



Your reference: APP-20171594
21 December 2017

The General Manager
Environment Southland
Private Bag 90116
INVERCARGILL

Attention: Ms A Grant

Dear Aurora

RE: Further Information – Miraka Farms Ltd

I will respond in order

Effluent storage facilities

The system will consist of existing twin sludge beds, the existing pond and the new pond.

The new pond will be constructed in early 2018 and the additional cows will not be milked until spring.

The existing pond was built in 2008 as part of the conversion. A CPEng rep. has carried out an initial inspection and there is no leakage or structural issues but they want to see the lower slopes of the inside wall. A full structural inspection as set out in Rule 35(b) (iii) will be carried out when the pond is empty and after the drop test.

We will order a drop test to confirm that it is not leaking when I get some of the 13 ordered back.

The milking season is from 1 August to 31 May and effluent may be spread all year but from the DESC it may only be 1 year in 10.

The 25 July and 8 July are incorrect. The DESC dates are correct from 1 August to 31 May.

Discharge to land and land use for increase of cows numbers

There are no silage storage facilities.

There will be a 200m buffer to 262 Boyle Road and should be shown in the Appendix 1 map.

The effluent irrigation system is a pulsed at 2mm over 15 minutes and a 15 minute gap. It is a very low rate system and even though the Braxholme soil is in the Central Plains Zone it will tend to act to a lesser extent as if in a Gleyed Physiographic Zone. The land is flat and at low rates and will not flow overland. The farm will have 500m³ of additional storage which provides an extra buffer volume. Any cracking will only be in very dry years and irrigation could be held during these periods because of the adequate storage available during summer.

The application is for 50 litres/cow for shed and yard use and does not include a green wash system. The total effluent to discharge per year is 14,428m³ as shown in the DESC. With a 200ha of discharge area the average depth of application is 7mm. The 7mm of effluent is equivalent to 21kg/ha of N and 1.4kg/ha K with this application depth. The usual permit condition is for 150kg/ha of N from this activity. I'm not sure where the 21mm of N comes from.

There will be 10 hectares of winter grazing with up to 100 cows and 170 heifers.

The phosphorus loss increase is 15kg over the entire farm area. This loss is quite small but it is a loss. Many dairy farms are up at 1.2kg/ha. There are two duck ponds that could be converted to catch sediment and this would catch phosphorus. The farm also has all streams and drains fenced with mature riparian areas which will also retain phosphorus. The N loss is also very low with normal range being 24 – 42 kg/ha for dairy farms. This farm, both before and after expansion, should be held up as an example of how dairy farm can lower their losses considerably. The farm also uses direct drilling when possible in the grass to grass pastoral renewal.

The details for the activities and nutrient losses are fully detailed in the Farm Scenario Plan supplied by Ravensdown with the nutrient budgets.

Groundwater consent

Sorry but the foot of the hill is from another farm at Opio and incorrect. The farm takes its water from the bore E45/0404 which is in the tanker loop.

The water take is 120 litres/cow/day and considered best practice. A green wash could be set up but these are best done as the shed is built.

The take is for stock over a greater area. The stock on the additional area would have been watered but at a lower take. The take is at less than 2 litres/sec and there are no issues with water supply on this farm or in the neighbourhood. The increased take could remove nitrogen from the aquifer over the long term although the latest test in 2014 indicated a Nitrate Nitrogen of 1.2mg/litre at this bore which is well below the NZDWS at 11.3mg/litre.

We have included a revised DESC report. Also included is a copy of the water test of the bore in November 2014 and probably more representative than the 10 year old tests and this shows the nitrate levels have improved considerably from the 2007 test.

Please contact me if you have any questions.

Yours faithfully
Civil Tech Ltd



Murray Gardyne
Director



2152

WATER TESTING LABORATORY

Lake Street Invercargill
ph(03) 216 2189 fax (03) 216 2789

21-Nov-14

Lab Reference Number: B 18346

McNeill Water Test Report:

Invercargill

Name: Dykes
Peter
Address: 180 Boyle Road Centre Bush
Order No: P63811
Date Received: 19/11/2014 13:05
Date Sampled: 19/11/2014 11:00
Sample Description: Water sample

Bacteriological Analysis

Test	Result	Units	Method
Total Coliform:	300	Colony Forming Units per 100ml	(APHA 21ed 9222 B)
Faecal Coliform:	28	Colony Forming Units per 100ml	(APHA 21ed 9222 D)
Enterococci:	27	Colony Forming Units per 100ml	(APHA 21ed 9230 C)

Physical and Aggregate Properties

Test	Result	Units	Method
pH:	7.57		(APHA 21ed 4500-H+ B)
pH after Aeration:	8.05		(APHA 21ed 4500-H+ B)
Turbidity:	48.1	NTU	(APHA 21ed 2130 B)
Total Hardness:	74	mg per litre as CaCO ₃	(APHA 21ed 2340 C)
Calcium Hardness:	61	mg per litre as CaCO ₃	(APHA 21ed 2340 C)
Magnesium Hardness:	13	mg per litre as CaCO ₃	(APHA 21ed 2340 C)

Chemical Analysis

Test	Result	Units	Method
Iron:	3.79	mg per litre	(APHA 21ed 3500-Fe B)
Nitrate Nitrogen:	1.21	mg per litre as N	(NWASCO 38)
Ammoniacal Nitrogen:	0.10	mg per litre as N	(NWASCO 38)
Chloride:	25	mg per litre	(APHA 21ed 4500-Cl-B)
Manganese:	0.45	mg per litre	(APHA 21ed 3500-Mn B)

Bacteriologically this water sample showed faecal contamination. A soft water sample. The iron and manganese may cause taste and staining.

A. Cocker
Lab Manager 

Dairy Effluent Storage Calculator

Summary Report

Regional authority: Environment Southland Regional Council
Authorised agent:
Client: Miraka Farms Ltd
Program version: 1.47
Report date: Thursday, 21 December 2017
General description:

Climate

Rainfall site: Drummond Marson Rd
Mean annual rainfall: 1061 mm/year

Effluent Block

Area of low risk soil: 0.0 hectares
Minimum area of high risk soil: 200.0 hectares
Surplus area of high risk soil: 0.0 hectares

Wash Water

Yard wash:

- Milking season starts: 01 August
- Milking season ends: 31 May

Month	Number of Cows	Hours in Yard	Wash Volume (cubic metres)
January	750	5.0	37.5
February	750	5.0	37.5
March	750	5.0	37.5
April	750	5.0	37.5
May	750	5.0	37.5
June	0	0.0	0.0
July	0	0.0	0.0
August	750	5.0	37.5
September	750	5.0	37.5
October	750	5.0	37.5
November	750	5.0	37.5
December	750	5.0	37.5

Irrigation

Winter-spring depth: 4 mm
Spring-autumn depth: 8 mm
Winter-spring volume: 110 cubic metres
Spring-autumn volume: 150 cubic metres
Irrigate all year? Yes

Catchments

Yard Area: 964 square metres
Diverted? Yes
- diversion start: 31 May

- diversion end:	01 August
Shed Roof Area:	175 square metres
Diverted?	Yes
Feedpad Area:	0 square metres
Covered?	No
Diverted?	No
Animal Shelter Area:	0 square metres
Covered?	Yes
Diverted?	No
Other Areas:	14 square metres

Storage

Pond/s present?	Yes
No. of ponds:	2 pond/s
Includes irregular ponds?	No
Pond 1	
- total volume:	6231 cubic metres
- pumpable volume:	4955 cubic metres
- surface area:	2401 square metres
- width:	49.0 metres
- length:	49.0 metres
- batter:	2.0:1
- total height:	3.5 metres
- pumped?	Yes
Pond 2	
- total volume:	1296 cubic metres
- pumpable volume:	1033 cubic metres
- surface area:	770 square metres
- width:	22.0 metres
- length:	35.0 metres
- batter:	1.5:1
- total height:	2.5 metres
- pumped?	Yes
Tank/s present?	No
Emergency storage period:	1 days

Solids Separation

Solids separator/s present?	Yes
No. of separators:	1 separator/s
Separator 1	
- dry matter:	20 %
- source/s:	Yard
- separation starts:	01 August
- separation ends:	31 May
- bunker length:	48.0 metres
- bunker width:	11.0 metres
- bunker height:	1.0 metres
- minimum SWD:	7 mm
- minimum 4 day SWD excess:	25 mm
- don't empty start:	16 May
- don't empty end:	31 July
- minimum volume before emptying:	75 %

Outputs

Maximum required storage pond volume: 6626 cubic metres
 90 % probability storage pond volume: 5392 cubic metres
 Maximum required solids bunker volume: 615.2 cubic metres
 During the period from: 01 July 1980
 To: 30 June 2013

