

## Submission on a Limited Notified Application for Resource Consent

**To:** Environment Southland  
Private Bag 90116  
**Invercargill 9840**

**Name of submitter:** Fish & Game New Zealand – Southland Region ('Fish & Game')  
PO Box 159  
**Invercargill 9825**

**Attention:** **Alexandra King – Consents Officer**

**Name of Applicant:** Woldewide One Ltd, Heddon Bush ('the Applicant')

**Application:** APP-20171445

**Description of activity:** The Applicant has applied for the following consents associated with expansion of an existing dairy farming operation:

- **Land Use Consent** to increase cow numbers from 540 cows to 800 cows.  
  
The proposal is a discretionary activity under Rule 22(a) of the Proposed Southland Land and Water Plan.
- **Discharge Permit** to discharge dairy shed and wintering barn effluent to land from up to 800 cows by travelling irrigator.  
  
The proposal is a discretionary activity under Rule 35(c) of the proposed Southland Water and Land Plan.
- **Water Permit** to take up to 91,000 litres/day of groundwater from a bore in the Waimatuku Groundwater Zone.  
  
The proposal is a discretionary activity under Rule 54(d) of the proposed Southland Water and Land Plan.

The proposed consents are sought to expire on 9 November 2027, which is common to the expiry dates of consents currently held by the Applicant for the existing dairy farming operation, namely consent 301663 (to discharge dairy effluent to land) and consent 301664 (to take groundwater water for dairy purposes).

**Location:** 1200 Hundred Line Road East, Heddon Bush at about NZTM2000 1225175E 4888760N.

**Our submission relates to:** The whole application.

**Our submission is:** We oppose the application.

## **Our reasons for comments are:**

Fish and Game is responsible for the management of sports fish and game birds within the Southland region. Fish and Game has an interest in dairy expansion activities, particularly where they may affect water quality, quantity and aquatic ecosystems.

The proposal is to expand an existing dairy farming operation in the Waimatuku catchment, apply farm dairy effluent (FDE) to land and take groundwater for shed use and stock drinking water. The Waimatuku catchment, which is located between the Oreti and Aparima catchments. The headwaters of the Waimatuku catchment are fed by a large swamp area (the Bayswater Peat Bog) with small springs in the Drummond district also contributing to the base flow.

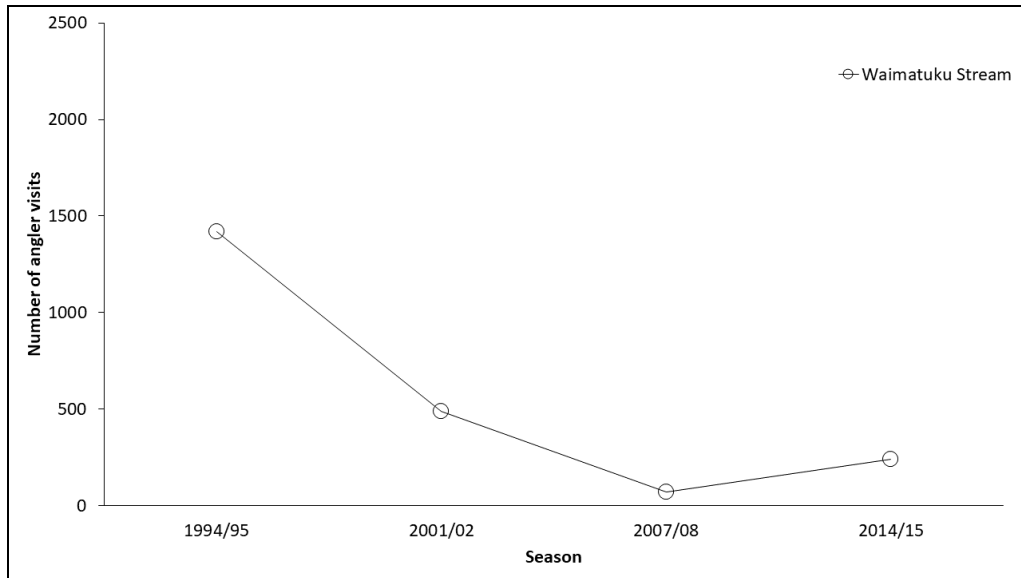
The Waimatuku catchment has fish and game values, including recreational hunting and fishing values. Specifically:

1. It is a sensitive small rain and spring-fed catchment draining into the Waimatuku Stream and Estuary, which is a 2km long, shallow, tidal river mouth estuary (approximately 20ha) that periodically closes to the sea.
2. The Waimatuku catchment supports a population of native and introduced waterfowl, including game species that have been hunted annually during the game bird hunting season.
3. Waimatuku Stream, including its tidal / estuarine waters, and its tributaries support a brown trout fishery, which historically was a productive lowland fishery. In recent years the Waimatuku fishery has declined. Research provides that water quality parameters are limiting brown trout growth and productivity in the Waimatuku Stream.<sup>1</sup>

Fish & Game national angler use surveys (repeated every seven years) have recorded a significant decline in angler usage of the Waimatuku Stream since commencement in 1994 / 1995 in a pattern that is consistent with decline of the fishery.

---

<sup>1</sup> Moate, D. (November 2010), 'Waimatuku Stream, Southland – Brown Trout Diet and Growth', Report for partial fulfilment of Bachelor of Environmental Science – Southern Institute of Technology (unpublished), 68 pages.



**Figure 1 – Angler usage of the Waimatuku Stream (1994 / 95 – 2014 / 15)<sup>2</sup>**

Waimatuku Stream and its tributaries provide spawning habitat for the brown trout fishery. In this case, the property is intersected by four unnamed tributaries of Middle Creek, which flows into Waimatuku Stream upstream of Waimatuku settlement.

4. Waimatuku Stream and its tributaries, provide habitat for a number of indigenous fish species, including: Long fin and short fin eels, lamprey, torrent fish, freshwater crayfish, inanga, common bully, common smelt, and galaxias.<sup>3</sup>
5. Waimatuku Wetlands, which are situated immediately east of the Waimatuku River mouth, are identified as a regionally significant wetlands in Southland.<sup>4</sup> Waimatuku Wetlands have been restored to their original water level, and are the only remaining example of a chain of small coastal wetlands which occurred between Invercargill and Riverton / Aparima.

## Position on the Application

### Actual and potential effects on the environment

#### *Water permit*

The proposed abstraction is 90,000 litres/day of groundwater from the Waimatuku Groundwater Zone, which equates to 112.5 litres/cow/day and is consistent with the Council’s standard estimate for dairy operations for combined dairy shed use (50 litres/cow/day) and stock drinking water (70 litres/cow/day).

#### *Discharge permit and land use consent – expansion of existing dairy farming operation*

<sup>2</sup> Unwin M. (July 2016) ‘Angler usage of New Zealand lake and river fisheries - Results from the 2014/15 National Angling Survey’, Prepared for Fish & Game New Zealand, NIWA, Appendix 1.

<sup>3</sup> New Zealand Freshwater Fish Database - <https://nzffdms.niwa.co.nz/search>. Accessed 22 January 2018.

<sup>4</sup> Appendix B – Regionally Significant Wetlands in Southland, Regional Water Plan for Southland and Appendix A – Regionally Significant Wetlands in the Proposed Southland Water and Land Plan.

The potential adverse effects of the proposed dairy expansion and discharge of dairy effluent onto land onto land include: contamination of groundwater, odour, effects on soil structure and fertility and contamination of watercourses (surface water).

### Physiographic zone(s)

The application provides that the Applicant's property overlies the Oxidising and Central Plains physiographic zones. Depiction of the overlaying physiographic zones shows that the Applicant's property is predominantly located in the Central Plains physiographic zone.

Environment Southland information provides that the Central Plains zone includes areas of clay-rich soils found in the central parts of the Southland Plains. These soils can crack extensively during summer as they dry out, and swell when wet in winter and early spring, becoming poorly drained.<sup>5</sup> As such, patterns for contaminant loss to aquifers and streams vary depending upon whether soils are wet or dry as follows:

1. Wet soils – prone to waterlogging, resulting in extensive artificial drainage network (mole and tile drains). When soils are wet, contaminants (including nutrients, sediment and microbes) can be potentially lost to rivers and streams via artificial drainage into a dense network of nearby streams.
2. Dry soils – prone to shrinking and cracking, allowing drain to bypass the soil to the underlying aquifer. When soils are dry, cracking and deep drainage allow nitrogen to move rapidly through the soils to underlying aquifers.

The gravels underlying the Central Plains zone host an extensive 'unconfined' aquifer system and a dense network of small streams flows through the zone, which are fed by artificial drainage. Streams and aquifers are not diluted or 'flushed' by a major river. Good management in the Central Plains zone includes measures for reducing the effects of artificial drainage and deep drainage.

The above considerations raise issues regarding:

1. The implementation and timing of good management practices and onsite mitigations to reduce the adverse environmental effects of the proposed activity; and
2. The timing and frequency of monitoring for ground and surface water monitoring.

### Soils

The application provides that Braxton (97ha) and Drummond (191ha) soil types have been identified within the farm boundary, which have the following properties<sup>6</sup>:

---

<sup>5</sup> <http://gis.es.govt.nz/apps/water-and-land/zones/Central%20Plains.pdf> Accessed 22 January 2018.

<sup>6</sup> <http://gis.es.govt.nz/soil-classification/index.aspx>

**Table 1 – Topoclimate soil types and vulnerability factors**

Soil type	Vulnerability factors		
	Structural compaction	Nutrient leaching	Waterlogging
Braxton (97ha)	Moderate	Slight	Severe
Drummond (191ha)	Minimal	Moderate	Slight

The extent to which the property is underlain with subsurface drainage, such as tile drains, is not identified in the application. This is significant in circumstances where:

1. The Applicant’s property is predominantly located in the Central Plains zone where contaminant losses to streams via artificially drained wet soils is an issue; and
2. The Applicant’s property includes soils that are prone to severe waterlogging.

Catchment

The proposed expansion of the existing dairy farm operation and FDE discharge area is located within the Waimatuku catchment, where there are existing issues with respect to ground and surface water quality and estuarine health. Specifically:

1. Groundwater quality

The results from groundwater monitoring of bore E45/0622 show highly variable nitrate and E-coli concentrations.

Environment Southland data provides that groundwater in the vicinity of the Applicant’s property could be regarded as significantly degraded due to anthropogenic inputs.

2. Surface water quality

Surface water quality in the Waimatuku Stream is monitored by Environment Southland at Lorneville-Riverton Highway.

**Table 2 – Waimatuku Stream at Lorneville – Riverton Highway<sup>7</sup>**

Parameter	State - Comparative	State – NoF band	Trend (10 year trend)
E-coli (500n/100ml)	Worst 25% of like site	B – NoF band annual median	Indeterminate trend
Clarity (1.12m)	Worst 50% of like site	-	Indeterminate trend
Turbidity (3.3 NTU)	Worst 50% of like site	-	Indeterminate trend
Total Nitrogen (3.9g/m <sup>3</sup> )	Worst 25% of like site	-	Meaningful improvement
Total Oxidised Nitrogen	Worst 25% of like site	C – NoF band annual median (3.35g/m <sup>3</sup> );	Meaningful improvement

<sup>7</sup> <https://www.lawa.org.nz/explore-data/southland-region/river-quality/waimatuku-stream/waimatuku-stream-at-lorneville-riverton/> Accessed 22 January 2018

		and C – NoF band annual maximum (5.5g/m <sup>3</sup> )	
Ammoniacal Nitrogen	Worst 50% of like site	A – NoF band annual median (0.0104g/m <sup>3</sup> ); and A – NoF band annual maximum (0.0416g/m <sup>3</sup> )	N/A
Dissolved Reactive Phosphorus (0.042g/m <sup>3</sup> )	Worst 25% of like site	-	Meaningful degradation
Total Phosphorus (0.0605g/m <sup>3</sup> )	Worst 25% of like site	-	Indeterminate trend

In summary, there are issue with respect to surface water quality in the Waimatuku Stream at Lorneville-Riverton Highway, particularly with respect to nutrients.

### 3. Estuarine health

Research commissioned by Environment Southland in 2011<sup>8</sup> identifies that:

- a. Eutrofication and sedimentation are major issues in the Waimatuku Estuary; and
- b. There is a need to manage Waimatuku Estuary and its surroundings to ensure that the assimilative capacity is not breached. It is recommended that appropriate catchment management nutrient and sediment guideline criteria be developed and that guideline criteria are used to assess the extent to which catchment loads meet these guidelines.

As yet, no interim catchment limits have been developed for the Waimatuku catchment.

#### Nutrient budget

The applicant has modelled nutrient losses using Overseer from the proposed activity verses the status quo.

**Table 3 – Summary of nutrient outputs**

	Total N loss (Woldewide 1 and 2)	N loss (kg N/ha/yr)	Total P loss (Woldewide 1 and 2)	P loss (kg P/ha/yr)
<b>Status quo</b>	11,162	17	330	0.7
<b>Proposal</b>	11,002	16	357	0.7
<b>Change</b>	-160	-1	+27	No change

<sup>8</sup> Stevens, L. and Robertson, B., (July 2011), *Waimatuku Estuary 2011 – Fine Scale Monitoring and Macrophyte Mapping*, Prepared for Environment Southland, Wiggle Coastal Management.

In summary, the nutrient budget for the proposal predicts a long term scenario across both Woldewide 1 and 2 of:

1. N losses reducing by a total of 160kg/year compared to the status quo; and
2. Phosphorus losses increasing by 27kg/year compared to the status quo.

Fish & Game considers that the Overseer modelling undertaken needs to be treated with care in circumstances where:

1. Overseer calculates an annual nutrient budget that represents the long term annual average if the management system described remained in place. Accordingly, Overseer assumes that:
  - a. 'Good management practices' have been implemented on the farm;
  - b. The inputs, such as stocking rates and rate / timing of fertiliser applied, are correct; and
  - c. Specific 'good management practices' selected as additional measures have been implemented on the farm if selected.

An issue with respect to the Overseer modelling relates to the fact that:

- a. The Applicant's property is located in the Central Plains zone where contaminant loss via dry soils and deep drainage is identified as an issue; and
- b. Overseer models nutrient loss to the bottom of the root zone, hence Overseer does not take account of nutrient loss via deep drainage.

In addition, the application does not provide detail on:

- a. What, if any, audit or review of the operation is proposed to ensure that the modelled leaching rates remain in place and further intensification resulting in increased nutrient loss does not occur over time.
  - b. Where the 200 cows that are not be wintered in the extended wintering barn on the Applicant's property will be wintered. No detail is provided as to whether these cows are to be wintered off farm in or outside the Waimatuku catchment.
  - c. How and when the bulk of nutrients from the proposed activity is transported to ground / surface water and whether this could be further mitigated. As discussed, it is unclear whether the Applicant's property, which is predominantly in the Central Plains zone, is underlain by a network of subsurface drains discharging to tributaries of Waimatuku Stream, which may have an effect on water quality.
2. As yet, no statutory body has acted to develop nutrient loading limits to address issues raised in the Waimatuku catchment or other catchments in Southland. However,

Environment Southland intends to complete interim limit setting for catchments within the Southland Region by 2021.<sup>9</sup> No consideration is given in the application to:

- a. The possibility that the applicant may be required to reduce their modelled losses should future planning instruments require reductions; or
  - b. Alternative land uses, which would result in lower nutrient leaching.
3. As yet, no peer review of the Overseer modelling has been undertaken by Environment Southland. Fish & Game is reliant on Environment Southland to provide information on whether the predicted nutrient losses are justified and have a sound basis.

### **Planning assessment**

As presented, the application is contrary to:

1. The purpose of sustainable management defined in Part 2 of the RMA. Consent conditions proposed by the Applicant do not:
  - a. Safeguard the life-supporting capacity of water and ecosystems; or
  - b. Avoid, remedy or mitigate adverse effects;
2. Matters of national importance outlined in s 6 of the RMA, including: 6(a), 6(b) and 6(c);
3. Other matters outlined in s 7 of the RMA, including: 7 (aa), 7(b), 7(c), 7(d), 7(f), 7(g) and 7(h) of the RMA;
4. Section 30(1)(c)(ii) of the RMA;
5. The objectives and policies of the National Policy Statement for Freshwater (2014)<sup>10</sup> (NPS-FWM), including:
  - a. Policies A2, A3 and A4 which require Environment Southland to set objectives and limits to assist improvements of water quality in water bodies;
  - b. Policies B5 and B7 which seek to protect the life-supporting capacity of freshwater resources; and
  - c. Policy C1 which requires integrated management of freshwater and land use.
6. The objectives and policies of the Proposed Southland Water and Land Plan ('the Proposed WLP'), including:
  - a. Objectives 1, 3, 6(a) and (b), 7, 8(a), 13(c), 14 and 18; and

---

<sup>9</sup> <http://waterandland.es.govt.nz/setting-limits> - Accessed 22 January 2018.

<sup>10</sup> As amended in August 2017 to incorporate amendments from the National Policy Statement for Freshwater Amendment Order 2017.



- b. Policy 5, Policy A4 of the NPS-FWM, Policies 13, 15(1), (2) and (3), and 16(1)(b) and (2)(c).
7. The objectives and policies of the Regional Policy Statement for Southland (2017) ('the RPs'), including:
- a. Issues WQUAL .1 - .3, Objectives WQUAL. 1 and .2, Policies WQUAL. 1, .2, .5 and 12 and Method WQUAL .3; and
  - b. Objectives BIO .1 and .2 and Policy .4.

**Decision we wish the Council to make**

That the application be declined, unless the following consent conditions are imposed:

1. Robust monitoring is imposed for the duration of the consent to accurately determine effects of the proposed activities on ground and surface water quality. The timing and frequency of monitoring should be tailored to when contaminant losses (nutrients, sediment and microbes) are most likely to occur in the Central Plains zone.
2. Good practice mitigation activities, including their timing / seasonality and frequency, made in nutrient modelling shall be implemented, including:
  - a. 'Assumed' good management practices; and
  - b. Any good management practices selected as 'additional measures'.
3. Annual audit / review and reporting of:
  - a. Modelled nutrient leaching, including any determinate trends; and
  - b. Current state and trends in surface and ground water quality at a property and catchment scale.

Fish & Game wishes to be heard in support of its submission at a hearing if needed.

Fish & Game wishes to be involved in any pre-hearing meeting that may be held for this application.

If others make a similar submission, Fish & Game will consider presenting a joint case with them at a hearing.

Fish & Game has served a copy of its submission on the Applicant.



Jacob Smyth  
Resource Management Officer  
Fish & Game New Zealand – Southland Region

Date: Monday, 22 January 2018

Cc: Aqualinc Research Ltd  
PO Box 20462  
Bishopdale  
**Christchurch 8543**

**Attention: Nicole Matheson**