbers from 700 to 680, a corresponding reduction in young stock numbers, a reduction in nitrogen applied as fertiliser overall, increased use of barley as a supplementary feed, an increased area utilised for baleage grass wintering, and a reduction in OlsenP to 30 on the milking platform²³. At this point we record that there was no suggestion that the changes made to the application were beyond the scope.
47. With respect to the addition of the 'East Block' specifically, he noted that no wintering was proposed on the block during June and July, no grazing of livestock in the months from May to August, a reduction in fertiliser corresponding with a reduction in pasture cover requirements, no supplementary feeding on the block, baleage made on the East Block (due to distance from the cowshed) and the use of low solubility P fertiliser.
48. He noted that the existing consents were due to expire on 20 December 2021.
49. In terms of the modelling under 'Overseer' he was satisfied that the baseline modelling in terms of the current land use represented the actual lawful use of the land and would provide an indication of contaminant loss that could be considered as part of the existing environment.
50. He noted the presence of a number of Critical Source Areas (CSA's) on the property including tile drains which would allow for the movement of contaminants into surface watercourses. He said there were no wetlands within the receiving environment. The receiving environment contained three registered drinking water sites, these being that at Lochiel school 1.2 km down gradient, another on the Oreti River (a town drinking water supply for the Invercargill City Council), and the third approximately 4.3 km downstream on the Oreti River servicing the Alliance Lorneville meat processing plant. He said that the applicant had made no reference to these drinking water supplies, other than that at Lochiel School. He added that the Statutory Acknowledgement Areas of significance to Tangata Whenua had not been addressed.
51. Adverse impacts on water quality derived from the presence of bacteria, sediment, nitrogen and phosphorus transported to water bodies by overland flow and/or subsurface drainage. He said with respect to groundwater, there was limited monitoring in the vicinity of the property but groundwater to the east and west indicated that nitrates were elevated.
52. He stated:
- "The risk of most concern of this proposal is largely due to the change in land use on the east block 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"*²⁴.
53. He was satisfied that the proposed volume of groundwater be abstracted did not raise any issues of concern as it fell well within the allocation still available within the aquifer, as set out in his evidence²⁵. He also considered there were no issues likely to arise with odour, noting

²³ S42A Report, paragraph 16

²⁴ S42A Report, paragraph 86

²⁵ *ibid*, Table 11, paragraphs 88, 92 – 93

effluent storage facilities were located more than 400m from the property boundary and 700m from the closest dwelling²⁶.

54. With respect effluent loading, he noted the effluent disposal field was larger than the area required to meet the minimum standard of 4ha per 100 cows, with winter grazing being undertaken off site.
55. In terms of effects on water quality from effluent discharge his conclusions were qualified by the need to ensure that recommended conditions of consent were agreed and adhered to (his subsequent conclusions are addressed later in this decision). He noted that the increase in the discharge area was effectively cancelled out by the increased herd size. In his view the application did not detail how effluent irrigation would be managed during periods when soils were saturated. He expressed concern that the position of some tile drains was unknown, and that this could have an impact on application rates and depths.
56. Mr Erceg's specific issues of concern in terms of effects on water quality included:
 - the modelled reduction in nutrient losses were recalculated over the entire landholding, which could underestimate adverse impacts within individual blocks;
 - 'Overseer' does not provide for sediment and microbial losses;
 - in the absence of targeted mitigation, there will be increased nutrient losses in the Tussock Creek sub- catchment, and to some extent the Makarewa sub- catchment;
 - soils in the gleyed physiographic zone are poorly drained, tile drains have not been mapped within the east block and could create contaminant pathways;
 - the application does not model the east block separately;
 - although localised effects are spread out, intensified land-use results in greater effects overall;
 - mitigation measures need to be assessed as to their level of effectiveness accompanied by the certainty that they are going to be implemented, rather than relying solely on the modelled nutrient losses.
57. Within the Oxidising Zone, Mr Erceg was not satisfied that there was sufficient information to conclude that contaminant losses will not increase.
58. Mr Erceg also added that although the contaminant loading from the site was expected to be very small, the receiving environment was degraded such that small contributions could be significant. This was a factor of concern given the presence of artificial drainage networks on the property, and the fact that it straddled multiple catchments which ultimately drained into the New River Estuary.
59. Taking account of the audit of the modelling undertaken at the applicant's request he conceded he had no concerns about the modelling itself, but again raised the issue about the implementation of mitigation measures (including assumed GMP's) and uncertainty around inputs. He noted that *Overseer* was unable to estimate nutrient losses beyond the root zone, or from changing farm management. He stated:

²⁶ *ibid*, paragraph 96

*“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”.*²⁷

60. He noted that the planning framework required that water quality in the receiving environment had to be improved and not merely maintained²⁸. He insisted this could be achieved in reality only if the targeted mitigations were implemented, and the GMP’s proposed and assumed by Overseer were put in place. He acknowledged potential positive effects as including a potential decrease in contaminant loading is on the receiving environment subject to the implementation of mitigation to ensure these positive effects will be ‘achieved in reality’.
61. He did not share Dr Freeman’s reservations about GMP’s. He noted that Rule 20 and Appendix N of the Proposed Plan, included reference to GMP’s. During questioning, he expressed the view that there was a need to identify measures that went beyond GMP’s, and added that the FEMP did not include enough detail and needed to be supplemented by conditions as well, particularly because a FEMP may change over time.
62. He expressed a strong preference for compliance monitoring to be undertaken on a three-year, not a four year, average. This was because a three-year period permitted one non-compliance, whereas a four year rolling average would allow two years of non-compliance. He said this was consistent with the requirements of Appendix N.
63. Turning to the objectives and policies of the Proposed Plan, he was of the view that the key policies²⁹ were Policy 10 (Oxidising Physiographic Zone), Policy 13 (Management of land use activities and discharges), Policy 15B (Improve water quality where standards are not met) and Policy 16 (farming activities that affect water quality).
64. He began by drawing attention to Policy 15B which sought to avoid new discharges which did not result in an improvement in water quality, which he considered the application could satisfy if *in addition* to the modelled results, the mitigations in GMP’s were implemented and achieved.
65. Policy 16 specifically addresses farming activities which affect water quality. This however, refers to freshwater objectives which have not yet been established. He noted that upon the development of freshwater objectives, applications to establish new or further intensified dairy farming of cows or intensive winter grazing activities, would ‘generally not be granted’ where freshwater objectives were not met as envisaged by subclause 16(1)(b).
66. Having regard to the Operative RWP, he noted that many of the policies seek to avoid discharges to water, which is not proposed through this application. He contended that Policy 13A was relevant, which is a transitional policy relating to the establishment of “new” dairy farms. However, in his overall judgement he considered that the proposal was consistent with the Water Quality, Water Quantity, and the Land and Soils objectives and policies of the RWP.

²⁷ S42A Report, Paragraph 186

²⁸ Ibid, para 215

²⁹ S42A Report, paragraph 334

67. Mr Erceg stated that he had applied more weight to the Proposed Plan, in recognition of it having been through a hearings process, and it's more targeted policies which give effect to the most recent version of the NPSFM, in contrast to the RWP. He drew attention to the stronger directives at the national and regional planning level which emphasised the importance of improving water quality, particularly where this was degraded. This was the context in which this application had to be considered.
68. Mr Erceg recommended that any grant of consent be for a 10 year term³⁰. Having regard to his assessment of the objectives and policies of the Proposed Plan, and concerns with respect to implementation, it was apparent to us from the S42A Report, that his eventual recommendation to grant only just 'tipped the scales' in favour of consent, and was significantly qualified. This did not appear to reflect any qualms about the modelling undertaken, but rather uncertainties about inputs and implementation.
69. We questioned Mr Erceg at the close of his evidence as to whether his opinions had been influenced by the applicant's evidence to the hearing. His response was that he was now satisfied that the projected improvements in water quality would be achieved, and that he concurred with Dr Freeman's comparative analysis (described below) that compared to the current platform, reductions in nutrients would 'very likely' be achieved.
70. **Ms Abigail Lovett** prepared a statement of evidence to the hearing addressing the effects of the proposal on surface and ground water. She said that the dairy platform is predominantly located within the Lower Oreti Groundwater Management Zone, with the eastern area being within the Makarewa Groundwater Management Zone. She said there was no evidence of a long-term decline in groundwater level over time, but as the aquifers were recharged by rainfall they were particularly vulnerable to the effects of land surface activities. Although limited, groundwater quality monitoring from these areas had revealed elevated nutrient concentrations and increased bacterial contamination.
71. In her opinion, the application had overstated likely nutrient losses by describing them as being a "significant reduction", when more appropriate terminology would have been "possible" or "likely". Her evidence, like that of Mr Erceg, drew attention to claimed reductions in nutrient losses being heavily reliant on mitigation measures being implemented and operating successfully.
72. She also raised the issue of whether the applicant had considered the effects of increased abstraction from Bore E 46 – 1067, which we noted Dr Freeman considered was completely unnecessary given the remaining unallocated capacity available. Her report also queried how soil moisture management would be actually implemented and whether relevant soil moisture data was to be used. We note that during the hearing Mr Erceg conceded that while it there would be more certainty provided by undertaking soil moisture monitoring on site, he accepted the applicant's contention that the Environment Southland Soil Monitoring Site at Tussock Creek was an adequate indicator.

³⁰ *ibid*, paragraphs 326 and 339

73. Shortly prior to the hearing, we received a copy of a Memorandum provided to Mr Erceg on the subject of 'Groundwater Monitoring' dated 28 January 2020. This was authored by Ewen Rodway (Environmental Scientist) and Sarah Yeo (Science Assistant). This outlined the benefits and disadvantages of site-specific groundwater monitoring, including potential relevance to the requests for monitoring raised by the Ministry of Education. The authors noted that:

"There are numerous negatives associated with trying to use regional groundwater monitoring networks to assess the effects (of) single activities. Regional groundwater monitoring networks are very unlikely to be spatially dense enough to identify adverse effects resulting from a single activity (Vrba and Pekny, 1991). Regional monitoring networks are not designed to assess the effects at small scales and are also not designed to be specific to the activity or the physiographic environment in which that activity is occurring. The long residence times, slow flow rates and cumulative effects can also be significant confounding factors. Additionally, the distance between each bore would likely result in difficulty attributing any changes to the groundwater system from a single activity".

74. This was a specific issue of concern to Dr Freeman, particularly if it led to any associated condition that might be imposed on the application. From our perspective, it also emphasised the importance of implementing GMP's and mitigation measures "at source", as the success or otherwise of enhanced farm management practices, and any improvements in water quality, can only be determined a considerable time later on a catchment wide basis.

For the Applicant

75. **Mr Tim Driscoll** opened with brief evidence setting out the background to his application. He explained the Driscoll family had farmed the property since 1905, but that the size of the farm had been increased through purchases in 2012, 2014, and most recently in 2017. He said the farm was converted to dairy in 2012. He stressed that GMP's were the basis of how the property was operated, and that he had sought expert technical advice as part of pursuing the application.
76. At the hearing he was questioned on his understanding of what constituted 'good management practices'. He said that employees would be made aware of their obligations with respect to implementing conditions of consent and added that in his view animal welfare was linked to GMP's. He commented that the Maxipods would be moved around as required, and the rate of application could be adjusted allowing for wet weather conditions. He also added that adjustments were made to fertiliser application to reduce potential nutrient losses. We understood that he intended to retain tile drainage and replace old clay drains with modern plastic 'Novaflow' systems, which would be placed at least 700 mm below ground level to avoid potential damage from machinery. He added however, that in his opinion only a small part of the farm required drainage.
77. **Dr Michael Freeman** was the primary witness for the applicant. He described the modelling exercise undertaken to accompany the application, and how this dovetailed with the report of Ms Topham. He stated that modelling was based on the 'Overseer' FM version 6.3.2 which since the application was originally lodged, had been re – run in this later version which was only released as recently as 9 September 2019. He said the modelling had been audited by Irricon

and was considered to have 'high robustness' in terms of both the current and proposed farm system modelling.

78. With respect to the new water permit, he said the abstraction rate would be less than 2/l per second and would be abstracted from Bore E 46/1067 as the primary source.
79. He considered that when comparing *Overseer* modelling with targets, a 3 – 5 year period would produce more reliable results. He added that a five-year period was a long time for compliance purposes.
80. A significant component of his evidence responded to matters raised in the officer's report³¹, with which he stated he was largely in agreement.
81. With respect to potential impacts on registered drinking water supplies, he noted that with the exception of that of Lochiel School, the other two city water sources were located a significant distance down gradient and/or there was a lack of any apparent contaminant pathway which could adversely affect the water quality of these supplies. Similarly, he considered that proposal would not affect tangata whenua values, and noted that their representatives had not submitted on the application.
82. He said the evidence on water quality including that from Ms Topham, strongly indicated that there would be a decrease in contaminant loading, and consequently granting consent would result an (admittedly small) contribution to improving water quality in the receiving environment including the New River Estuary. He said that Ms Topham's evidence had indicated that a 7.9% decrease in nitrogen losses could be expected from that part of the property within the Oxidising Physiographic Zone. A similar conclusion could be expected for the Tussock Creek Catchment.
83. Dr Freeman opposed Mr Erceg's suggestion that a number of shallow monitoring bores be established on the property. He doubted that establishing and monitoring one or two shallow, short-term bores would provide reliable long-term information. He added that there was potential for contamination from inadequate wellhead protection, and difficulties in determining a suitable location for such monitoring bores.
84. With respect to soil moisture management, he said it was appropriate to rely on the Tussock Creek monitoring site 7 km away as this contained comparable soils. In his opinion on-site soil monitoring was not necessary, but the applicant was prepared to do this if necessary.
85. He said the reporting officers acknowledged that the modelling revealed that it was very likely there would be a reduction in nutrient losses but had concerns about implementation of the necessary measures to achieve this. He said these mitigations were specified in the FEMP and that the applicant had a good compliance history which justified confidence that the mitigation would in fact be implemented.
86. With respect to the increased abstraction from Bore E 46/1067 he noted there was a minor error in the AEE where it was stated there would be *no* increase in the volume sought. However,

³¹ Evidence Dr Freeman, paragraph 30

the volume proposed to be taken was correctly identified in the application as notified, and was in any event well within the ground water allocation for the zone, and as such any effects on groundwater quantity would be insignificant.

87. Having regard to Ms Topham's evidence, Dr Freeman considered that the reporting officers had placed too much weight on Policy 10 of the Proposed Plan (perhaps treating it as a rule or standard). This policy relates to the Oxidising Physiographic Zone, and among other things indicates that consents would not normally be granted for additional dairy farming of cows where contaminant losses would increase; and requires particular regard to be had to water quality and the effects of drainage; and the implementation of good management practices. He said that in any event, the evidence was that nitrogen losses within the Oxidising Zone would decrease, as indicated by Ms Topham's analysis.
88. A significant matter which arose in his evidence concerned the confidence that could be placed in the combination of *Overseer* modelling, the FEMP, and implementation of GMP's. He referred to Mr Erceg's observation that the modelled reduction in (nutrient) losses will 'more likely than not' be achieved in reality, and also the comments of Ms Lovett who had concluded that claims in the application that a significant reduction in nutrient levels would be achieved was inappropriate when it should have been described as being only 'possible or likely'. He drew attention to recent IPCC quantitative definitions³² with respect to what might be meant by the phrase 'likelihood'.
89. Under the IPCC definitions, terms are defined with respect to the 'likelihood of the outcome'. The term "virtually certain" equated to a greater than 99% probability; "extremely likely" to greater than 95% probability; "very likely" as equating to more than 90% probability; "likely" as equating to more than 66% probability; "more likely than not" as more than 50% probability; and "about as likely as not" as between 33 and 66% probability.
90. Using these definitions as a yardstick, Dr Freeman stated that:

"My opinion is that there is a greater than 90% likelihood that the estimated reduction in contaminant losses will occur over the long term and therefore the appropriate terminology to reflect this confidence would be "very likely" as defined by the IPCC".
91. During discussion relating to the 'margin of error' that arises with respect to modelling approaches such as *Overseer*, he expressed the opinion that a 30% margin of error was more appropriate on a cumulative scale. He considered there was no such thing as a 'gold standard', but opined that greater confidence could be assumed when comparing an existing farming scenario with the future farming scenario using a combination of both modelling and the application of farm environmental management plans – a theme he returned to consistently.
92. We note that 'Good Management Practices' (GMP) are defined in a Glossary in the Proposed Plan³³ as follows:

³² Evidence of Dr Freeman, paragraph 9 (f); reference to the 'Australian Department of the Environment (2013) Confidence in Likelihood on the IPCC Fifth Assessment Report, Fact Sheet'

³³ Proposed Southland Water and Land Plan, p115

“Include, but are not limited to, the practices set out in the various Good Management Practices fact sheets available on the Southland Regional Councils webpage”.

93. Making reference to these fact sheets, Dr Freeman expressed some scepticism about GMP's, saying these were not well defined. As an example, he stated that GMP's assumed that fertiliser would be spread evenly. He said there was a wide range of GMP's identified in both the Operative and Proposed Regional Plans, but while many of these practices would be undertaken by landowners and would be accepted as appropriate, they were not strict mandatory requirements. In his opinion it might be useful to identify the GMP's within current planning provisions as 'Plan GMP's' and to identify additional mitigation measures going over and beyond these. He offered the example of vegetated buffers to reduce the effects of run-off on surface water quality as an example of a mitigation measure going beyond GMP's. This matter was also raised in Ms Topham's evidence as discussed below.
94. With respect to the policies in the Proposed Plan, he considered that the Environment Court preferred an 'effects/risk' based approach to one based on a 'grant/not-grant' basis.
95. In terms of potential conditions of consent, he expressed concern about the wording of conditions that might invite contradictory interpretation.
96. **Ms Mo Topham** explained that she had been preparing nutrient budgets for this application since late 2017, using *“Overseer Best Practice Data Input Standards, March 2018”*. She noted that updates and further mitigations were modelled for the applicant reflecting ongoing changes to *Overseer* and changes in interpretation of the Proposed Plan.
97. She stated that the Council's initial reaction to modelling undertaken in October 2018 was concern that predicted Phosphorus losses were higher under the proposed system than under the current system. She reminded us that a number of amendments had been made to the proposal which if implemented, would achieve nutrient reductions on a farm wide basis for both nitrogen and phosphorus.
98. She outlined some of the key assumptions and limitations of the *Overseer* model. It assumes average annual inputs and outputs; that a farm is maintained in a state where there is minimal change each year; that the input data is an accurate reflection of the actual farm management system; and that *“in practice, Overseer assumes that a very specific list of GMP practices are implemented on farm”*³⁴.
99. With respect to farm laneways, *Overseer* assumes that these are provided for dairy cows to move from the paddock to the milking shed, and she calculated that phosphorus losses under the current and proposed systems from laneways would be 34% and 40% respectively³⁵.
100. During the course of the hearing, she noted that there had been some discussion with respect to the difference between GMP's and mitigation measures, which might be regarded as being

³⁴ Memorandum of M Topham, 12 February 2020

³⁵ Ibid

'over and above' GMP's. In her evidence dated 20 January³⁶, she addressed the proposed changes between the current and proposed systems as follows:

Nitrogen loss

- (a) Increased the area that effluent is applied to – reduced N application in effluent to this area
- (b) Reduce nitrogen fertiliser use (although an increase on the East Block)
- (c) Change in the farms culling policy to one of culling earlier
- (d) Lower protein content supplementary feed (Bali modelled but this could be any low-protein feed)

Phosphorus loss

- (a) Improve laneway sediment loss mitigations (as detailed in the applicant's Farm Environmental Management Plan)
- (b) A reduction in Olsen P on the current dairy platform area (although an increase in Olsen P on the East Block)
- (c) Use of the low solubility phosphorus fertiliser on the East Block (RPR modelled but could also be any other low solubility P fertiliser such as serpentine super)

Mitigation specific to the East Block

- (a) No wintering on this block (June and July)
- (b) no grazing of livestock in the months of May to August, requiring less pasture cover May to August and a subsequent reduction in fertiliser N applications, and consequently overall lower pasture growth on this block
- (c) No supplements fed on block
- (d) Baleage made on the East Block due to distance from cowshed
- (e) Low solubility P fertiliser is applied (assumed to React of Phosphate Rock in the modelling, may also be Serpentine super in practice)

101. With respect to laneway management, she said that *Overseer* assumed that 30% of all faecal phosphorus is lost from the farm, that it did not take account of any possible attenuation between the laneway and the farm boundary, and that there was no reference available defining the difference between GMP and mitigation with respect to laneway management.
102. She said *Overseer* does not address nutrients lost between the root zone and the farm boundary, or transported to the eventual receiving water body, an exercise which instead relies on catchment scale modelling. It does not take account of extreme events such as floods and droughts, does not calculate the impacts of a conversion process, is not spatially explicit beyond the level of a defined block, and does not include all management practices or activities. It does not provide for all farm systems in New Zealand and components of the model have not been calibrated against measured data from every combination of farm systems and environments. She also added that it does not recognise physiographic zones. She noted however, that pastoral blocks have been subject to the most calibration and testing in terms of *Overseer*, most of which has taken place on dairy farms³⁷.
103. In her evidence she set out a number of steps that had been taken during the modelling process for this application to minimise uncertainties³⁸. In response to concerns expressed about losses

³⁶ Evidence of M Topham, paragraphs 15-17

³⁷ Evidence of M Topham, paragraph 22

³⁸ *ibid*, paragraph pp 11 – 13

from the Oxidising Physiographic Zone, she noted that this comprised only 62.3 ha of the proposed platform.

104. While GMP's provided a platform for addressing potential nutrient losses, she said that it was often necessary to go beyond these into additional mitigation measures. She noted that during a good growing season, there were likely to be more nutrient losses, while during a poor growing season, there would likely be lower nutrient losses. She emphasised the need to provide for flexibility in farm management.
105. Dr Freeman and Ms Topham circulated two Memoranda dated 12 February 2020, which addressed matters which were raised during the substantive hearing on 3 February. We have treated these as forming part of the applicant's right of reply, and incorporated the matters raised in these memoranda in the above summary of evidence.

Submission by the Ministry of Education

106. In the letter dated 27 January 2020 tabled at the hearing, the Ministry advised that no longer wished to be heard at the hearing. It noted that the Ministry had held discussions with both Council officers and the applicant, which concerned the potential effects of granting the application on the water quality of the Lochiel School bore supply. Accordingly, the submitters comments responded to the content of the applicant's pre-circulated evidence.
107. The letter advised that a proposed condition proffered by the applicant would be acceptable to the Ministry. A summary of the key components of this condition were for the applicant to undertake the following obligations for the term of the consent:
 - a payment to Lochiel School for an increase in the frequency of existing microbiological drinking water supply testing from monthly to a fortnightly basis;
 - a payment to Lochiel School for an increase in the frequency of existing drinking water UV treatment maintenance during each and every school term;
 - a payment to Lochiel School for two drinking water supply water samples to be tested for nitrate – nitrogen with one sample taken in October and one sample taken in March each year;
 - all sampling specified to be undertaken by a suitably qualified person and tested in laboratory with IANZ accreditation with the results provided to the consent holder and consent authority each year;
 - that the payment be made once in invoices provided to the consent holder signed by the principal of Lochiel School;
 - if after five consecutive years of additional maintenance and monitoring no breaches have been detected during that period in terms of the NZ Drinking Water Maximum Acceptable Values for *Escherichia coli*, the above two conditions would cease to apply.
108. This was offered as an *Augier* condition, on the basis that the applicant agreed to be bound by these conditions even though they were 'off site'.
109. However, the Ministry's letter also sought an additional condition. This was that a Management Plan be submitted for the approval of Environment Southland which would include a monitoring

regime, and the definition of appropriate trigger levels for the measurement of samples. Further action would be required if the trigger levels were breached including further sampling, notification of any affected parties, and practicable measures to address any breaches of the trigger levels.

110. Dr Freeman opposed such an additional condition on the grounds that it involved a 'secondary approval' process which he submitted was contrary to case law and guidance on resource consent conditions. He considered it was also unreasonable to put an onus on one farm (among many) to monitor and respond to regional groundwater nitrate – nitrogen quality and be held responsible for any breaches. He emphasised there could be no guarantee that there would be *no* adverse effects on groundwater quality. Nevertheless, he was firmly of the opinion that from a combination of the *Overseer* modelling and proposed conditions of consent, one could be confident that water quality would be likely to improve, albeit by a very small amount given this was just one farm in a much wider catchment.
111. The Ministry's letter drew attention to the same condition being sought on applications for enlarged dairy farming operations by *Woldwide 1* and *Woldwide 2*, upon which decisions had been issued by Commissioners on 20 January 2020. It noted that the Commissioners did not share the applicant's reservations in that case (we understood that the *Woldwide 1* and *Woldwide 2* applicants were also represented by Dr Freeman in his capacity as an expert witness) and had imposed the additional condition sought by the Ministry.
112. We discuss this further below.

ASSESSMENT OF EFFECTS

113. Section 104(1)(a) of the RMA requires us to have regard to "*any actual or potential effects of allowing the activity*". In determining the effects, we have considered the application documents and AEE, the pre-circulated S42A report and technical reviews, all submissions received and following correspondence from submitters, the pre-circulated evidence from the applicant, and further memoranda provided during and after the hearing adjournment. The information received is summarised above and we have considered all matters raised in making our determination.
114. Section 104(2) states that when forming an opinion for the purposes of section 104(1)(a), we may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect. This is referred to as the permitted baseline.
115. We refer here to Policy 39 of the Proposed Plan which 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.
116. No party suggested that we should apply the permitted baseline and, given the direction of Policy 39, we consider it appropriate to consider all adverse effects. While Policy 39 refers specifically to applications for the use of land for a farming activity, given the inter-related

nature of the applications we are considering, we do not consider it appropriate to apply the permitted baseline to the water permit and discharge permit and not apply it to the land use permit. The permitted baseline is therefore not applied to these applications.

Effects of the take of groundwater

117. Groundwater is sought for stock drinking water and dairy shed wash down purposes. The proposal is to increase the volume of water from 72,000 L/day to 81,600 L/day due to the increase in cow numbers. The rate and volume sought is at the small end of the scale and is from a significantly under-allocated groundwater allocation zone.
118. As the rate of take will not exceed 2 L/s, a stream depletion assessment is not required³⁹. We also agree that the use of water is efficient and consistent with Council recommendations, with the rate of take equating to 120 L/cow/day. The applicant does not consider that there will be interference effects on neighbouring bores due to the small rate of take. This was not disputed by Mr Erceg and we agree that effects on other users will be negligible.
119. Following the hearing adjournment Dr Freeman and Mr Erceg helpfully provided us with a set of conditions with their marked-up comments. We note that there is some disagreement between them over the frequency of recording and reporting of water metering data.
120. We note that Rule 54(a)(iv) provides for a permitted activity for abstractions that exceed 20,000 L/day, where a water meter capable of recording the rate of take and daily volume is used, and water take data is recorded daily. While consent for this activity is required under Rule 23(d) of the RWP, we were informed that the activity is permitted under Rule 54. However, the condition proffered by Mr Erceg and Dr Freeman would not comply with this requirement.
121. Having considered their comments and the discussion on this matter at the hearing, we conclude that a water meter must be installed that can record the rate of take and daily volume. We consider that determining the rate of take and daily volume from monthly take data, as described to us by Mr Erceg, is not adequate where water use is intricately linked through effluent discharges to water quality outcomes.

Effects of the effluent discharge

122. The applicant seeks to increase the volume of dairy effluent discharged to land, resulting from an increase in milking cows and subsequent increase in water used for dairy shed washdown. Currently, wash down water from a 50 bail rotary dairy shed flows by gravity via a stone trap to an effluent storage pond with a 3,261 m³ capacity. Low rate pods are used to irrigate the liquid effluent and a slurry tanker is used when necessary to discharge sludge to land.
123. We heard from both Dr Freeman and Mr Erceg that, when applied at an appropriate rate and depth, dairy effluent can act as a fertiliser with minimal risk of reaching groundwater or surface water. Mr Erceg explains that⁴⁰, for this to occur, sufficient effluent storage is required to enable scheduling of effluent irrigation based on soil moisture deficits, and the irrigation area must be

³⁹ As per Policy 29 of the RWP and Policy 23 and Appendix L.2 of the Proposed Plan.

⁴⁰ S42A report, paragraphs 113 and 114

of a sufficient size. Where effluent is applied when soils are at field capacity, there is likely to be increased leaching beyond the root zone and overland flow to surface water may occur. Where concentrations exceed plant uptake capacity, nutrient leaching can occur.

124. The applicant proposes to irrigate liquid effluent at a rate of 10 mm/hr and at a depth of 25 mm, and apply sludge at a maximum depth of 5 mm. A minimum return period of 28 days between applications is proposed. The AEE contends that this is all well within accepted practice for ensuring that the effluent discharges can be managed to minimise nutrient loss to groundwater or surface water. Mr Erceg agrees that the proposed discharge is appropriate, however he noted that⁴¹, although the discharge area is increasing slightly, any benefits from the increasing land area are cancelled out by the increasing cow numbers. We agree with Mr Erceg that the increasing land disposal area cannot be considered as mitigation for increasing cow numbers.
125. Mr Driscoll told us that he currently uses an Environment Southland soil moisture reference site, located approximately 6.5 km south east of the property at Tussock Creek, to determine whether soil moisture is below field capacity (and effluent irrigation can occur). Being closer to the coast, Mr Driscoll informed us that the reference site is likely to get slightly more rainfall. Dr Freeman told us that the reference site has Pukemutu soils like those on the Applicant's property and that there is likely to be a good relationship between soil moisture at each site.
126. We agree that, as far as reference sites are concerned, this one is likely to be a good match. However, there is a heavy reliance on soil moisture monitoring to ensure that effluent application does not occur when soil moisture is at field capacity. In addition, the effluent discharge area occurs on both Edendale soils and Pukemutu soils, whereas the reference site only comprises Pukemutu soils.
127. As an aside, there was no disagreement over the soil characteristics of Pukemutu and Edendale soils. Pukemutu soils are poorly drained and are subject to severe structural compaction and waterlogging. They are therefore classified as having a slight vulnerability to leaching but are prone to overland flow. Edendale soils are well-drained by comparison and are subject to only slight compaction and waterlogging. There is therefore a higher risk of leaching with Edendale soils.
128. We accept that the proposed discharge parameters will not result in increased contaminants reaching groundwater and surface water if the conditions of consent are adhered to. However, we note that a high degree of accuracy is required to ensure that effluent is not discharged when the soil exceeds field capacity.
129. We note that the AEE⁴² proposed on-site soil moisture monitoring within six months of the grant of a consent. Mr Driscoll told us that on-site soil moisture monitoring would also be useful for measuring soil temperature for fertiliser application, however Dr Freeman considers that the Council reference site is sufficient and that on-site monitoring is unnecessary. Mr Erceg acknowledges that on-site soil moisture monitoring provides more certainty, however agreed that the reference site is useful and adequate.

⁴¹ Ibid, paragraph 117

⁴² AEE page 36

130. We consider that this certainty is necessary given the different soil types on site and high risks of increased contamination if the effluent discharge is applied to or above field capacity. We have therefore included a consent condition requiring that soil moisture monitoring be installed within six months of the grant of consent.
131. As discussed above, Mr Erceg expressed concerns in his S42A report about the tile and mole drainage providing a contaminant pathway to surface water, with Pukemutu soils particularly prone to waterlogging and therefore requiring artificial drainage networks. We agree with Mr Erceg's concerns and note that the FEMP seeks to "*avoid preferential flow of FDE through drains*", with the GMP's to achieve this being to "*defer effluent application when soil conditions unsuitable*" and "*apply effluent at low rates and depths*". We understand that the locations of many of the tile drains are unknown and that to avoid effluent irrigation in the vicinity of tile drains is not an achievable condition.
132. We consider that there are several mitigation measures that are critical to reducing the risk of nutrient loss via tile and mole drainage: ensuring that effluent is not applied when the soil is at or above field capacity, utilising the discharge area to ensure that the application rate remains well within 150 kg/N/ha/yr, and applying effluent at low rates and depths. These can be addressed by conditions and should ensure that the effects of the effluent discharge are minor.

Effects of the change in land use

133. As outlined above, the proposal anticipates reductions in nitrogen and phosphorus losses, calculated over the entire landholding using the Overseer model and reliant on a range of proposed mitigation measures. The land use consent incorporates effects from effluent discharges, as well as the diffuse discharges of contaminants from cows and fertiliser application.

Overseer modelling and dealing with uncertainty

134. The applicant has relied on Overseer modelling to estimate the overall change in nutrient loss from the current to the proposed scenario. The Overseer modelling was undertaken by Ms Topham, who has considerable expertise in this area. We questioned her on the validity of the model inputs and note that she has used satellite images and aerial photos to validate the inputs for the current scenario. Ms Topham's work was peer reviewed prior to submission to the Council.
135. The Council commissioned a peer review of the Overseer modelling from Ms Nicki Watt from Irricon Resource Solutions, whose review concluded that the robustness of the modelling for the two scenarios was high. We also note the considerable expertise of Dr Freeman in the use of Overseer.
136. There were several iterations of Overseer modelling for the current and proposed scenarios, each with varying reductions in N and P loss. The original application, which included an additional 20 cows when compared to the revised application, had a 0.2% reduction in N loss (11.5 tonnes N per year compared to 11.3 tonnes N per year) and a slight increase in P loss (0.26 tonnes P per year compared to 0.27 tonnes of P per year). The amended application, dated 13 September 2019, proposed an approximately 9% decrease in N and approximately 8% reduction in P.

137. The final Overseer modelling iteration is contained in Ms Tophams's Memorandum dated 30 January 2020 and suggests an 8.6% reduction in total farm N loss and a 7.8% reduction in total farm P loss. While the N loss changes are largely incorporated into the Overseer model, adjustments were made to the P loss calculation outside of Overseer. We understand from Ms Topham that Overseer does not account well for P mitigations and that these need to be calculated separately and added to the Overseer modelled reduction.
138. While we are satisfied that the Overseer modelling has been undertaken appropriately, we feel obliged to comment on the inherent uncertainty in the Overseer model and the likely high level of inaccuracy in the findings. We acknowledge the wide-spread use of Overseer in these types of regulatory situations, but also the widespread concern about its use in this way. The uncertainties and appropriate application of Overseer were discussed in some detail during the hearing, with both Ms Topham and Dr Freeman acknowledging the issues and uncertainty with the use of Overseer.
139. Ms Topham referred us to the Parliamentary Commissioner for the Environment's⁴³ (PCE's) report which cites a 25-30% level of uncertainty with Overseer modelling of nitrogen losses. Ms Topham informed us that this level of uncertainty would likely be less for the applicant's property as it is close to an Overseer calibration site with similar characteristics. We note from the PCE's report⁴⁴ that a 25-30% model uncertainty is for calibrated sites, so are reluctant to accept Ms Topham's assertions that the uncertainty would be less in this instance.
140. While this level of model uncertainty is high, Ms Topham and Dr Freeman explained that Overseer is most useful when comparing different scenarios on the same farm. Where many of the key inputs, such as soil type, climate and cow types, are the same the error is likely to be similar for each scenario. The focus is therefore on the relative change between the current and proposed scenarios, rather than on the accuracy of the predicted loss rates. Additional uncertainty is raised by some of the mitigation incorporated into the proposed scenario, such as the use of biallage grass wintering, which is reasonably new and not well calibrated in Overseer.
141. Ms Topham explained to us that the modelled proposed scenario is only one example of how nutrient reductions could be achieved on the property resulting from the increase in cow numbers. She requested that flexibility be allowed through the consent conditions so that other scenarios could be used to achieve an equivalent reduction. We understand that this flexibility would allow the applicant to respond to factors such as market changes, scientific developments, animal diseases and climate and weather.
142. Given the inherent uncertainty in the modelling, and that the feasibility of the proposed scenario requires the associated mitigation to be examined, we consider that it is risky to provide the flexibility requested by Ms Topham. We agree with Mr Erceg, who considered that other options would need to be assessed to determine their usefulness and certainty in achieving the predicted loss reductions.

⁴³ Parliamentary Commissioner for the Environment. Overseer and regulatory oversight: Models, uncertainty and cleaning up our waterways. December 2018.

⁴⁴ Ibid, page 36

143. This brings us to whether we can have certainty that the modelled reductions will occur. That is, we need to consider the Overseer modelling alongside the proposed changes to the farm system.

Good Management Practice and proposed mitigations

144. There was discussion in the hearing about the extent to which the proposed mitigation can be considered GMP's or beyond GMP. Dr Freeman asserted that GMP doesn't have a clear definition, and that the proposed mitigations should be examined on their merits rather than focussing on whether they can be considered GMP's. Dr Freeman advised us that certainty is need through consent conditions and that we should focus on what mitigation can be "locked down" in conditions. We find this approach to be somewhat contradictory to the request for flexibility requested by Ms Topham.
145. Mr Erceg considers that GMP is sufficiently well defined and reminded us of the requirements in the Proposed Plan for achieving GMP, in particular Rule 20 and Appendix N. We were provided with GMP factsheets published by Environment Southland and DairyNZ. We acknowledge Dr Freeman's assertions that these lack certainty but note that they are prepared for use by farmers and likely not intended to be guidance for technical experts.
146. GMP becomes an issue because the Proposed Plan requires through Objective 18 that *"all activities operate in accordance with "good management practice" or better..."*. This is implemented through Policies 6 and 10, which are further discussed below. Therefore, should the applicants implement the mitigation proposed through this application (considered to be GMP or better) on their property without the increase in cow numbers, we anticipate that greater improvements in water quality would be achieved. This would therefore contribute to achieving a key objective of the plan, being to improve the water quality in degraded water bodies (Objective 6), in a greater way than the proposal before us. We also note that had the Applicant been further along in implementing GMP's, then additional mitigation would have been required to demonstrate an improvement in water quality from the proposed farm changes.
147. We felt obliged to question whether this is a matter that can be considered under the Proposed Plan. Is there a baseline that proposed reductions should be measured against? Should we be requiring mitigation that goes beyond GMP for this proposal, if that is able to be defined?
148. Dr Freeman provided some guidance on this in his Memorandum dated 12 February 2020, where he stated the following on page 4:
- "When assessing the extent to which new mitigation measures should be considered in assessing a proposed reduction in contaminant loss; the key comparison is what has been occurring (the existing environment) compared to what is proposed. In my view, this is the appropriate comparison rather than a comparison with what might have been occurring if all potentially relevant plan GMPs were implemented"*.
149. We note that the proposed scenario in this instance is compared to the average of the previous three seasons, up to and including 2018/19. This appears to be an accepted approach by

Environment Southland in the absence of any guidance in the Proposed Plan. At the hearing Dr Freeman attempted to guide us away from considering GMP's altogether, although we are not prepared to do this given that it is a clear requirement of the Proposed Plan.

150. In his S42A report⁴⁵, Mr Erceg considers that GMP's are the bare minimum requirement under the Proposed Plan and that the applicant should already be underway with implementing these. Mr Erceg had requested that the applicant show which GMP's have already been implemented on the property and shared the response as Table 15 in his S42A report.
151. Mr Erceg comments, and we agree, that many of the GMP's that have already been implemented are also included as proposed mitigation for this application. The applicant is proposing to amend or improve these practices to improve their effectiveness, however we note that Table 15 indicates that many of the GMP's have already been "done" on the current platform and will be implemented on the new block also. We could take from this that the amendment or improvement is the application of these practices to the new block, however we understand from the hearing and evidence that these are property-wide improvements to enhance the effectiveness of these measures. However, if many of the mitigations have already largely been implemented, how much additional improvement can be gained to offset the increase in cow numbers?
152. While we attempted to clarify this through questions to Dr Freeman and Ms Topham at the hearing, the distinction between what has already been done on the property and what is incorporated into the proposed scenario remains largely unclear. We were repeatedly directed to the FEMP as providing detail on the proposed mitigation, and reassured that having the nitrogen and phosphorus losses, to be estimated by Overseer, as consent conditions will provide sufficient certainty that the predicted losses will occur. Ms Topham and Dr Freeman told us that existing practices, including GMP's that have already been implemented, were incorporated into the existing Overseer scenario. Indeed, Overseer assumes certain GMP's, such as even and precise spreading of fertiliser.
153. The FEMP has very broad descriptions of the mitigations and no timeframes for implementation. It is comparable to the GMP guidance referred to above which Dr Freeman considered lacked certainty. At a property level, we would expect considerably more detail. We concluded above that, while we accepted the Overseer modelling for the current and proposed scenarios, given the inherent uncertainty in the modelling we were not prepared to rely on it without confidence that the proposed mitigation is appropriate and achievable. The discussions below consider whether we can achieve the level of certainty necessary to grant this consent.

Nitrogen and phosphorus

154. We are satisfied that the Overseer modelling is robust for the actual and proposed scenarios but recognise that whether reductions in nutrient loss occur in practice will depend on how well the applicant undertakes the proposed mitigation. Ms Watt considers that management of the East Block is critical to achieving the proposed N reductions. The western portion of the proposed dairy platform, including the East Block, is in the oxidising physiographic zone, where nitrogen leaching is the main nutrient concern.

⁴⁵ S42A report, paragraphs 172-174.

155. The key proposed measures to address N loss include less N fertiliser applied to the East Block (compared to other blocks), no grazing on the East Block from May to August inclusive and no supplements fed on this block. Other key mitigations to reduce N include increasing the area that effluent is applied to, culling livestock earlier than in the current scenario and use of a lower protein content feed.
156. Some of these measures are included in the condition set proposed by Mr Erceg and Dr Freeman, such as restrictions on East Block grazing and supplement feeding. We are satisfied that certainty for other measures, such as the active effluent disposal area, earlier livestock culling and animal feed, can be achieved through the FEMP auditing process, along with nutrient loss limits and annual Overseer modelling.
157. The dairy platform sits largely on the gleyed physiographic zone. Here, the S42A report explained that waterlogging results in extensive artificial drainage networks and a higher risk of overland flow. P is therefore the nutrient of most concern. Appropriately, P loss is a major focus of the proposed mitigation. The key additional drivers for reducing P loss, identified by Ms Topham and supported by Ms Watt, include reducing Olsen P on the dairy platform (but increasing on the East Block), the use of low solubility fertiliser on the East Block, and directing runoff away from CSA's or filtering runoff through adequate riparian buffers. These are identified in the FEMP in general terms.
158. We observed on our site visit that the waterway margins were fenced and vegetated, however we were concerned to observe a several hundred metre stretch of laneway to the south of the dairy shed situated almost immediately adjacent to the waterway, with a steep, vegetated slope between the laneway and the waterway approximately 2-3 m wide. The steep and narrow nature of the riparian strip would reduce its effectiveness. This was not acknowledged or addressed by the applicant or Mr Erceg.
159. We note that the FEMP specifically refers to an increased buffer width along the laneway at the southern end of the property (paddock 5). The site plan included as Appendix B of the FEMP indicates that this is referring to the area we observed. The FEMP does not include a timeframe for this mitigation to be implemented, however we note from Table 15 of the s42A report, provided by the applicant in response to a request for further information, that an *"increase in buffer area on the lane to the south of the dairy shed prior to the exercise of consent"* is proposed. The width of this increased buffer zone was not stated.
160. The FEMP also proposes improvements to kickboards on specified bridges and culverts. The FEMP states that identified culvert crossings *"will be inspected over the next 12 months and additional containment and diversion mechanisms will be installed as necessary to ensure there is no direct run-off of effluent from any crossing to water"*. We note that there is no time limit proposed for such improvement works to be completed, if they are necessary, and agree with Ms Topham and Ms Watt that measures such as this are essential to ensuring P loss is reduced. We note that Table 15 of the s42A report, referred to above, indicates *"overall improvement to barge boards and cutoffs proposed prior to the exercise of consent"*.
161. We consider that these measures are essential and, while their implementation would be driven in part by the P loss rates included in the proposed consent conditions, additional certainty will be achieved through requiring these measures as conditions. This is particularly the case

because, as discussed above, these measures have already been partially implemented on the property. The condition requirements are discussed further in the section below on conditions.

Sediment and microbes

162. Dr Freeman and Ms Topham informed us that that contaminants such as sediment and microbes are not specifically modelled or estimated by Overseer, and that the modelled effect of phosphorus loss can be relied on as a proxy for the relative loss of sediment and microbes. Phosphorus and microbes are commonly found bound to sediment, so the three contaminants have similar pathways. The key contaminant pathway is overland flow driven by rainfall, although during dry periods high winds can mobilise sediments.
163. Mr Erceg challenges the assertion in the application that, due to a similar contaminant pathway, all are lost at the same rate. He has not seen evidence to support this and considers that relying on Overseer phosphorus loss is inappropriate, given the acknowledged uncertainty in Overseer for modelling phosphorus loss.
164. We agree that such an approach only adds to an already considerable amount of uncertainty. Given that the key pathways for sediment and microbes are understood to be similar to those for phosphorus, we have considered whether the mitigation proposed is appropriate to address the risks from those contaminant pathways. As discussed above, we are requiring some key mitigations from the FEMP to be included as consent conditions, namely inspection and improvement works to reduce direct run-off from bridges and culverts, and that laneway runoff be directed away from adjacent surface waterbodies. We are satisfied that the addition of these conditions, along with other key mitigation included in the FEMP, will provide sufficient certainty that effects from sediment and microbes do not increase as a result of the increased cow numbers.

Effects on drinking water supplies

165. The proposed increase in cow numbers has the potential to increase microbial concentrations in downgradient water supplies. Mr Erceg identified three registered drinking water supplies downgradient of the property: the Lochiel School supply at 1.2 km, sourced from a bore; an Invercargill City Council town supply sourced from the Oreti River at 11.7 km; and another take from the Oreti River servicing the Alliance Lorneville processing plant at approximately 16 km downgradient.
166. The Ministry of Education expressed concern in their submission about the potential adverse effects on the quality of the Lochiel School water supply, as discussed above. While we accept that a modelled reduction in nutrients is likely to occur, there is less certainty with microbial contamination. In addition, the provision of a rolling average means that there could be very small increases in some years although we accept Dr Freeman's evidence that the effect of this on the school water supply would likely be insignificant. We also accept that any effects observed could be from a different source.
167. We consider that the condition proposed by the Ministry of Education is appropriate, although agree with Dr Freeman that the requirement for a management plan that identifies trigger levels and outlines action if these are breached, is unnecessary. We consider that such a management plan should be the responsibility of the school in consultation with Public Health South.

Off-site effects

168. The applicants currently graze some cows off-site at a third-party grazier. This proposal includes a reduction in the numbers of cows wintered off-farm in June and July. While we were told by Mr Erceg that we can consider the effects of off-site grazing, there is very little detail on the location or activities occurring there. We have to assume that any third-party grazier has the appropriate authorisations in place for their operation.

Cultural effects

169. Effects on Tangata Whenua values are an important consideration for any application which has the potential to contaminate water. Rūnanga did not submit on these applications and the effects on Tangata Whenua values were not well-considered in either the AEE or S42A report. We were surprised to find that the relevant iwi management plan, Te Tangi a Tauira, was not considered in the S42A report, although note that the AEE gives some consideration to this. Mr Erceg identifies the Oreti River Statutory Acknowledgement Area and the Rakiura/Te Ara a Kiwa Statutory Acknowledgement Area as being within the receiving environment, as well as the Oreti Mataitai Reserve.
170. We accept the evidence that the proposal will result in a slight improvement in water quality and can only assume that there will not be adverse effects on the relationship between Tangata Whenua and their ancestral waters and taonga. Should such unanticipated effects arise, a condition provides for review of this consent under section 128 of the RMA.

Positive effects

171. Mr Driscoll outlined in his evidence the positive effects of the proposal, including a more sustainable long-term farming system. We acknowledge the significant investment in the current farming system, including the acquisition of the East Block, and the efforts that the Driscolls are making to reduce the nutrient losses from their property. We also acknowledge that the potential for increased production contributes to the regional economy.

OBJECTIVES AND POLICIES

The Proposed Southland Water and Land Plan (Part A)

172. As a preliminary matter, and as described by Mr Erceg⁴⁶, the Environment Court issued an Interim Decision on 20 December 2019 concerning 10 of the 24 appeals to the provisions of the Proposed Plan⁴⁷. Attached to this decision is Annexure 1, the preamble to which states:

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.

⁴⁶ S42A Report, paragraphs 269 – 274

⁴⁷ Aratiatia Livestock Ltd v Environment Southland, Decision [2019] NZEnvC 208

For some provisions the court has proposed alternative wording , in which case we indicate that the provision is “proposed to be amended” the parties are invited to respond to the same while respecting the Court’s findings in relation to the wording proffered by the parties.

173. In his evidence, Mr Erceg stated that:

“..... I consider 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”

174. We agree, and adopt this reasoning with respect to any such objectives or policies which are relevant to this application.

175. We have conferred significant weight on the Proposed Plan. The Regional Water Plan (RWP) became operative in 2010 and seeks generally similar outcomes to those on the Proposed Plan, but is far less directive than the Proposed Plan. This is particularly evident with land use applications being required for the establishment or expansion of dairy platforms as is sought through this application.

176. Quite apart from the conclusions in the Interim Decision of the Environment Court described above, the Proposed Plan was prepared giving effect to the requirements of the National Policy Statement on Freshwater Management (NPSFM). There was no dispute between the parties with respect to the identification and application of the relevant objectives and policies

177. The NPSFM was significantly strengthened in 2017, and we understand a draft NPSFM (2019) has been promulgated, although we are unable to take account of that at this stage. What is significant is that the regime for managing the effects of land use on water has fundamentally changed and the Proposed Plan gives effect to these changes which are mandated at a national policy level.

178. Before considering this application against the specific objectives and policies in the Proposed Plan, we note that freshwater limits and targets have not yet been set in accordance with Policy CA2 of the NPSFM (2017). This is to be pursued through a plan change to be completed by December 2025 for the Freshwater Management Units (FMU’s) in the region.

179. We have focused our attention on those objectives and policies of the Proposed Plan which have more direct relevance to the assessment of this application. We begin with consideration of Region – wide Objectives.

180. Objectives 2, 9(c) and 13(1), which are both subject to appeal, recognise that water and land enable primary production, and the economic social and cultural well-being of the region. While these are objectives we must take into account, we do not take them as meaning that primary production and economic well-being are to be ‘balanced’ against requirements for the protection of water quality. Rather, we consider that achieving economic well-being is enabled subject to this being consistent with improving the quality of water in water bodies which have been subject to degradation. This is a clear direction in higher order instruments notably the NPSWM. We do not consider that this was a matter in contention at the hearing.

181. Objective 3 (as amended by the Environment Court) requires that:

The mauri of water will be acknowledged and protected so that it provides for te hauora o te taiao (health and mauri of the environment) and te hauora o te wai (health and mauri of the water body) and te hauora o te tangata (health and mauri of the people).

182. This objective is accompanied by Objective 4 which requires that tangata whenua values and interests are reflected in the management of freshwater, and Objective 5 which requires that access is provided (including customary use of) mahinga kai resources, nohoanga, mataitai and taiapure.

183. We acknowledge the fundamental importance of these values. The receiving waters of the Oreti River and the New River Estuary are degraded. In order to be consistent with the protection of the resources described in this objective, a grant of consent to this application must be demonstrated to improve the quality of these receiving waters. Dr Freeman was of the opinion that a grant of consent to this application would achieve this result. He quite rightly observed however, that this 'improvement' would be very small on the basis that the applicant's farm was only one of a large number of contributors to water quality in the catchment.

184. Objective 6 (as amended by the Environment Court) requires that:

Water quality in each freshwater body will be:
(a) maintained where the water quality is not degraded, and
(b) improved where water quality is degraded by human activities.

185. There is agreement between all parties to the hearing that the water quality of the receiving waters of the Oreti River and its tributaries have been degraded by human activities and hence subclause (b) is directly relevant, as the property concerned falls within the catchment of this river. The effect of land use activities on freshwater quality in the Oreti River can only be determined collectively, as there are many farm properties which contribute contaminants. For an application such as this, the potential impacts on water quality can only be determined on an individual basis on farm through the implementation of the FEMP and demonstrated improvements in on farm practices which result in a modelled decrease in nutrient discharges.

186. In this case, we have an increase in cow numbers and in proportional terms, a somewhat smaller increase in the area of the dairy platform. The weight of evidence before us demonstrated that notwithstanding the increase in the number of cows, the potential discharge of nutrients and other contaminants from the overall property (as enlarged to incorporate the East Block) was expected to decrease, and accordingly a grant of consent would be consistent with Objective 6 (b).

187. Objective 7 as amended by the Environment Court requires that following the establishment of freshwater objectives limits and targets, in terms of both water quality and quantity, to maintain or improve water quality and phase-out existing over allocation.

188. Typically, 'over allocation' has been understood in quantitative terms with respect to the allocation of ground or surface water, but we now understand this includes a qualitative aspect

in terms of land use and discharges⁴⁸. Consistent with our findings above, we do not consider a grant of consent to this application would be contrary to Objective 7.

189. Objective 8 seeks to ensure that the quality of groundwater is maintained, or because of the effects of land use or discharge activities is progressively improved.
190. We are aware that the Edendale soils on the property are susceptible to leaching, and accordingly it is important that in terms of soil moisture, effluent disposal to the surface of the land does not exceed the field capacity of those soils. We consider this factor is of such importance that on-site soil monitoring and careful management be required by way of conditions. Subject to such management and compliance with conditions we are satisfied that the proposal is not contrary to Objective 8.
191. Objective 13B seeks that discharges of contaminants to land and water that have significant or cumulative adverse effects on human health are avoided.
192. Earlier in this decision we noted the limitations of *Overseer* in modelling P losses, and discussed the known linkage between sediment and microbes and P losses. Given the evidence, we consider that the potential for adverse effects on the water supply bore serving Lochiel School are very low, but that a condition requiring testing water quality for the school would be appropriate. Overall, we do not consider the proposal would be contrary to Objective 13B.
193. Objective 18, as proposed to be amended by the Environment Court, states that:

All persons will demonstrate improved land use and water management practice.
194. We acknowledge that the NPSFM and the Proposed Plan – regardless of the outcome of remaining appeals – make it very clear that for dairying intensification activities such as this one, improved land use and water management practices are mandatory, and this was not a matter of dispute between the parties at the hearing. We note there is an element of uncertainty in the assumptions underlying modelling, and minor changes in circumstances or practices can have a significant impact on water quality outcomes. On balance, we have come to the conclusion that the changes in practice outlined in Ms Topham’s evidence and reflected in the conditions of consent attached to this application, represent improved land use and water management and hence are consistent with this objective.
195. Turning to the region-wide Policies, Policy 6 relates to the Gleyed physiographic zone. The Environment Court has proposed that this policy be amended by adopting either a “risk based” or “effects based” approach. This will require the identification of contaminant pathways to ground and surface water bodies by overland flow including artificial drainage, and the implementation of good management practices. These matters should be taken into account when assessing resource consent applications and preparing or considering Farm Environmental Management Plans.
196. Policy 10 relates to the Oxidising physiographic zone. It is also proposed to be amended by the Environment Court through wording having either a “risk-based” or “effects based” approach.

⁴⁸ Eg, Policy 16.1(b)(ii)

The assessment required is broadly similar to that for the Gleyed zone described above, but also requires particular consideration of effects on water quality from contaminants transported by deep drainage, and the avoidance of dairy farming of cows and intensive winter grazing where contaminant losses will increase as a result of the proposed activity.

197. Both of these policies apply directly to this application. We note in passing that with respect to Policy 10, the term 'avoidance' would at least imply noncomplying if not prohibited activity status which is not the case here. In order to address risk factors, and the potential adverse effects of deep drainage, conditions are to be imposed to ensure there is no intensive winter grazing of stock on forage crops between May and September inclusive.
198. Policy 6 relates to the Gleyed soils comprising the majority of the property. Particular attention must be paid to the adverse effects of artificial drainage and overland flow with respect to this soil type. While we are generally satisfied that nitrogen losses would be satisfactorily managed, we have concerns about potential P losses on the soils, and accordingly consider it is necessary to have conditions to ensure that riparian losses to waterways are adequately managed. Subject to conditions to achieve this, we are satisfied that this policy can be met.
199. The subsequent Water Quality policies have not been subject to assessment through the Environment Court decision. These begin by referencing Policy A4 of the NPSFM 2014 as amended in 2017, which addresses discharge consents. This is further considered below.
200. Policy 14 states a preference for discharges to land over discharges to water. The latter is not proposed through this application.
201. Policy 15B calls for the improvement of water quality where standards are not met, and is accordingly relevant to this application. This policy and subclause (1) read as follows:

Where existing water quality does not meet Appendix E Water Quality Standards or bed sediments do not meet 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 exceedances of those standards or sediment guidelines beyond the zone of reasonable mixing and*

.....

202. As discussed earlier in this decision, we consider that with the conditions imposed, there will be a small improvement on water quality resulting from the approval of this application and compliance with the necessary conditions of consent.
203. Policy 16 concerns farming activities that affect water quality and is subject to appeal. Those components of this lengthy policy which are of direct relevance to this application read as follows:

1. Minimising the adverse environmental effects (including on the quality water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes, and ground water) from farming activities by:

.....

(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 over allocated; or

(iii) water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet Appendix C ANZECC sediment guidelines; and

.....

204. Subclause (c) relates applications to establish new or to further intensify existing dairy farming following the development of freshwater objectives under the FMU processes.

205. Clauses 2 and 3 of Policy 16 state as follows:

2. Requiring all farming activities, including existing activities to:

(a) implement a Farm Environmental Management Plan, as set out in Appendix N;

(b) actively manage sediment run-off risk from farming and hill country development by identifying critical source areas and implementing practices including setbacks on water bodies, sediment traps, riparian planting, limits on areas or duration of exposed soils and the prevention of stock entering the beds of surface water bodies; and

(c) manage collected and diffuse run-off and leaching of nutrients, microbial contaminants in sediments with the identification and management of critical source areas within individual properties.

3. When considering a resource consent application for farming activities, consideration should be given to the following matters:

(a) where the multiple farming activities (such as cultivation, riparian setbacks, and winter grazing) can be addressed in a single resource consent; and

(b) granting a consent duration of at least five years.

206. We have commented earlier on the potential issues associated with the legal status of an activity and policies using wording based on whether or not 'consent is to be granted'. Dr Freeman was concerned that this read like a 'rule'. The wording of these policies have yet to be resolved through further proceedings through the Environment Court. We have approached it on the basis that the application of the policy be considered in terms of whether effects are adequately mitigated, and that a grant of consent would not create a risk that the quality of receiving waters would deteriorate.

207. In considering the weight of evidence, we have come to the conclusion that by comparison with the current farming practices on this property, and with the imposition of conditions, there will be a small reduction in contaminants entering receiving waters. This recognises that this is but one property in a catchment containing a large number of dairy farms. Implementation of the proposals contained within the FEMP can be expected to 'minimise' potential adverse effects as anticipated by subclause (1) of the policy, although some adverse effects will continue even as a consequence of the existing intensity of activity on the property.

208. FEMP's are required practice with respect to applications of this nature. The FEMP contains a number of measures which have an inherent element of uncertainty in terms of their application, notwithstanding the degree of confidence that has been expressed with respect to the modelling results. Taking these factors into account, we think it is be appropriate to conclude that the proposed activity is 'not inconsistent with' these policies, rather than conclude that they have been satisfied.
209. Policy 17 relates to agricultural effluent management. From the evidence we were satisfied that the agricultural effluent system existing on this property was fit for purpose, and no adverse effects were expected subject to its ongoing maintenance.

The Regional Water Plan (RWP)

210. Although operative, we have attached less weight to this plan, not because its policies are inconsistent with those of the RPS or the Proposed Plan, but because it was formulated prior to the NPSFM. In summary it's relevant policies with respect to water quality require that:

Policy 3 – requires no reduction in water quality beyond the zone of reasonable mixing;
Policy 4 seeks to ensure that point and non—point discharges to surface water bodies outside of Natural State Waters managed to meet or exceed water quality standards;
Policy 7 expresses a preference for discharges to land over discharges to water;
Policy 13A calls for the recognition of new dairy farm developments as a risk to water quality;
Policy 25 seeks to avoid remedy or mitigate point source and nonpoint source discharges so there is no deterioration in groundwater quality after reasonable mixing, and:
Policy 31A seeks to address the level of management required for discharging effluent to an acceptable level of environmental risk.

211. It was common ground at the hearing that the RWP, being an older document prepared prior to the current iteration of the NPSFM, is both less prescriptive and less detailed than the Proposed Plan. Notably, Policy 3 requires that there be 'no reduction' in water quality beyond the zone of reasonable mixing, whereas the Proposed Plan requires that applications demonstrate an improvement in the quality of receiving waters where these are degraded. The current application is predicated on recognising a need for improvement, not merely maintenance, of water quality. The other policies are more general in their content and application. We are satisfied that a grant of consent would be consistent with the requirements of the RWP.
212. There is a suite of other policies⁴⁹ addressing water quantity, but as the proposed increase in take is minor in the context of a groundwater zone where the water is not over allocated, so this application does not raise any issues with respect to these policies. Similarly, agricultural effluent can be sufficiently managed as the current infrastructure on-site has been approved through a relatively recent resource consent so is consistent with relevant policies relating to that matter.⁵⁰

⁴⁹ Policies 21, 22, 23, 28, 29 and 30

⁵⁰ Policies 41 and 42

The Southland Regional Policy Statement.

213. The RPS became operative in October 2017.
214. Objectives TW3, TW 4 and Policy TW4 seek to sustain or improve mauri and wairua where these values are degraded, recognise sites and places of significance to Maori, and ensure that resource management decisions take into account traditional uses and practices, their relationship with natural resources, access to natural resources used for customary purposes, places sites and areas with significant spiritual or cultural values, and Maori health and cultural well-being.
215. Given our overall conclusions with respect to the impacts of the proposal on receiving waters, we have concluded that it is not contrary to these two objectives and policy.
216. Water quality objectives and policies call for the safeguarding of water quality in the region, and the management of discharges and land use activities. Specific provision is of relevance include:
- Objective WQUAL.2 – halt the decline, and improve water quality in low land water bodies in 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.2 – Maintain or improve water quality, having particular regard to the following contaminants:*
- (a) nitrogen;*
- (b) phosphorus;*
- (c) sediment;*
- (d) microbiological contaminants.*
217. Policy WQUAL.11 calls for the avoidance as far as practicable of the risks of land use activities and discharges on sources of community water supplies.
218. The RPS is a higher order document, which in our view does largely incorporate the directives contained in the NPSWM. Earlier in this decision we have expressed our qualifications with respect to the uncertainties associated with quantifying the inputs into farm management practices, which in turn have a fundamental impact on modelled outcomes for contaminants. We have taken account of the extensive evidence presented on behalf of the applicant, and the Council officer's responses to that evidence at the conclusion of the hearing. On this basis we have come to an overall view that the weight of that evidence justifies a grant of consent. For these reasons we concluded that the application would be consistent with Objective WQUAL.2, Policy WQUAL.2 and Policy WQUAL 11.
219. Objective WQUAL.1 (d) and Policy RURAL.1 call for the recognition of the use of rural land and water resources to meet the social economic and cultural well-being of people and communities, while Policy WQUAN.8 calls for the integration of the management of land use, water quality, water quantity and the use and development of resources.
220. We acknowledge that we are required to take into account the positive aspects of a grant of consent to this application, both to the applicant and the wider community in terms of increased

farm production and both the direct and indirect economic benefits that flow from this. We have however been careful not to undertake a 'balancing exercise' between the economic benefits of farming versus potential adverse effects on water quality. We have proceeded on the basis that consent can be granted to this application subject to conditions which ensure that this proposal will in itself result in an improvement in the quality of receiving waters. This improvement will be very small given that this is simply one farming operation among many in the wider catchment. On this basis, the application would achieve Objective WQUAL.1 (d) and Policy RURAL.1.

The National Policy Statement for Freshwater Management (NPSFM)

221. We are aware that the NPSWM is under further amendment and refinement, but the contents of these provisions were not available (at least to the point of having status) for consideration at the time this application was heard.

222. Two objectives of particular relevance to this application include:

Objective A 1 – To safeguard the life supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of freshwater; and the health of people and communities, and sustainably managing the use and development of land, and of discharges of contaminants.

Objective A 2 – The overall quality of freshwater within a region is maintained or improved while protecting the significant values of outstanding water bodies; protecting the significant values of wetlands; improving the quality of freshwater in waterbodies that have been degraded by human activities to the point of being over allocated.

223. These are accompanied by a range of related and supporting policies. We consider that the Proposed Plan has been prepared taking account of the provisions of the NPSFM, the key provisions of which were discussed in the officer's report⁵¹, and we concur with his assessment that the proposal is 'not inconsistent' with them⁵².

PART 2 RMA AND SECTIONS 104, 105 AND 107 RMA

224. We consider that the relevant provisions of section 104 as applied to this application are as follows:

104 Consideration of applications

(1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to –

(a) any actual or potential effects on the environment of allowing the activity; and

(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate any adverse effects on the environment that will or may result from allowing the activity; and

(b) any relevant provisions of –

(i) a national environmental standard

⁵¹ S42A report, paragraph 296.

⁵² Ibid, paragraphs 297 – 300

- (ii) other regulations;
- (iii) a national policy statement;
- (iv) a New Zealand coastal policy statement;
- (v) a regional policy statement or proposed regional policy statement;
- (vi) a plan or proposed plan; and

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

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

.....

(3) a consent authority must not, –

(a) when considering an application, have regard to –

- (i) trade competition or the effects of trade competition; or
- (ii) any effect on a person who has given written approval to the application.

.....

(c) grant a resource consent contrary to –

(i) section 107, 107A, or 217:

.....

225. In terms of subsection (6) of s104, we consider we have adequate information to make a decision on this application
226. The application of Part 2 of the RMA has been the subject of proceedings before the Courts, notably in the *King Salmon* decision by the Supreme Court, and more recently in the findings of the Court of Appeal.⁵³
227. We are aware of the recent Environment Court decision issued on 20 December 2019 with respect to appeals on the Proposed Plan.
228. Given the fact that the Proposed Plan is still subject to a range of appeals, we have concluded that it would be prudent to undertake at least a brief assessment of Part 2 RMA.

Part 2 RMA Purpose and principles

229. Iwi did not submit on the application, but we are well aware of the objective and policy framework relating to the protection of their interests, particularly in the RPS and in the Proposed Plan, and the emphasis on maintaining or (as in this case) improving water quality. We have approved this application on an evidential basis that the farm management regime and conditions will ensure that the activities undertaken on this property will have the effect of improving water quality, albeit as one farm among many contributing to the quality of receiving waters. We have come to this conclusion acknowledging the provisions of sections 6 (e), 6 (g), 7 (a) and section 8 of the RMA.
230. On the balance of evidence, we are satisfied that the proposed activity is consistent with section 7 (d) – the protection of the intrinsic value of ecosystems, and section 7 (f) – the maintenance

⁵³ RJ Davidson Family Trust versus Marlborough District Council[2018] NZCA 316

and enhancement of the quality of the environment. We are also satisfied that the activity would represent an efficient use and development of natural and physical resources consistent with section 7 (b) of the RMA.

231. Overall, we have concluded that the activity is consistent with section 5 RMA, in that it would safeguard the life supporting capacity of water and ecosystems (subsection 2(b) and would sustain the potential of surface and ground water to meet the reasonably foreseeable needs of future generations terms of subclause 2(a). With the range of conditions proposed we are satisfied that a grant of consent would avoid or mitigate adverse effects on the environment, with particularly emphasis on water resources, and be consistent with subclause 2(c).

Other relevant matters

232. We considered the appropriate planning frameworks under the relevant regional planning instruments earlier in this decision, and find that a grant of consent would be consistent with them. We have given some consideration to possible precedent effects in terms of section 104(1)(c), particularly in terms of the potential for similar applications seeking intensification of dairy farming activities.
233. We are aware that there is no means of establishing a direct causal linkage between the effects of a proposal of this nature, and downstream effects on receiving waters, and where any improvement (or conversely deterioration) in water quality may not be apparent for a prolonged period. Downstream effects can be measured only on the basis of the collective impact of land use activities on receiving waters (i.e, catchment wide). There was brief discussion during the hearing about the merits or otherwise of establishing a network of groundwater monitoring wells, and the practical difficulties associated with that. Should it be found that the quality of receiving waters (surface or groundwater) has deteriorated at some future point, it would be difficult if not impossible to link this to any particular non– point source such as an individual dairy farm. To us, this emphasises the importance of on-site monitoring of the conditions of consent, including review of the consent if necessary.
234. Applications of this nature, and potentially the review of consents, provides an opportunity for ongoing improvements (on a property by property basis) in farm management practices. This offers the ability to substantially improve, subject to the monitoring and enforcement of conditions, individual farm management through tools such as a FEMP. Using a model such as *Overseer* can demonstrate substantial improvements for a poor performing farm. While this is desirable, it can also have a somewhat perverse effect, in that farms that are already performing well would find it difficult to demonstrate any significant improvements, certainly in the absence of significant technological change. Any such improvements, as measured in percentage terms, can be quite small, as in the case of this application. This again emphasises the uncertainties that have been discussed earlier in this decision, such that it would take only relatively small changes in farm inputs and management to ‘cancel out’ any modelled improvements in terms of nutrient losses and contaminants – quite apart from any external factors. This has strongly influenced our approach to conditions and the need for certainty.
235. Notwithstanding these reservations, in coming to our conclusions we acknowledge the robust nature of the modelling undertaken, and the weight of the expert evidence that has been put before us.

Section 105 RMA Matters relevant to certain applications

236. Subsection (1) provides that (relevantly):

(1) If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104 (1) have regard to –

(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

(b) the applicant's reasons for the proposed choice; and

(c) any possible alternative methods of discharge, including discharge in any other receiving environment.

237. The applicant has an existing effluent storage pond which provides sufficient deferred storage, combined with additional methods of discharge in the event of failure. The proposal for discharge to land over discharge to water is strongly preferred by the policies of regional plans. Overall, we concur with the conclusions of the reporting officer with respect to the matters under section 105⁵⁴.

Section 107 RMA Restriction on grant of certain discharge permits

238. Subsection (1) provides that (relevantly):

Except as provided in subsection (2) a consent authority shall not grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15 A allowing –

.....

(b) a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; or

.....

If, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water is likely to give rise to all or any of the following effects on the receiving waters:

(c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(d) any conspicuous change in the colour or visual clarity:

(e) any admission of objectionable odour:

(f) the rendering of freshwater unsuitable for consumption by farm animals:

(g) any significant adverse effects on aquatic life.

239. Subsection (2) provides that a consent authority may grant a discharge permit in exceptional circumstances, if the discharges is of a temporary nature, or is associated with necessary maintenance work. None of these factors are relevant to this application.

⁵⁴ S42A report, paragraphs 305 – 310

240. Subject to the conditions we have imposed, we do not expect that the adverse effects described above are likely to arise as a result of a grant of consent.

CONDITIONS

241. Mr Erceg and Dr Freeman helpfully provided us with a condition set with their respective comments. There was significant agreement on most conditions and much of the disagreement was regarding condition structure. We discuss these points below, along with further discussion on the additional conditions we are requiring, where this hasn't been addressed earlier.

Exercise of consents "in conjunction with" other consents

242. Mr Erceg has recommended a condition on the land use and discharge permit requiring that the two consents must be exercised in conjunction with each other. The intention of this is to ensure that the conditions of both consents are complied with at any one time, rather than the consent holder being able to select one or other. Dr Freeman considers these conditions "superfluous" and that they could be interpreted to mean that the resource consents had to be exercised at the same time. We disagree with this interpretation and consider that these conditions are necessary to recognise the overlap between the discharge permit and land use consent.

Providing for flexibility in the farm operations

243. The applicant requested a flexible approach for the land use consent that would enable them to adapt their farming operations in a way they choose to meet the required nutrient loss limits. This may or may not include the farming activities and mitigations that were proposed through the application and included in the Overseer modelling as the proposed scenario. We received no evidence on examples of such alternative scenarios that would meet the proposed nutrient loss limits.
244. Given the inherent uncertainty with the Overseer modelling, we consider that it is not appropriate to rely primarily on nutrient limits to achieve the outcomes anticipated by the application. We consider that additional certainty is gained by including a range of enforceable consent conditions, including nutrient loss limits and appropriate mitigations. If the applicant seeks additional flexibility or alternative farming options, they should present an assessment of effects to the Council and seek a change of conditions.

Achieving the proposed mitigations

245. We discussed above the relatively general nature of the FEMP and the need for additional certainty for the land use consent, particularly regarding when certain measures will be achieved. Without this, we consider that there would be too much reliance on the nutrient loss limits, especially considering the evidence we heard about how essential certain mitigation measures were to achieve those limits. This particularly applies to P loss mitigation.
246. We consider it appropriate that these additional measures are in place before the land use consent is exercised and have included conditions to achieve this. This includes requirements that buffer distances are a minimum of 10 m width from the closest edge of the laneway, prior

to the exercise of the land use consent, and that the improvements proposed to prevent runoff from culverts and bridge crossings are implemented prior to exercise of the consent. These measures appear to be consistent with the broadly stated mitigation measures contained in the FEMP.

247. The agreed condition set also included further mitigation measures, which are considered good practice and which we have retained in the conditions.

Auditing the Farm Environmental Management Plan

248. The proposed conditions allow for the consent authority to require an independent audit of the authorised farming activity. We consider that this audit should be mandatory and undertaken at regular intervals, dictated by the level of confidence (high, medium or low) achieved in the previous audit. We consider such audits to be essential for ensuring that the farming activities are being undertaken as proposed and to provide certainty that the nutrient loss limits are being achieved. We considered specifying the regularity of such audits through consent conditions, but consider that this needs to be part of a wider compliance policy to ensure consistency with other similar consents.

Rolling average for Overseer modelling

249. There was some discussion at the hearing as to whether compliance with the nutrient loss limits should be based on a three or four-year rolling average of the annual Overseer monitoring. At the hearing, Mr Erceg considered that a three-year rolling average was appropriate, primarily because this would allow the nutrient loss limits to be exceeded one year in three, as opposed to two years in four for a four-year rolling average. Dr Freeman considered that a four-year rolling average is more appropriate, as it would balance the long-term averages approach of Overseer with the on-farm annual variance.
250. There appears to be agreement between Mr Erceg and Dr Freeman on a four-year rolling average in the proposed conditions, however we consider that a more precautionary approach is to opt for the three-year rolling average. We note that this position was also reached by the Commission for the Wold Wide applications.

Exceedance of the Overseer targets

251. An exceedance of the rolling average N or P loss rate requires the consent holder to prepare a report outlining the reasons for the exceedance and the measures to be taken to reduce the loss. Such an exceedance would result in non-compliance with the consent conditions and be subject to normal compliance and enforcement processes, however Dr Freeman initially considered that the report requirement should only be triggered when the limit is exceeded by greater than 10%. Dr Freeman and Mr Erceg reached an agreement that the report should be triggered by any level of exceedance but were unable to agree on the level of detail that should be provided on the mitigation.
252. A breach of the nutrient loss limit is not acceptable, and we consider that, if it occurs, it should result in the provision of considerable detail on how future breaches will be avoided. We

consider that the level of detail suggested by Mr Erceg is appropriate, although have included some wording changes to clarify the intent of this condition.

DECISION

We have resolved that pursuant to sections 104, 104D, 105, 107 and 108 of the RMA, that the application be approved subject to the attached consent conditions for a duration of 10 years.



Robert Charles Nixon

Hearings Commissioner (Chair)

10 March 2020



Bianca Sullivan

Hearings Commissioner

10 March 2020

Consent conditions

DISCHARGE PERMIT – AUTH-20181765-01

Purpose: To discharge dairy shed effluent to land

Location: 266 O’Shannessy Road, Winton

1. This resource consent shall not be exercised until Discharge Permit AUTH-301043 has been surrendered or has expired.
2. This resource consent shall be exercised in conjunction with Land Use Consent AUTH-20181765-03.
3. The discharge authorised by this consent shall only be to land within a discharge area of 70 hectares as described on the plan attached as Appendix 1, which forms part of this consent, and in the table below:

Property Address	266 O’Shannessy Road, Winton
Legal Descriptions of Discharge Area	Part Section 29 Block I Winton Hundred Part Section 30 Block I Winton Hundred Section 43 Block I Winton Hundred Section 44 Block I Winton Hundred Section 45 Block I Winton Hundred

4. The discharge of dairy shed effluent (“agricultural effluent”) to land shall be via an effluent disposal system consisting of a concrete stone trap and synthetically lined effluent storage pond via low rate pods and a slurry tanker.

Advice Note:

Routine monitoring inspections of this property may occur up to two times a year. This number does not include any other required inspections and may be combined with the inspections required for Land Use Consent AUTH-20181765-03.

5. The discharge to land shall be limited to:
 - a. agricultural effluent generated from milking up to 680 cows twice a day from 20 July to 20 June;
 - b. liquid agricultural effluent discharged via a low rate pod system; and
 - c. slurry agricultural effluent discharged via a high rate slurry tanker.
6. This permit shall be exercised in accordance with the Collected Agricultural Effluent Management Plan. Where there is inconsistency between the Collected Agricultural Effluent Management Plan and the conditions of this consent, the conditions of this consent shall prevail.

Effluent Discharge Management

7. The discharge of agricultural effluent shall not exceed:

- (a) for the low rate pod system, a depth of application of 25 millimetres per application, and an instantaneous rate of 10 millimetres per hour; and
 - (b) for the slurry tanker, a depth of application of 5 millimetres.
8. The minimum return period for the discharge of agricultural effluent to land shall be 28 days.
9. Nitrogen loading onto any land area as a result of the exercise of this consent must not exceed 150 kilograms of nitrogen per hectare per year.
10. The stored or discharged agricultural effluent shall not cause any:
- (a) odour that is offensive or objectionable; or
 - (b) spray drift;
- beyond the boundary of the property (as shown in Appendix 1).

Soil Moisture

11. For the purposes of complying with Condition 12, within the first six months of this consent the Consent Holder shall:
- a. install a soil moisture sensor in a representative area of Pukemutu soils; and
 - b. within five working days of the installation of the sensor, notify the Consent Authority that the sensor has been installed, and of its location.
12. The discharge of agricultural effluent must not occur when soil moisture is at or greater than field capacity as identified:
- a. prior to installation of the on-site soil moisture sensor, at the Tussock Creek Soil Moisture Monitoring Site accessed via the Southland Regional Council's website; or
 - b. from the on-site soil moisture following its installation in accordance with Condition 11.

Agricultural Effluent Storage System Management

13. The discharge shall occur via a synthetically lined agricultural effluent storage facility of between 2,670 cubic metres and 3,261 cubic metres capacity.
14. Prior to 30 December 2029 the Consent Holder shall obtain written confirmation from a Suitably Qualified Person, in accordance with Appendix P of the proposed Southland Water and Land Plan (Decisions Version 2018) or any subsequent replacement version(s), that the synthetically lined effluent storage pond meets the relevant pond drop test criteria in Appendix P.
15. The Consent Holder shall inspect the leak detection chamber of the effluent storage pond not less than monthly to check for any evidence of leakage.
16. A record of the inspections required by Condition 15 must be maintained by the Consent Holder and included in the Management Plan required by this consent.
17. If the leak detection chamber inspections or the pond drop test required by Conditions 14 and/or 15 or any other inspection identifies that:

- (a) the incidental discharge is not within the pond drop test criteria of Appendix P of the proposed Southland Water and Land Plan Decisions Version 2018 (or any subsequent replacement version); or
- (b) there is any visible leakage identified in the leak detection chamber; or
- (c) there are visible cracks, holes or defects that would allow effluent to leak from the facility;

the Consent Holder must notify the Consent Authority as soon as reasonably practicable after becoming aware of the incident.

18. Within five working days of notifying the Consent Authority under Condition 17, the Consent Holder shall advise the Consent Authority in writing of the steps that will be taken to ensure that the structure is made suitable for ongoing use, including:

- (a) any additional testing to be undertaken;
- (b) an outline of the proposed works to be undertaken to remediate the structure;
- (c) the timeframe for completion, which shall be no longer than three months;
- (d) Where the timeframe is expected to exceed three months;
 - i. the Consent Holder shall notify the Consent Authority that they will exceed the timeframe set out in Condition 18(c) and provide an expected date of completion;
 - ii. a Chartered Professional Engineer shall undertake an assessment of the pond and submit a report to the Consent Authority, outlining the defects in the pond and the remedial works to be undertaken, a detailed completion timeframe and the suitability of the pond for use during the remediation works;
 - iii. the Consent Holder shall submit a plan for their temporary operating procedures to the Consent Authority including what is required under Condition 18(f) and how they will manage their effluent;
 - iv. if the pond is deemed not suitable for use under Condition 18(d)(ii), the Consent Holder shall empty the pond and continue not use it, until the pond has been certified to be within the normal operating parameters of a leak detection system or the pond drop test criteria set out in Appendix P of the proposed Southland Water and Land Plan Decisions Version 2018 (or any subsequent replacement versions) and this certification has been received by the Consent Authority;
- (e) identification of whether the works will require consent for reconstruction of the structure;
- (f) the additional mitigation measures that will be employed to minimize the adverse effects of the leaking structure prior to remediation being undertaken; and
- (g) testing, certification, or inspections to be completed following the works to demonstrate that the structure is able to comply with the conditions of this consent.

System Management

19. The Consent Holder must notify the Consent Authority the identity of the Person in Charge of the agricultural effluent disposal system:

- (a) prior to the first exercise of this consent; and
- (b) no more than five working days following the appointment of any new Person in Charge.

20. The Consent Holder must install and maintain:

- (a) an operational alarm that alerts the Person in Charge to any system failure that could cause the over-application, overflow or spilling of agricultural effluent (e.g. sudden pressure drop, irrigator stoppage; and/or
 - (b) an operational automatic switch-off system that prevents any over-application or spilling of agricultural effluent.
21. Where the agricultural effluent reticulation system is installed in such a way that effluent can be siphoned when pumping ceases, the Consent Holder shall install and maintain an anti-siphon device in the agricultural effluent pipeline.
22. In the event of the failure or mismanagement of the agricultural effluent disposal system, or any other event that may result in a discharge of agricultural effluent that may have significant adverse effect on water quality, particularly in the region of the abstraction point of a registered drinking-water supply, the Consent Holder shall notify, as soon as reasonably practicable, the following:
- (a) the Consent Authority (ph 03 211 5115 or 03 211 5225 after hours); and
 - (b) the Southland District Council (ph 0800 732 732)

Exclusions

23. This consent does not authorise the discharge of:
- (a) dairy shed effluent collected during 20 June to 20 July (inclusive); or
 - (b) effluent collected from a feed pad, calving pad, wintering pad or barn; or
 - (c) effluent collected from an underpass; or
 - (d) silage leachate.
24. The Consent Holder shall inspect the discharge area prior to effluent application, and shall not discharge agricultural effluent to any specific area of land if that area of land has ponding or pooling of water on the land surface.
25. No discharge shall occur within:
- (a) 20 metres of any surface watercourse;
 - (b) 100 metres of any water abstraction point;
 - (c) 200 metres of any place of assembly or dwelling not on the subject property; and
 - (d) 20 metres from any property boundaries.

Where there is inconsistency between the plan attached as Appendix 1 and the conditions of this consent, the conditions of this consent shall prevail.

26. The stored or discharged agricultural effluent shall not directly or indirectly enter any surface water.
27. The stored or discharged agricultural effluent shall not form ponds or flow on the land surface.

Collected Agricultural Effluent Management Plan

28. Within three months of the first exercise of this consent, the Consent Holder shall prepare and submit to the Consent Authority a Collected Agricultural Effluent Management Plan. The Collected Agricultural Effluent Management Plan shall:

- (a) provide concise and clear direction to the Person in Charge and other staff on the operation of the agricultural effluent system;
- (b) identify environmental risks of agricultural effluent discharges specific to the farm including, but not limited to, locations of drains, surface waterways, sub-surface drainage and critical source areas in the agricultural effluent disposal area;
- (c) identify how the above environmental risks are avoided;
- (d) describe how each component of the agricultural effluent system is maintained and have regard to the information provided in the pond storage calculations provided in the application;
- (e) describe how agricultural effluent in storage is managed;
- (f) describe how agricultural effluent is managed when soils are at or above field capacity and/or during adverse weather conditions; and
- (g) describe how any stormwater diversion on the system is set up and managed.

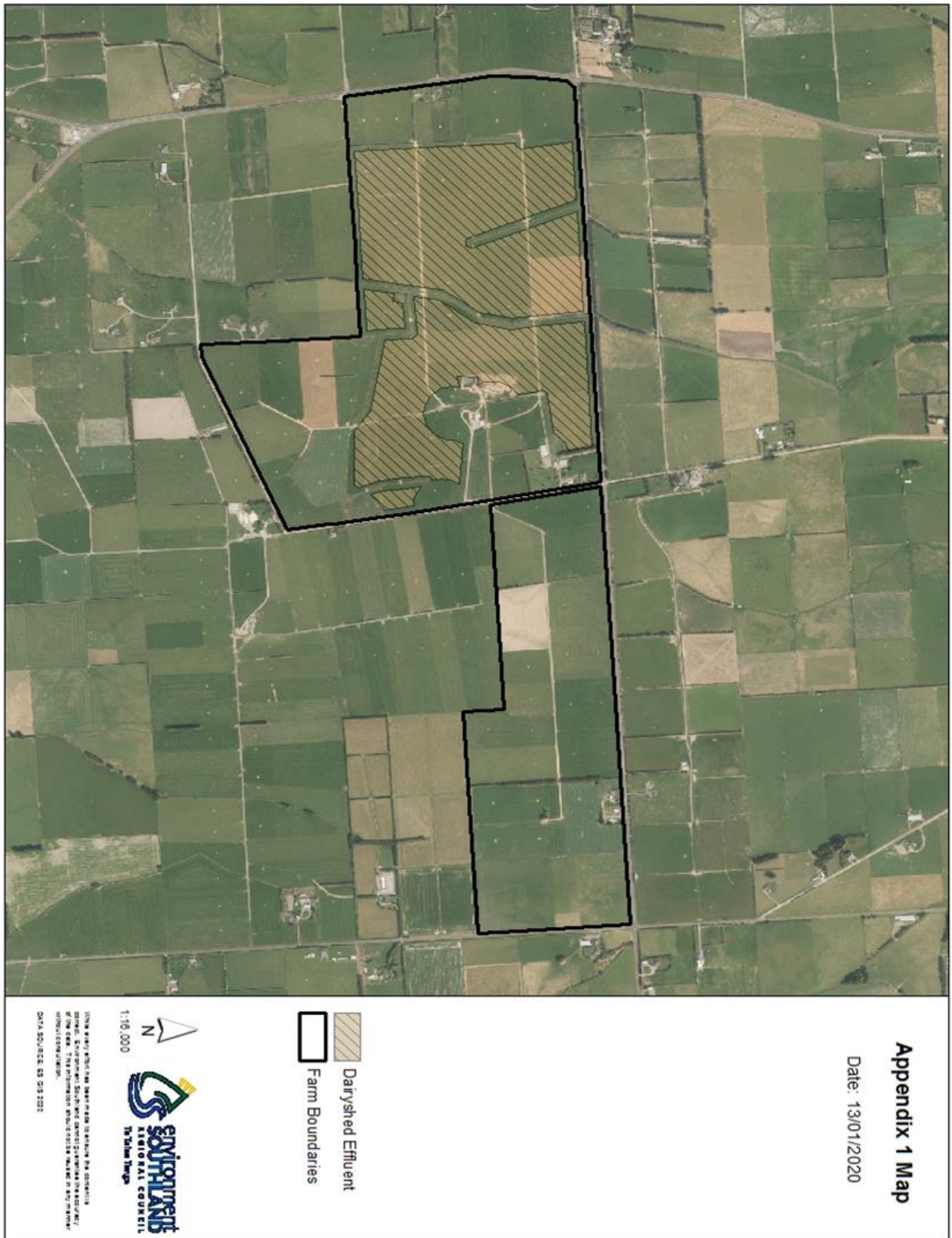
Advice Note

The Collected Agricultural Effluent Management Plans (CAEMP) may be combined with the Management Plan required by Land Use Consent AUTH-20181765-03 provided all the requirements required by Condition 27 are met.

- 29. The Collected Agricultural Effluent Management Plan shall be reviewed at least once each milking season; and either
 - (a) an updated version shall be provided to the Consent Authority by 31 May each year; or
 - (b) the Consent Holder must notify the Consent Authority in writing that no changes have been made by 31 May each year.
- 30. The Collected Agricultural Effluent Management Plan may be amended at any time, provided it continues to adhere to the matters listed in Condition 28 of this discharge permit and the Consent Holder provides the amended version to the Consent Authority within one month of the amendment.
- 31. Once the Collected Agricultural Management Plan is received as required by Condition 29 or Condition 30, this version will supersede the Collected Agricultural Effluent Management Plan supplied in accordance with Condition 28.
- 32. Effluent shall be managed in accordance with the current Collected Agricultural Effluent Management Plan. Where there is inconsistency between the Collected Agricultural Effluent Management Plan and the conditions of this consent, the conditions of this consent shall prevail.
- 33. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period 1 February to 30 September each year, or within two months of any enforcement action being taken by the Consent Authority in relation to the exercise of this consent, for the purposes of:
 - (a) determining whether the conditions of this permit are adequate to deal with any adverse effect on the environment, including cumulative effects, which may arise from the exercise of the permit, and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the permit;

- (b) ensuring the conditions of this consent are consistent with any National Environmental Standards, Regulations, relevant plans and/or the Southland Regional Policy Statement;
- (c) adding or adjusting compliance limits;
- (d) ensuring the Oreti Freshwater Management Unit meets the freshwater objectives and freshwater quality limits set in an operative regional plan; and
- (e) requiring the Consent Holder to adopt the best practicable option to remove or reduce any adverse effect on the environment arising as a result of the exercise of this permit.

Appendix 1 – Agricultural Effluent Discharge Area



WATER PERMIT – AUTH-20181765-02

Purpose: To take and use groundwater for stock drinking water and dairy shed wash down

Location: 266 O’Shannessy Road, Winton

1. This consent must not be exercised until Water Permit AUTH-301044 is surrendered or has expired.
2. This resource consent authorises the abstraction and use of groundwater for stock drinking water and dairy shed wash down from the following bores:

(a) Bore E46/1067, located as described in the table below: and

Property Address	266 O’Shannessy Road, Winton
Legal Description	Section 43 Block I Winton HUN
Map Reference (NZTM 2000)	1241040E 4874813N

(b) Bore E46/1089, located as described in the table below:

Property Address	266 O’Shannessy Road, Winton
Legal Description	Section 44 Block I Winton HUN
Map Reference (NZTM 2000)	1240876E 4874516N

3. The total combined rate of abstraction shall not exceed:

- (a) 2 litres per second; and
- (b) 81,600 litres per day; and
- (c) 25,172 cubic metres per year.

Advice Note

The Consent Holder must ensure that the bore that water abstraction occurs from can meet the following conditions:

The bore or well design and headwork’s prevent:

- i. the infiltration of contaminants; and*
- ii. the uncontrolled discharge or leakage of water to the ground surface or between aquifers.*

Should the bore not meet the above conditions, the Consent Holder shall apply to the Consent Authority for a Resource Consent for the use and maintenance of the bore.

4. Prior to the first exercise of this consent, the Consent Holder shall install a backflow prevention device or take other appropriate measures to ensure water and/or contaminants cannot return to the water source.
5. The Consent Holder shall have and maintain a water meter(s) to record the rate and volume of water taken, within an error accuracy range of plus or minus five per cent over the meter’s nominal flow range.

6. If the Consent Holder replaces the water meter required by Condition 5, the Consent Holder must forward a copy of the installation certificate to the Consent Authority within one month of installing the new water meter.
7. The water meter must be installed in a straight length of pipe, before any diversion of water occurs. The straight length of pipe shall be part of the pump outlet plumbing, easily accessible, have no fittings and obstructions in it. There shall be a straight length of pipe on either side of the water meter, on the upstream side there shall be a distance that is 10 times the diameter of the pipe and on the downstream side there shall be a distance of five times the diameter of the pipe.
8. The Consent Holder shall ensure the full operation of the water meter at all times during the exercise of this consent. All malfunctions of the water meter during the exercise of this consent shall be reported to the Consent Authority within five working days of observation and appropriate repairs shall be performed within five working days. Once the malfunction has been remedied, a Water Measuring Device Verification Form completed with photographic evidence must be submitted to the Consent Authority within five working days of the completion of repairs.
9. The Consent Holder shall:
 - (a) if a mechanical insert water meter is installed, have it verified for accuracy each and every year from the first exercise of this consent; or
 - (b) if an electromagnetic or ultrasonic flow meter is installed, have it verified for accuracy every five years from the first exercise of this consent.
10. Each verification must be undertaken by a Consent Authority approved operator and a Water Measuring Device Verification Form shall be completed and supplied to the Consent Authority with receipts of service.
11. The water meter verifications required under Condition 9 must be supplied to the Consent Authority within five working days of the verification, and at any time upon request.
12. The Consent Holder must maintain a record of the rate of take and the daily volume of water abstracted each month and provide this record to the Consent Authority by 31 May each year and at any other time on request.
13. Prior to the exercise of this consent, the Consent Holder shall notify the Consent Authority of the person who is in charge of the operation this consent. If the person in charge changes during the term of this consent, the Consent Holder shall notify the Consent Authority of the new operator no later than five working days after that person takes responsibility.
14. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period 1 February to 30 September each year, or within two months of any enforcement action being taken by the Consent Authority in relation to the exercise of this consent, or on receiving monitoring results, for the purposes of:

- (a) adjusting the consented rate or volume of water under Condition 3, should monitoring under Condition 12 or future changes in water use indicate that the consented rate or volume is not able to be fully utilised;
- (b) determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage;
- (c) ensuring the conditions of this consent are consistent with any National Environmental Standards Regulations, National Policy Statement, Water Conservation Order, relevant plans and/or any relevant Regional Policy Statement; or
- (d) adjusting or altering the method of water take data recording and transmission.

LAND USE CONSENT – AUTH-20181765-03

Purpose: To use land for a farming activity

Location: 266 O’Shannessy Road, Winton

1. This consent must not be exercised until Discharge Permit AUTH-301043 is surrendered or has expired.
2. This consent must be exercised in conjunction with Discharge Permit AUTH-20181765-01.
3. Except as modified by conditions of resource consent, the activities authorised by this resource consent shall be carried out in general accordance with the application for resource consent (APP 20181765), and all subsequent information provided during the application and the Farm Environmental Management Plan required by this consent.
4. For the avoidance of doubt, in the event that any inconsistency between the conditions of resource consent and the information and plans, including the Farm Environmental Management Plan (FEMP) submitted as part of the application, the conditions of resource consent shall prevail.

Advice Note:

Routine monitoring inspections of this property may occur up to two times a year. This number does not include any other required inspections and may be combined with the inspections required for Discharge Permit AUTH-20181765-01.

5. The use of land for farming shall occur on the landholding at 266 O’Shannessy Road, Winton, as shown on the plan attached as Appendix 1, and consisting of:
 - (a) A block of land referred to as the “Existing Platform”, at or about map reference (NZTM 2000) 1240897E 4874621N and comprising Part Sections 29 and 30 Block I Winton Hundred, Sections 43, 44, 45 and 54 Block I Winton Hundred, Lot 1 DP 449518; and
 - (b) A block of land referred to as the “East Block”, at or about map reference (NZTM 2000) 1242743E 4874818N and comprising Lot 2 DP 449518.
6. The farming activities shall be limited as follows:
 - (a) a maximum milking herd of no more than 680 cows; and
 - (b) no more than 252 milking age cows on the land during June or July (inclusive).

Exclusions

7. There shall be no intensive winter grazing of stock on the land. Intensive winter grazing is defined as the grazing of stock between May and September (inclusive) on forage crops (including brassica, beet and root vegetable crops), excluding pasture and cereal crops
8. The Consent Holder shall graze all young dairy stock, defined as between 4 and 22 months old, off the land subject to this resource consent.
9. The East Block must not:

- (a) be grazed by livestock in the months of May to August (inclusive); or
- (b) have supplement fed on the block.

Nutrient Management

- 10. The Consent Holder shall implement a soil testing regime to determine the soil fertility status over the landholding and to develop fertiliser recommendations based on the soil testing results.
- 11. The Consent Holder shall maintain a record of their soil testing regime, soil testing results and fertiliser recommendations and provide this record to the Consent Authority upon request.
- 12. The Consent Holder shall:
 - (a) manage the application of fertiliser in accordance with:
 - i. The Code of Practice for Nutrient Management (With Emphasis of Fertiliser Use) Fertiliser Association, 2013, ISBN 978-0-47328345-2"; or
 - ii. any subsequent updates.
 - (b) not apply fertiliser:
 - i. to land during the period 1 June–31 July inclusive;
 - ii. within 10 m of a surface water body;
 - iii. within 10 m of any wetland boundary;
 - v. within 20 m of any bore;
 - vi. when soil temperature is at or below six degrees Celsius;
 - vi. when soil moisture capacity is exceeded; and
 - vii. directly to land within a riparian strip/margin.
- 13. The Consent Holder shall:
 - (a) make every effort to reduce the Olsen P values in the soil from 32 to 30; and
 - (b) ensure that representative Olsen P values in the soils are maintained at or below the range of 30–32; and
 - (c) take representative soil samples at least once every two years and have those samples analysed for Olsen P by a laboratory with IANZ accreditation for Olsen P; and
 - (d) shall make the results available to the Consent Authority on request.

Nutrient Modelling

- 14. The Consent Holder must ensure that nitrogen and phosphorus losses to water from farming activities undertaken on the land are maintained at, or below the baseline contaminant loss rates of:
 - (a) 45 kilograms per hectare per year nitrogen;

as estimated by the three-year rolling average loss rates using OVERSEER FM® version 6.3.2, undertaken in accordance with the generally accepted best practice modelling including the applicable Best Practice Data Input Standards/OverseerFM User Guide.
 - (b) 0.9 kilograms per hectare per year phosphorus as estimated by the three-year rolling average loss rates using:

- (i) OVERSEERFM® version 6.3.2, undertaken in accordance with the generally accepted best practice modelling including the applicable Best Practice Data Input Standards/OverseerFM User Guide; and
- (ii) information from published New Zealand and Overseas research to estimate the additional phosphorus loss mitigation, beyond that modelled in Overseer, that is likely to occur as a result of the mitigation being implemented in accordance with the FEMP required under this resource consent.

For the purposes of this resource consent, the three-year rolling average is defined as the average of the most recent three consecutive years' results starting from 1 July 2020.

Advice Note

The baseline loss rate for nitrogen and phosphorus is the discharge below the root zone as modelled with OVERSEERFM® version 6.3.2, the farm system inputs described in the application, and in accordance with the OVERSEER® Best Practice Input Standards as of 8 May 2019. The baseline loss rate for nitrogen and phosphorus is also the discharge modelled by a subsequent version of OVERSEER®.

The determination of whether the contaminant loss rates have been met will be made using the contaminant loss from the most recent year, modelling using the latest version of OverseerFM.

- 15. Each and every year for the duration of this consent, using the current version of OverseerFM and in accordance with the generally accepted best practice modelling and the current Best Practice Data Input Standards, the Consent Holder shall:
 - (a) model the nitrogen and phosphorus loss rates for the previous year from 1 July to 30 June inclusive;
 - (b) model the three-year rolling average of nitrogen and phosphorus loss rates;
 - (c) model the predicted nitrogen and phosphorus loss rates for the upcoming year from 1 July to 30 June inclusive; and
 - (d) re-model the baseline contaminant loss rates specified in Condition 14 in the current version of Overseer.
- 16. The re-modelled baseline contaminant loss rates, modelled in accordance with Condition 15(d) shall supersede and replace the baseline contaminant loss rates specified in Condition 14.
- 17. A report must be provided to the Consent Authority by 30 September each year summarising the results of Overseer nitrogen and phosphorus loss modelling required by Condition 15. The report must include:
 - (a) a review of the Overseer input data to ensure that the annual nutrient budget reflects the farming system;
 - (b) an explanation of any differences between that nutrient budget and the annual nutrient budget of all previous years of farming undertaken under this consent;
 - (c) a comparison of the three- year rolling average nitrogen and phosphorus losses with the applicable baseline contaminant loss rates; and
 - (d) the names and summaries of the relevant qualifications and experience of the person(s) who prepared and (if relevant) reviewed the nutrient budget.
- 18. If in any year, the rolling three-year average nitrogen or phosphorus loss rate as modelled in accordance with Condition 15 exceeds the baseline nitrogen and/or phosphorus loss rates set

under Condition 14, or subsequently modified by Condition 16, the Consent Holder shall, by 30 November of that year, prepare a report for the Consent Authority that details:

- (a) any reasons or causes of the exceedance;
- (b) the measures that will be taken to ensure that nutrient losses are reduced to ensure compliance with the baseline contaminant loss rates; and, where required
- (c) a detailed description of the measures to be taken; and
- (d) for any mitigations proposed, a detailed mitigation plan (taking into account contaminant loss pathways) that identifies:
 - i. the mitigations to be undertaken;
 - ii. the physical works required to complete the mitigations;
 - iii. the proposed implementation timeframes for each mitigation;
 - iv. the operation of the mitigation; and
 - v. the mitigations' potential effectiveness.

19. The measures and mitigations identified in the report required by Condition 18 shall be:

- (a) incorporated into the Farm Environmental Management Plan; and
- (b) undertaken within the timeframes specified in the report required by Condition 18.

20. Upon completion of the mitigation measures required under Conditions 18 and 19, the Consent Holder shall:

- (a) submit to the Consent Authority, photographs (date and time stamped) of the completed works; and
- (b) supply the Consent Authority the GPS coordinates of the location of the mitigation measures.

21. All nutrient loss modelling required by this consent must be undertaken by a person who is a Certified Nutrient Management Advisor (CNMA) under the Nutrient Management Advisor Certification Programme (NMACP).

22. The Consent Holder may use an alternative model that has been demonstrated to be equivalent to Overseer provided:

- (a) the evidence to demonstrate equivalence is provided to the Consent Authority at least six months prior to submitting the relevant annual report as required by Condition 17; and
- (b) the use of the alternative model is approved by the Chief Executive of the Consent Authority.

Mitigation Measures

23. The Consent Holder shall undertake maintenance of the existing and any new dairy lanes to ensure they are contoured to ensure that any run-off occurs onto vegetated areas where it will not enter any surface water body.

24. The Consent Holder must manage the dairy lanes so that agricultural effluent and effluent sludges from the lanes does not:

- (a) accumulate in gateways;

- (b) accumulate in paddocks; or
 - (c) result in the ponding, pooling, overland or lateral flow of any effluent or sludge beyond the dairy lane.
25. Except for crossings of surface waterways:
- (a) prior to the exercise of this consent, all dairy lanes shall be located at least 10 metres from a surface waterbody.
 - (b) the Consent Holder shall not construct any new dairy lanes within 10 metres of a surface waterbody.
26. Prior to the exercise of this consent, the Consent Holder shall inspect all bridges and culverts and, where necessary, undertake improvements to the structures to ensure that there is no runoff of agricultural effluent to surface water.
27. The Consent Holder shall:
- (a) fence all surface waterbodies to ensure stock exclusion;
 - (b) maintain bridges and culverts to ensure that there is no runoff to surface water; and
 - (c) have and maintain riparian strips along surface waterbodies.

Records and Reporting

28. The Consent Holder must have and maintain a record of the following practices undertaken each year between 1 July and 30 June:
- (a) fertiliser application, including rates;
 - (b) types of crops and total area of cropping, including winter feed/forage crops;
 - (c) cultivation methods;
 - (d) stock units with references to type, age and breed;
 - (e) effluent application areas;
 - (f) all other inputs to the OVERSEER[®] nutrient budgeting model.
29. The records required by Condition 27 shall be supplied to the Consent Authority upon request.

Farm Environmental Management Plan

30. The Consent Holder shall have and maintain a Farm Environmental Management Plan (FEMP). The FEMP shall, in accordance with Appendix N (Decisions Version) of the Proposed Southland Water and Land Plan (or any replacement Appendix in an updated version of the plan), demonstrate how the following outcomes are to be achieved:
- (a) nutrients are used efficiently and nutrient loss to water is minimised;
 - (b) contaminant losses from critical source areas are reduced;
 - (c) cultivation is undertaken in a manner that minimises the movement of sediment and phosphorus to waterways;
 - (d) intensive winter grazing occurs in a way that minimises the loss of sediment, phosphorus and microbiological contaminants to waterways; and
 - (e) agricultural effluent and other discharges are managed in a way that avoids or minimises the loss of contaminants to water. Irrigation water is applied to meet plant demands and minimises the risk of leaching and run-off.

31. The FEMP required by Condition 29 shall also include, but not be limited to:
- (a) a site map showing the location of critical source areas; physiographic zones; permanent or intermittent rivers, streams, lake, drains, ponds or wetlands; where known the location and depth of any subsurface drainage systems including outlets, riparian vegetation and fences adjacent to waterways and stock access points across waterways;
 - (b) details of the implementation and maintenance of mitigation measures required by the conditions of this consent;
 - (c) details of the implementation and maintenance of Good Management Practices, including adoption of changing industry good management practices. This includes where the implementation of these is to avoid, remedy or mitigate any farm specific environmental risks to water quality shown through any monitoring undertaken on the property voluntarily or as required by the conditions of this consent;
 - (d) a review of the data obtained from the monitoring undertaken in accordance with the Farm Environmental Management Plan and any changes made, or to be made, as a consequence of that monitoring.
32. The FEMP shall be reviewed at least once each milking season and can be modified at any time by the Consent Holder; and either
- (a) an updated version shall be provided to the Consent Authority by 31 May each year; **or**
 - (b) the Consent Holder must notify the Consent Authority in writing that no changes have been made by 31 May each year.

Advice Note

The results from the review of the FEMP will be assessed by the Consent Authority to ensure that the FEMP will still achieve the objectives specified in the FEMP and the FEMP has been prepared in accordance with Appendix N of the Southland Water and Land Plan (Decisions Version) (or any updated version of the plan).

33. The Consent Holder shall operate in accordance with the FEMP at all times. Where there is inconsistency between the FEMP and the conditions of the consent, the conditions of this consent shall prevail.

Auditing

34. The Consent Authority may require the Consent Holder to have the farming activity as authorised by this consent independently audited by a person who is a Certified Nutrient Management Advisor or Farm Environmental Plan Auditor or a Suitably Qualified Person who has demonstrated an equivalent level of expertise.

35. The audit shall:

- (a) assess the performance of the farming activity occurring on the property against:
 - i. the objectives and good management practices specified in the FEMP;
 - ii. any additional mitigation measures implemented on the property either voluntarily or as required by the conditions of this consent; and
 - iii. the baseline contaminant loss rates specified in Condition 16 and 18.

36. The audit must determine the level of confidence of achieving each objective set out in the FEMP. This level of confidence shall be categorised into the following:

- **High** - the objective is probably being achieved
 - **Medium** - the objective is possibly being achieved
 - **Low** - it is unlikely that the objective is being achieved.
37. The audit shall record the justification for each level of confidence assessment, including noting the evidence, or lack of, used to make the determination.
 38. Where an objective has received a Medium or Low level of confidence, the audit shall include the actions required for the farm to meet the objective and a timeframe whereby these actions need to be undertaken.
 39. Where an objective has received a Medium level of confidence (and the farm has received no Lows), the audit shall also determine whether or not the farm is on-track to achieve the objectives.
 40. The audit report shall be provided to the Consent Authority within three months of the date of the Consent Authority issuing a requirement to undertake the audit.
 41. The frequency of audit requirements may be annually except where, for two consecutive years, an audit report has concluded that all objectives are probably being achieved (received a high level of confidence). In that situation no further audit will be required for at least three years.
 42. Where the audit identifies actions required to be undertaken for the farm to meet the objective the Consent Holder must implement these actions within the timeframes stated in the audit.
 43. Upon completion of any changes made and/or mitigations implemented as required by the audit, the Consent Holder shall confirm in writing, including photographs (date and time stamped) to the Consent Authority that these actions have been completed and implemented.
 44. Upon completion of all the changes made and/or mitigations implemented as identified in the audit, the Consent Holder must ensure the measures are properly maintained, continue to function and are not removed or altered for the duration of this consent (and any subsequent variation versions).

Groundwater Quality Monitoring

45. The Consent Holder shall take representative samples of groundwater from bore E46/1089 or any replacement bore installed in this general location. The samples shall be taken by a suitably qualified and experienced person using methods described in the National Environmental Monitoring Standards, Water Quality Sampling Guidelines (NEMS, 2019).
46. Samples shall be collected twice per year for the duration of the consent, once in October and once in March.
47. Samples shall be analysed by an IANZ accredited laboratory for:
 - (a) *Escherichia coli* and
 - (b) Nitrate-nitrogen.

48. The results of the groundwater monitoring shall be provided to the Consent Authority, within 15 working days of sampling.

Lochiel School Bore Monitoring

- 49.
- a) The consent holder shall make a payment to Lochiel School that would provide for an increase in the frequency of existing microbiological drinking water supply testing from the current monthly frequency to fortnightly during each and every school term for the duration of this resource consent, unless not required as specified in Condition 49(f).
 - b) The consent holder shall make a payment to the Lochiel School that would provide for an increase in the frequency of existing drinking water UV treatment maintenance during each and every school term for the duration of this resource consent, unless not required as specified in Condition 49(f).
 - c) The consent holder shall make a payment to Lochiel School for two drinking water supply water samples to be tested for nitrate-nitrogen with one sample taken in October and one sample taken in March each year for the duration of this resource consent.
 - d) All sampling specified in Condition 49(a) and (c) shall be undertaken by a suitably qualified person and tested in a laboratory with IANZ accreditation for the relevant analysis and, subject to the Lochiel School making the results available to the consent holder, a copy of the results shall be provided to the consent authority each year.
 - e) The payment specified in Condition 49(a), (b) and (c) shall be made once an invoice is provided to the consent holder signed by the principal of Lochiel School with adequate evidence that the invoice reflects the actual and reasonable costs involved in the specified sampling, testing and maintenance.
 - f) If after five consecutive years of the additional maintenance and monitoring undertaken in accordance with Condition 49(a),(b) and (d), there have been no breaches during that period of the NZ Drinking Water Maximum Acceptable Values for *Escherichia coli* (as specified in the "Drinking-water Standards for New Zealand 2005 (Revised 2008)" then Condition 49(a) and (b) shall cease to apply.

Advice note

This condition was volunteered by the consent holder as part of the application process and has agreed to be bound by it.

Lapse and Review

50. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent during the period 1 February to 30 September each year, or within two months of any enforcement action being taken by the Consent Authority in relation to the exercise of this consent, or on receiving monitoring results, for the purposes of:
- (a) determining whether the conditions of this permit are adequate to deal with any adverse effect on the environment, including cultural effects on Te Rūnanga o Ōraka Aparima and/or cumulative effects, which may arise from the exercise of the permit, and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the permit; or

- (b) ensuring the conditions of this consent are consistent with any National Environmental Standards Regulations, relevant plans and/or the Environment Southland Regional Policy Statement.

Appendix 1 – Landholding Boundary

