

# Woldwide Five Limited

Farm Environmental Management Plan

March 2019



**LANDPRO**

Make the most of your land.

📍 **Cromwell**  
13 Pinot Noir Drive  
PO Box 302  
Cromwell 9342  
+64 3 445 9905

📍 **Gore**  
23 Medway Street  
Gore 9710  
+64 3 208 4450

📍 **New Plymouth**  
46 Vivian Street  
New Plymouth 4342  
+64 6 769 5631

0800 023 318  
info@landpro.co.nz  
www.landpro.co.nz



# FARM ENVIRONMENT MANAGEMENT PLAN

## A: PROPERTY OVERVIEW

|   |  |                              |               |
|---|--|------------------------------|---------------|
| <b>Contact Person(s)</b>                | Abe and Anita de Wolde   | <b>Plan Prepared By</b>      | Landpro Ltd   |
| <b>Contact Phone</b>                    | 02 227 2537  | <b>Date</b>                  | 28 March 2019 |
| <b>Email Address</b>                    | abe@woldwide.nz  | <b>Date of Next Review</b>   | 28 March 2020 |
| <b>Physical Address</b>                 | 104 Shaws Trees Road   |                              |               |
| <b>Consent Numbers and Expiry Dates</b> | TBC  |                              |               |
| <b>Farm Area</b>                        | 335 ha<br>Includes WW5 dairy platform and Woldwide Runoff  | <b>Peak Milked Herd Size</b> | 930           |
| <b>Legal Descriptions</b>               | <p>Lot 1 Deposited Plan 344176, Lot 2 Deposited Plan 344176, Lot 1 Deposited Plan 310140, Part Lot 12 Deposited Plan 238 and Lot 2-3 Deposited Plan 478843, Lot 1 Deposited Plan 12253<br/>           Lot 1 DP 478843 (new block called Collies Block)<br/>           Lot 7 DP 238 (new block from Cochrans)<br/>           Lot 2 DP 310140 (new block from Cochrans)</p> <p>Merrivale Block:<br/>           Part Section 7 Block XII Waiau SD<br/>           Part Section 7 Block XII Waiau SD<br/>           Part Section 7 Block XII Waiau SD<br/>           Lot 1 DP 3537</p> <p>Merriburn Lease Block:<br/>           Lot 1 DP 302409<br/>           Sec 26 Merrivale Settlement No. 1<br/>           Sec 27 Merrivale Settlement No. 1</p> |                              |               |

This FEMP sets out the management practices that will be implemented and adopted to actively manage the operation of the property to ensure that environmental risks are managed appropriately, and resource consent conditions complied with.

Objectives of this plan:

- Comply with all legal requirements related to land use and discharge.
- Take all practicable steps to minimise the risk of harm to onsite and nearby water resources.
- Take all practicable steps to ensure that there is an adequate supply of soil nutrients to meet plant needs.
- Take all practicable steps to minimise the risk of harm to significant vegetation and/or wildlife habitat.

This will be achieved through;

- Identifying and documenting contaminant pathways for the property (based on Physiographic Zones);
- Identifying relevant good management practices (GMP) and where they are required to be implemented to minimise environmental risks; and
- Documenting evidence to be provided to show adherence with consent conditions.

As the person responsible for implementing this plan, I confirm that the information provided is correct:

Name:..... Signed:..... Date:.....

## B: SITE PLANS

This FEMP contains various site plans identifying key features of the subject property in accordance with Part B(3) of Appendix N of the proposed Southland Water and Land Plan, 2018. The following table can be used as a reference point for locating these features.

| KEY FEATURES  | PLAN(S) WHERE KEY FEATURES ARE MAPPED                          |
|---|--|
| Site boundary   | All site plans in this FEMP                                    |
| Physiographic zones, variants and soil types  | Figure 1 and 2: Physiographic Plan<br>Figure 3 and 4: Soil map |
| Lakes, rivers, streams ponds, artificial watercourses, modified watercourses and natural wetlands               | Appendix A: Existing Waterways and Critical Source Areas       |
| Other critical source areas (gullies, swales etc)   | Appendix A: Existing Waterways and Critical Source Areas       |
| Land with a slope greater than 20 degrees   | N/A  |
| Existing and proposed riparian vegetation and fences (or other stock exclusion methods) adjacent to waterbodies | Appendix A: Waterway location, most have riparian planting     |
| Places where stock access or cross water bodies (including bridges, culverts and fords)                         | Appendix A: crossings labelled                                 |
| Known subsurface drainage system(s) and the location of drain outlets   | Appendix A   |
| All land that may be cultivated over the next 12 months   | TBC – once consent granted                                     |
| All land that may be intensively winter grazed over the next 12 months  | TBC – once consent granted                                     |

## C: PHYSIOGRAPHIC ZONES AND KEY CONTAMINANT PATHWAYS

This section of the FEMP documents the physiographic zones and key contaminant pathways present across the property.

The physiographic plans shows the spatial distribution of the physiographic zones on the entire property according to the Environment Southland Proposed Water and Land Plan 2018 (PSWLP) as mapped by Beacon Mapping Service. The mapping system also details the key contaminant pathways present for each physiographic zone and any variants for the location.

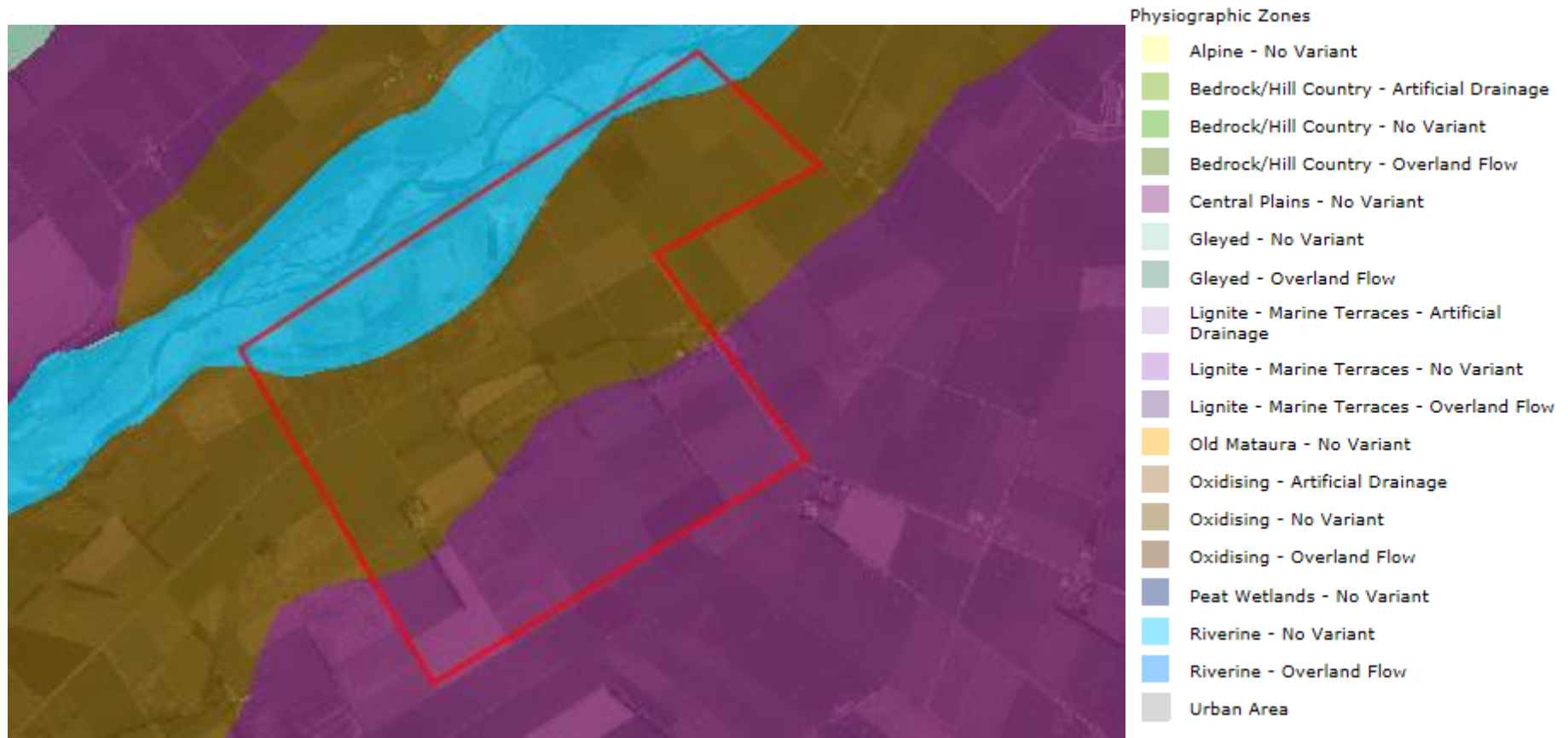


Figure 1: Physiographic Zones on the farm (showing dairy platform)



**Figure 2: Physiographic zones at Woldwide Runoff**

## D: SOIL TYPES

This section of the FEMP documents the soil types present across the property. The Soil Maps below shows the spatial distribution of the soil types across entire property according to the Environment Southland Beacon Mapping Service.



Figure 3: Soil types found on the dairy platform

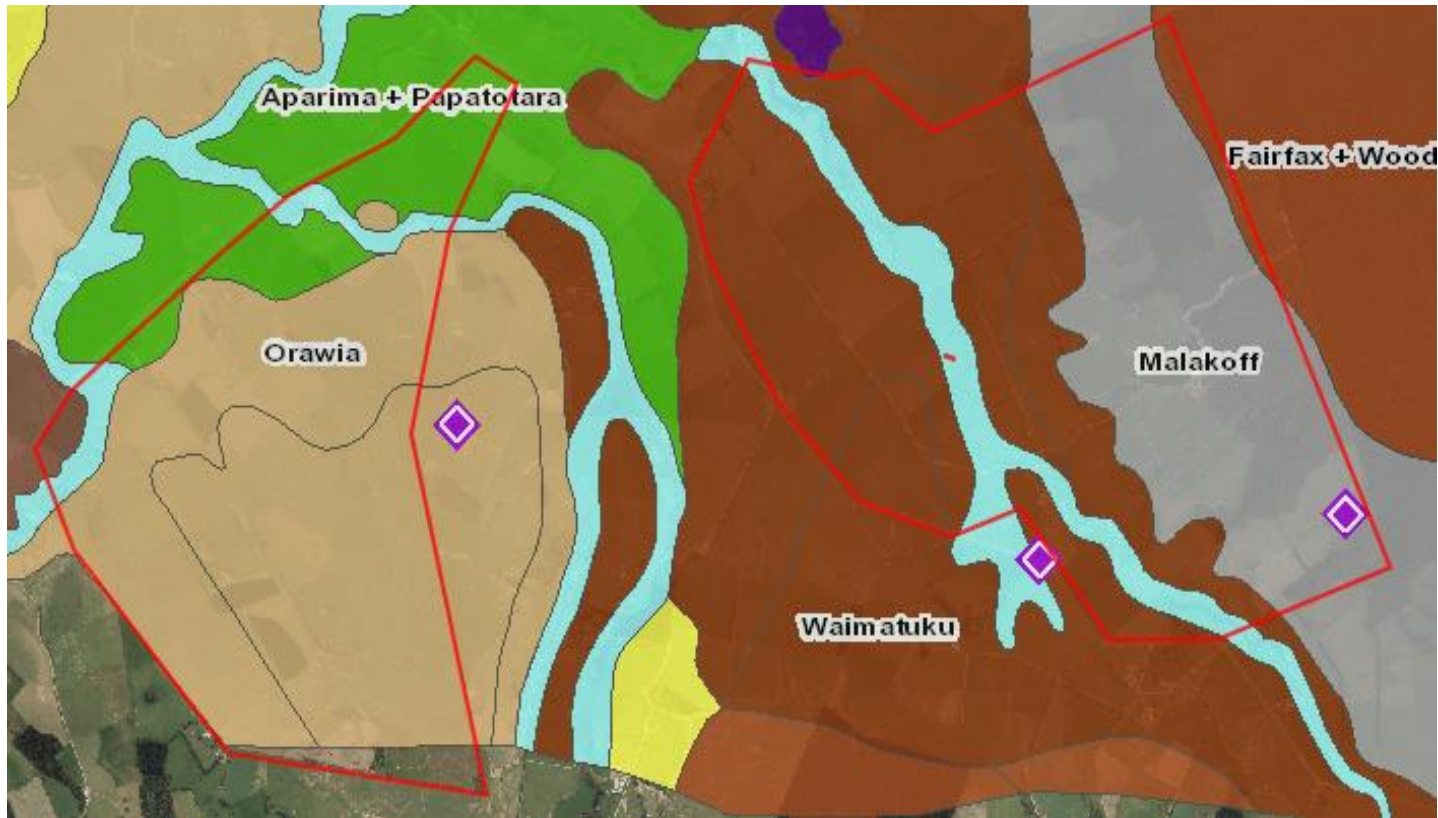


Figure 4: Soil types at Woldwide Runoff



## E: GOOD MANAGEMENT PRACTICES - GENERAL

| Mitigation  | Good Management Practice   | Review notes |
|---|--|--------------|
| Protect soil structure (will also help with P and N loss) | Wintering the milking herd on fodder beet on the dairy platform until wintering barns completed.   |              |
|   | Re-sow bare soils as soon as possible  |              |
|   | Use of selective grazing to avoid grazing very wet paddocks and open the breaks up to avoid pugging and treading damage.   |              |
| Manage Critical Source Areas (CSA)                        | Avoid working CSAs and their margins   |              |
|   | Leave grassed areas (or native vegetation) around CSAs especially when grazing winter forage crop and/or graze as "last bite". Grazing direction must be down the slope or towards CSA.  |              |
|   | All riparian margins must be fenced and left to establish with grasses to enable filtration of contaminants that may be transported via overland flow processes.                         |              |
| Additional P loss reduction                               | Create Riparian areas to mitigate overland flow into water ways. Refer to 'Consent Nutrient Budget Adjustments'.   |              |
|   | Reduce use of P fertilizer where Olsen P values are above agronomic optimum. Maintain Olsen P levels at around 40  |              |
| Reduce accumulation of N in the soil                      | Reduce the risk of run-off to laneways and other sources by ensuring crossings are adequately maintained and maintain gradients of laneways to direct runoff to pasture.                 |              |
|   | Use nutrient budgeting to manage nutrient inputs and outputs   |              |
| Avoid preferential flow of FDE through soil               | Time N fertilizer application to meet crop and pasture demand using split applications and avoid high risk times of the year i.e. when soil temperature is low or during drought periods |              |
|   | Defer effluent application when soil conditions are unsuitable especially when applying effluent to high risk paddocks   |              |

|                               |   |  |
|-------------------------------|---|--|
| profile and artificial drains | Apply effluent at low rates and depths and utilize entire effluent discharge area |  |
|-------------------------------|---|--|

## F: RIPARIAN MANAGEMENT

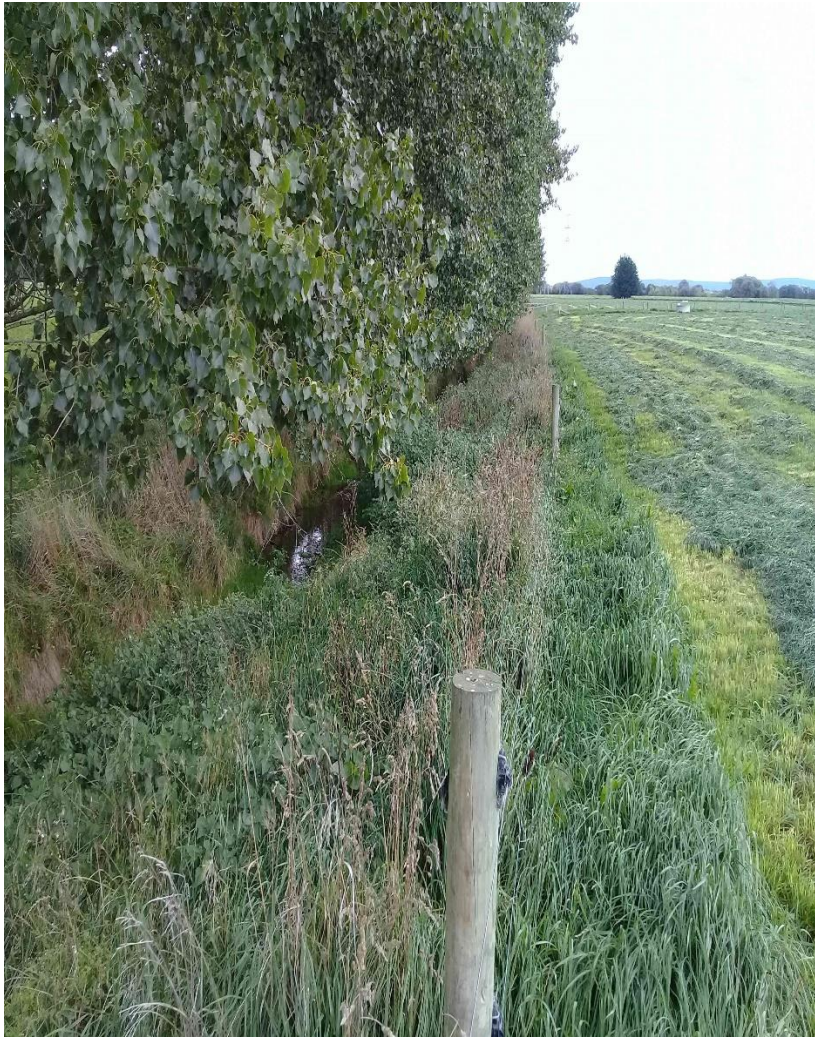
The dairy farm is mapped to drain to Waimatuku Stream and Aparima River. Woldwide Runoff drains to the Orauea River.

All waterways are already fenced to exclude stock as required by the supplier on the dairy platform. Any other waterways on the support land are fenced. All riparian margins are left to establish with grasses and native vegetation in the first instance or as a minimum. Some waterways contain riparian planting.

Riparian buffer zones will be created with natives and hedge like trees to retain nutrient s and stop over land flows, along the River edges and any further created water ways. These would run the length of paddocks 54 to 62 on Woldwide 5 alongside the river and the new water way fenced in the Cochrane block. See the attached map in Attachment A to see the location of riparian planting.

Where appropriate and as part of good grazing management, temporary fencing will also be erected to prevent any point source discharges occurring. This includes fencing off swale areas where they may directly discharge to surface water. Such practices will be adopted as set out elsewhere in this plan as part of the management of CSAs, and as set out in the Environment Southland Factsheet on *Critical Source Areas*, and *Dairy NZ Wintering in Southland and South Otago Guide*.

Appendix A maps the waterways present on the property, any stock crossings and/or CSA's for riparian management, with additional identified areas required to enable the P loss reductions modelled for the consent. Refer to 'Consent Nutrient Budget Adjustments' for further explanation. The photos below show existing riparian planting and fencing.







**Photos of artificial drainage channels on the farm (CSAs) with stock exclusion and riparian vegetation.**

## G: CRITICAL SOURCE AREAS

Critical Source Areas (CSA's) are areas that have high risk of channelling contaminants to waterways. CSA's for the property have been identified, as indicated in the Cultivation Map (Attachment A) The CSA's for the property include:

Good Management Practices that will be employed in the management of CSAs are summarised in the table above.

Areas where where over land flows collect and pool, with ability to flow into water ways are CSAs. As in Woldwide 1&2, these areas will be fenced and planted with Natives and flaxes etc. Fence off CSAs to create a grass or grass shrub buffer zone to filter contaminants and prevent stock access. The faster the water is flowing across a buffer zone, the wider the buffer zone should be to provide time for effective filtering. Plants which will slow and filter the sediment and nutrient overflows from entering water ways. The areas have been identified in the attached map in Attachment A.

## H: INTENSIVE WINTER GRAZING

Intensive winter grazing is defined in the PSWLP 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."*

Appendix B includes a farm map of winter grazing paddocks for 2018/2019 season. Full cultivation is undertaken and crop type is fodder beet.

The table below outlines the good management practices which will be adopted on site for the intensive winter grazing activity.

| Mitigation   | Good Management Practice   | Review notes |
|--|--|--------------|
| Protect soil structure and reduce N, P, sediment and faecal indicator organism loss from intensive winter grazing activities | Grazing direction must be top of slope to bottom of slope. Use break or block feeding and ensure a last bite of 5-20m is left from CSA's |              |
|  | Back fencing must be used to prevent stock from entering previously grazed areas   |              |
|  | Portable water troughs must be used to prevent stock from entering previously grazed areas   |              |

|  |  |  |
|--|--|--|
|  |  |  |
|  | Portable feed containers must be used for supplementary feed to avoid feed wastage |  |

## I: NUTRIENT MANAGEMENT

Nutrient management is a key component to ensuring good on farm environmental practice. The farm utilizes nutrient budgeting through their supplier (Fonterra) as well as via their fertilizer representative (Ravensdown) and will append full nutrient budgets by May 2019 in accordance with the PSWLP. Any resulting nutrient budgets are reviewed and updated as required especially if farm system changes are proposed, but not less than on an annual basis. Any budget reviews are guided by a fertiliser representative and nutrient management advisor.

Regular soil tests will be undertaken to establish the nutrient status of the soils. Soils should be at nutrient levels which avoid any adverse effects on the environment but maintain good pasture production and animal health, by ensuring that the soils are suitable for optimal plant nutrient uptake.

Areas which are receiving FDE will be carefully managed to ensure nitrogen loadings are at acceptable levels and are compliant with conditions imposed by resource consents. The annual effluent nitrogen loading rate shall not exceed 150kg/N/ha. Effluent will be applied utilising low rate application. Effluent management is discussed in Section H of this FEMP.

Where culverts along identifies lane ways have edges, which are not banded and/or have little riparian strips which leads to sediment and nutrient loss by flows into water ways, these will be re directed back to paddocks by contouring and additional areas added as buffer/riparian edges to allow more grass and area to plant to filter these over land flows. These areas have been located on the map in Attachment A.

Lane ways: Identified lane ways are to be re directed, involving cutting trees back to aerate lanes better (thus drier), plus widen lanes and contour them to drain to the paddocks and away from water ways. In addition, where lanes have areas which add to over land flow into critical source areas, these also will be re directed. These areas have been located on the map in Attachment A.

The table below describes the good management practices which will be adopted in relation to nutrient management.

| Mitigation   | Good Management Practice  | Review notes |
|--|---|--------------|
| Minimise nutrient losses from farming activities to ground and surface water by utilizing nutrient budgeting | Whole farm nutrient modelling using OVERSEER budget (or equivalent model) prepared by a suitably qualified person   |              |
|  | Whole farm nutrient budget reviewed annually and updated in accordance with significant farm system changes   |              |
|  | Minimise N losses by using soil testing to guide fertilizer recommendations and match fertilizer application with plant and animal requirements.            |              |
|  | Use of a fertilizer representative to advise on fertilizer type, timing and application rates. Split applications where application rates exceed 100kg P/ha |              |
|  | Limit P application between June and August   |              |
|  | Crop rotations adjusted to maximise the use of residual N in the soil   |              |
|  | Stock wintering practices adjusted to minimise nutrient losses  |              |

The following table sets out the evidence which needs to be collected for nutrient budgeting purposes:

| Record                         | Nature of information/person      | Collated (Y or N) |
|--------------------------------|-----------------------------------|-------------------|
| Production                     | Fonterra App, dockets             |                   |
| Soil test results              | Lab results, Ravensdown rep       |                   |
| Fertiliser application records | MINDA land & feed, Ravensdown rep |                   |
| Proof of placement             | MINDA land & feed                 |                   |
| Effluent application records   | Dairy diary                       |                   |
| Crop rotation records          | Farm map with total hectares      |                   |
| Stock numbers                  | Culling timeframes                |                   |



|                                     |  |  |
|-------------------------------------|--|--|
|                                     | Young stock grazed on farm<br>Breeding bulls |  |
| Record of supplements purchased     | Invoices/Cash manager, MINDA                 |  |
| Records of supplements made on farm | Invoices/Cash manager                        |  |
| Farm map/effective hectares         | Farm manager                                 |  |

## J: FARM DAIRY EFFLUENT

This section of this plan documents the methods that will be employed in the operation of the Farm Dairy Effluent (FDE) System to ensure that the discharge of effluent occurs in accordance with conditions of consent. Appendix C includes a full FDE Management Plan, monthly check sheets and staff training record.

|   |   |
|---|---|
| <b>Total effluent discharge area:</b>                     | 126 ha liquid effluent discharge area, 133ha slurry effluent discharge area               |
| <b>Available storage volume:</b>                          | 335m <sup>3</sup> for liquid, 7,955m <sup>3</sup> for slurry                              |
| <b>Storage Type:</b>                                      | Effluent tanks, concrete bunker, slurry effluent storage pond                             |
| <b>Effluent application method:</b>                       | Low rate pods<br>Slurry tanker/muck spreader/umbillical                                   |
| <b>Maximum application rate and depth of application:</b> | 10mm/hr<br>25mm depth per application.<br>2.5mm depth for slurry/muck spreader/umbillical |

| <b>Mitigation</b>  | <b>Good Management Practice</b>   | <b>Monitoring</b> |
|--|---|-------------------|
| Reduction in effluent generation                           | <ul style="list-style-type: none"> <li>Reduce water use in shed by reusing clean water where possible</li> <li>Treat the herd gently to avoid upset</li> </ul>  | N/A               |
| Effluent applied only when soil conditions are appropriate | <ul style="list-style-type: none"> <li>Sufficient storage provided so that when soils are at or above field capacity and/or during adverse weather conditions, effluent can be stored in the effluent storage pond until conditions are suitable for application</li> <li>Monitoring of soil moisture using the ES website.</li> <li>Paddocks will be inspected before effluent application to check that soil water deficit exists.</li> <li>Low rate application will be preferentially used during higher risk periods of the year with the slurry tanker used mainly in summer when a greater soil moisture deficit occurs</li> </ul> | N/A               |

|  |   |  |
|--|---|--|
| <p>Avoidance of direct effluent disposal or runoff to sensitive areas</p>                                    | <ul style="list-style-type: none"> <li>• Effluent discharge will observe a range of buffers from sensitive receiving environments as shown on the Appendix I plan attached to the discharge permit</li> <li>• Low rate effluent discharge will avoid ponding and/or runoff</li> <li>• Effluent will not be discharged onto any land areas that have been grazed within the previous 5 days</li> <li>• Effluent discharge will be to the entire effluent discharge area</li> </ul>                                     | <p>Record irrigation dates, times and areas in the DAIRY DIARY</p>   |
| <p>Avoidance of effluent contamination in tile drains</p>  | <ul style="list-style-type: none"> <li>• Low rate effluent discharge to reduce the risk of through-drainage and associated risk of effluent entering water</li> <li>• Mapping of tile drains</li> </ul>   | <p>N/A</p>   |
| <p>Efficient and effective collection, storage and delivery of effluent from infrastructure at all times</p> | <ul style="list-style-type: none"> <li>• Monthly/frequent system checks will be undertaken using the Monthly Effluent Check Sheet attached</li> <li>• All parts of the effluent system will be checked and maintained regularly</li> <li>• Leaks will be repaired immediately</li> <li>• Fail safe systems will be kept in place and kept in good working order i.e. automatic alarm and shut off system</li> </ul>   | <p>Record all repairs and maintenance (invoices, cash manager)</p> <p>Monthly Effluent Check Sheets filled out and signed</p>      |
| <p>Staff appropriately trained in operation and understand the effluent system</p>                           | <ul style="list-style-type: none"> <li>• All staff involved in the management of the effluent system are fully trained in its use</li> <li>• All staff are familiar with and understand the conditions of consent</li> <li>• All new staff will be taken through the "Staff Training Guide" (attached)</li> <li>• Staff to take immediate action if incident or breakdowns occur including; <ul style="list-style-type: none"> <li>- Rectifying the problem</li> <li>- Cleaning up if possible</li> </ul> </li> </ul> | <p>Keep signed training record in the back off this FEMP</p> <p>Ensure both farm manager and employee sign to confirm training</p> |
| <p>Application that is not offensive to neighbours</p>   | <ul style="list-style-type: none"> <li>• Wind conditions will be checked to ensure the effluent can be discharged without resulting in spray drift and odour beyond the property boundary</li> <li>• Observation of buffers to dwellings not located on the property (200 m) and property boundaries (20 m)</li> </ul>  | <p>Complaints received by Environment Southland</p>  |

## K: COMPLIANCE AND REPORTING

This section sets out the records which are required to be kept which will enable the Consent Holder to demonstrate compliance, as well as detailing the reporting requirements of the consents. The Consent Holder will also participate in annual compliance monitoring inspection programs that are to be implemented by Environment Southland.

| Record                                     | Kept | Date of most recent version |
|--|------|-----------------------------|
| Nutrient budget                            |      |                             |
| Fertilizer application records             |      |                             |
| Soil sampling results                      |      |                             |
| Water meter certification                  |      |                             |
| Water abstraction records                  |      |                             |
| Effluent system training record            |      |                             |
| Effluent system monthly maintenance checks |      |                             |
| Effluent proof of placement                |      |                             |
| Effluent application depth test results    |      |                             |

Annual reporting requirements are set out in the conditions of resource consent and include;

- Prior to the first exercise of the Effluent Discharge Consent the Consent Holder shall notify Environment Southland of the operator of the effluent system
- The Farm Environmental Management Plan shall be reviewed annually, and any amendments reported to Environment Southland by 31 June each year
- The Consent Holder shall provide records from the Water Permit to ES by 31 May each year

## L: ANNUAL REVIEW AND AUDIT OF FEMP

This FEMP shall be reviewed on an at least annual basis. The review shall include (but not be limited to) an assessment of;

- Verification of compliance with conditions of consent
- Details of the implementation of GMPs and identification of any new GMPs that would be appropriate to employ on the farm to manage risks identified
- Review of the data obtained from the monitoring undertaken in accordance with this FEMP and any changes to farming practice required as a consequence
- A report detailing items above shall be submitted to the consent authority each year including an updated version of the FEMP if any amendments made
- Updated maps of winter crop paddocks and CSA's if applicable

## M: INDUSTRY GUIDELINES

A complete list of the industry guidelines which have been referenced in the development of this FEMP are listed below. The Consent Holder is also referred to the following general sources for guidance in respect to the operation and management of their property.

**Environment Southland** [www.es.govt.nz](http://www.es.govt.nz)

**Dairy NZ** [www.dairynz.co.nz](http://www.dairynz.co.nz)

**Fonterra** [www.fonterra.com](http://www.fonterra.com)

Dairy NZ – A staff guide to operating your effluent irrigation system – Low Rate System

Dairy NZ – A farmer's guide to managing farm dairy effluent – A good practice guide for land application systems

Dairy NZ – Wintering in Southland and South Otago – A land management guide to good environmental practice

Dairy NZ – Land management on Canterbury Dairy Farms – Managing land to reduce sediment and phosphorous loss

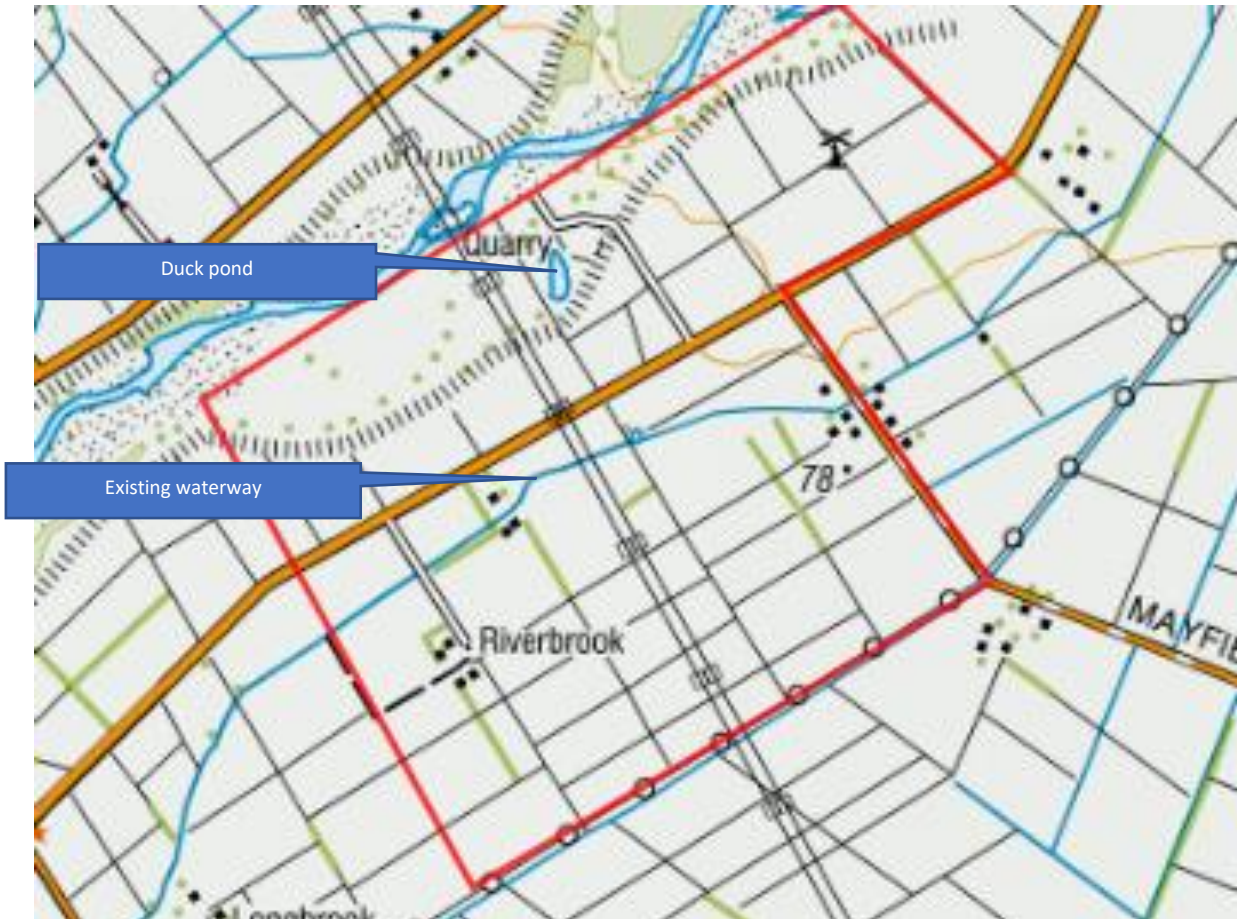
Environment Southland Factsheet – Critical Source Areas

Environment Canterbury – Information Sheet for Farmers on OVERSEER®

Sustainable Dairying: Water Accord

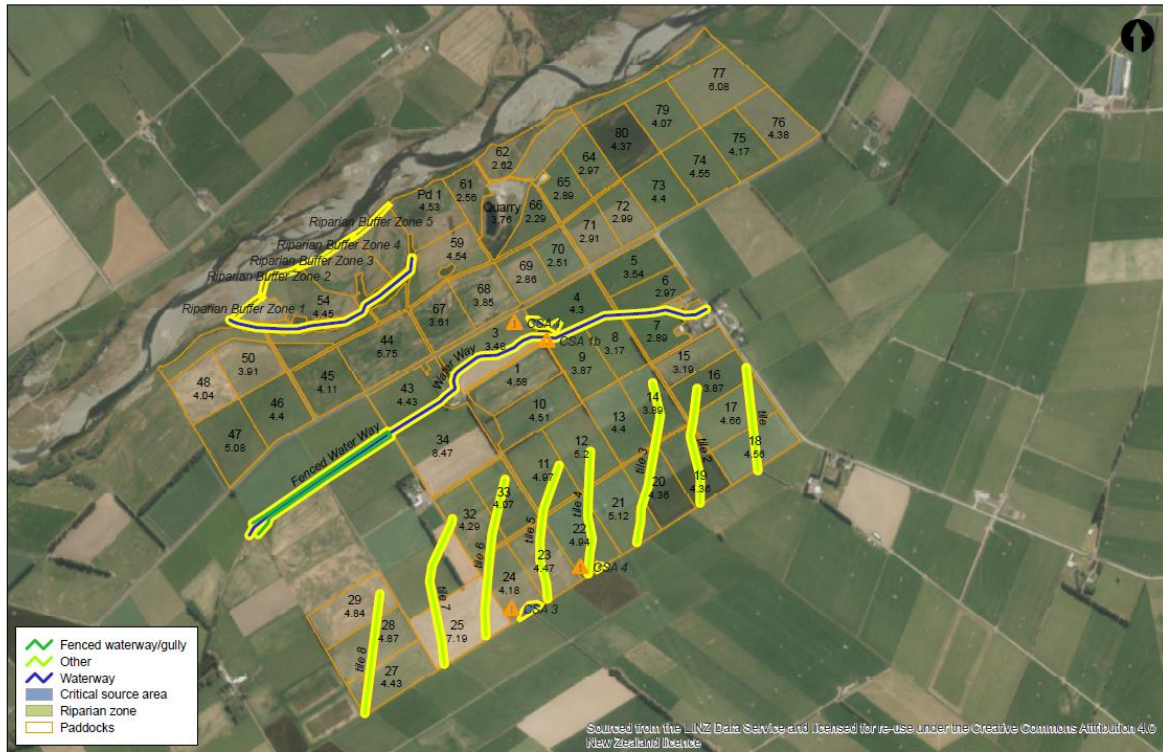
## Attachment A – Waterways and CSAs

The location of the waterways are mapped in this section for WW5 and Woldwide Runoff. Photographs are included of the CSA's present on WW5 platform.



*Figure: Waterways on dairy platform*

## WW5 P Mitigation



WORLDWIDE FIVE LTD - DE WOLDE A & J J - 60876935  
 Date printed: 23/08/2019  
 0800 73 73 73  
[www.hawkeye.farm](http://www.hawkeye.farm)

0 115 230 460 690 920  
 Metres

**Hawkeye**

| Features of P Mitigation<br>WW5 | GPS point                   | Area  |
|---------------------------------|-----------------------------|---|
| Critical Source Area 1          | -46.088933; 168.085793      | 0.11  |
| Critical Source Area 1(b)       | -46.089269 168.086665       | 0.05  |
| Critical Source Area 3          | -46.098744 168.084393       | 0.14  |
| Critical Source Area 4          | -46.097380 168.088048       | 0.02  |
| Total                           |                             | 0.32 ha effects 13.4 ha (3.9 %<br>modelled 2.5 %)   |
| Fenced Water way                | -46.093984 168.074506 (mid) | 1.1 ha effects 37.3 ha                              |
| Riparian buffer zones           | -46.086339 168.075157 (mid) | 0.3 ha effects 13.3 ha, whole<br>river edge 35.3 ha |
| Total                           |                             | 72.6 ha (modelled 82 ha)                            |

Critical Source Areas 1:



3&4:



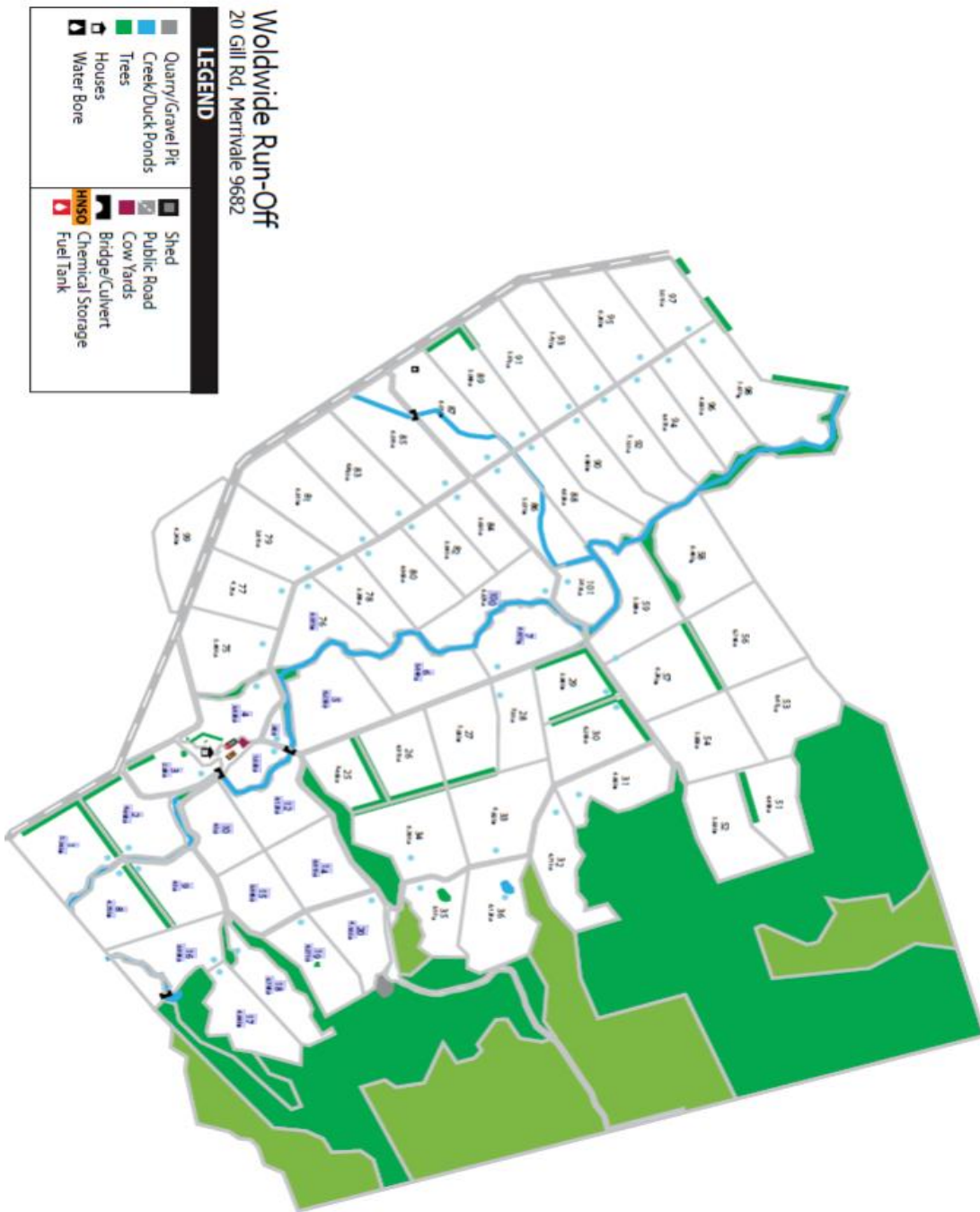


Buffer Zones:

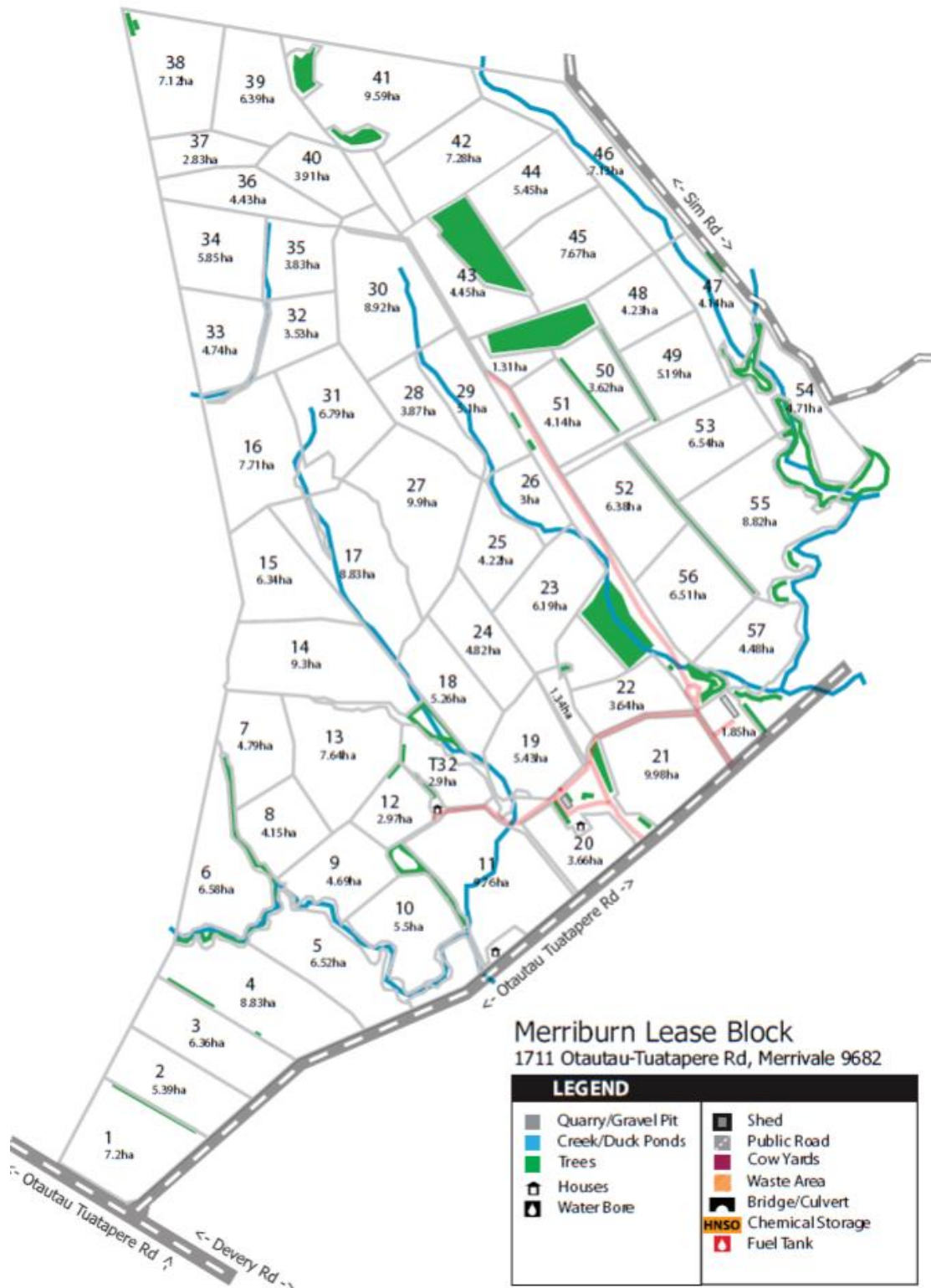








Farm map for Woldwide Runoff original block (Merrivale Block)



Farm map for Woldwide Runoff lease block (Merriburn)



## **Appendix C: Effluent Management**

# Titles



666102 1/1, Part Lot 12 Deposited Plan 238 and Lot 2-3 Deposited Plan 478843, 1,139,948 m2  
113.95 ha

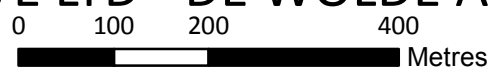
39965 1/1, Lot 1 Deposited Plan 310140, 240,900 m2  
24.16 ha

666101 1/1, Lot 1 Deposited Plan 478843, 441,981 m2  
44.32 ha

666102 1/1, Part Lot 12 Deposited Plan 238 and Lot 2-3 Deposited Plan 478843, 1,139,948 m2  
113.95 ha

1/1, Lot 1 Deposited Plan 22253, 335,200 m2  
33.52 ha

- Paddocks
- Discharge Area
- Titles Owned






# Effluent Orientation and Training Record

Season \_\_\_/\_\_\_

| Effluent Competencies  | Employee name | Employee name | Employee name |
|--|---------------|---------------|---------------|
| <b>General</b>   |               |               |               |
| Understands the regional council rules and farm policies for effluent management               |               |               |               |
| Understands health and safety around the effluent system                                       |               |               |               |
| Understands record keeping for irrigator runs and maintenance                                  |               |               |               |
| <b>At the Dairy</b>  |               |               |               |
| Use of stormwater diversion system   |               |               |               |
| Good hosing practice and water management  |               |               |               |
| Animal handling to minimise effluent volume  |               |               |               |
| Cleaning the stone trap  |               |               |               |
| Sump, pump & pond monitoring and management (including float switches)                         |               |               |               |
| <b>In the Paddock</b>  |               |               |               |
| When to irrigate: assessing soil and weather conditions  |               |               |               |
| Where to irrigate: runs, paddock rotations, high risk vs low risk soils etc (mark on farm map) |               |               |               |
| Where not to irrigate: near waterways, drains, boundaries, slopes etc (mark on farm map)       |               |               |               |
| How the irrigator works, how to use it, set up, hose layout and performance checks             |               |               |               |
| Measuring the depth of effluent application  |               |               |               |
| <b>Irrigator, pump maintenance/cleaning</b>  |               |               |               |
| Greasing and general maintenance requirements (how and when)                                   |               |               |               |
| How to check and replace rubber nozzles and seals (same time as dairy rubber ware)             |               |               |               |
| Tyre pressure and condition  |               |               |               |
| Pipe-work, hose and hydrant condition  |               |               |               |
| Wire-rope, cam and ratchet condition   |               |               |               |
| <b>Other</b>   |               |               |               |
|  |               |               |               |

|                    |  |  |  |
|--------------------|--|--|--|
| Trainer signature  |  |  |  |
| Employee signature |  |  |  |
| Date               |  |  |  |

 Date when staff become competent in each skill. If all training provided in one day, tick and date at the bottom.



# Smart Water Use in the Farm Dairy

*This guide looks at water use in and around the farm dairy, and whether there's potential for greater efficiency. Use it to evaluate your options for improvement.*



## *Efficient use of water can help:*

- control power use and costs
- manage effluent in a cost-effective manner
- get the most out of staff time
- reduce water costs if you pay for it by volume
- meet regulatory obligations that may apply in your region.



smartwateruse®  
on dairy farms

DairyNZ

Profitability. Sustainability. Competitiveness.

# Smart Water Use in the Farm Dairy

## Milk cooling

### Use source water from Tank 1.

Aim for the recommended ratio of 2½ water: 1 milk

For example,

$$2.5 \text{ litres (water) } \times \text{ peak daily litres (milk) } \\ \div 1,000 = \text{m}^3/\text{day water use}$$

### To measure milk cooling efficiency

Measure exit flow into a 200 litre drum during milking.  
*Flow rate in litres/min x total daily milking time (clock this) ÷ 1,000 = m<sup>3</sup>/day water use*

Alternatively, install a meter on the line delivering water to the plate cooler

### Efficiency options

Things to consider if improved cooling efficiency is warranted:

- use of correct flow rates
- optimal plate spacing to increase flow
- pre-cool water source
- ice banks/heat exchangers (can be costly).



### Return milk cooling water to Tank 2 for use in yard wash down.

Ensure adequate storage space remains to take all milk cooling water (use float ball or probes).

Capture roof water for reuse or at least exclude it from the yard to prevent increasing effluent volumes.

## Yard wash down

### To measure yard wash down water use

Follow the steps and calculations in the accompanying Worksheet to estimate water use.

### Efficiency options

For manual yard washing, here are some ways to improve water-use efficiency.

- Pre-wet the yard on warm, sunny days with a yard hose or sprinkler.
- Use a scraper or a chain (inside an old yard hose) on the backing gate to break up dung before hosing.
- Wash the yard after each milking.
- Work actively and close to the effluent.
- Hose the yard with high water volume under low pressure.
- Include a timer setting on the yard wash down pump (set a time standard for wash down and train staff to achieve it).
- Consider capturing excess cooler water (that would otherwise go to waste) in tipper drums for yard wash.
- Flood wash with water recycled from the effluent pond (refer to conditions of use from your milk processor).



## Plant/vat wash

### Use water from Tank 1.

To track plant/vat water use Wash tubs and hot water cylinders use set amounts of water. Refer to washing routine instructions supplied by the detergent companies.



### Efficiency options

Here are some steps you can take to reduce plant/vat wash water use:

- Seek advice from your detergent rep on litres required for hot/cold wash options.
- Refill tanks/cylinder with automatic shut-off (to avoid overflows). Use a toilet cistern and trough floats as proven refill/shut-off options.
- Consider heat exchange or pre-heating to improve energy efficiency.

## Milking routines

Procedures and practices during milking affect water-use efficiency. Below are some ways to cut water use.

- ❖ Pre wet ball and yard.
- ❖ Minimise sprinkler/spray washing.
- ❖ Hose little and often (as required) in pit area.
- ❖ Put cups on dry, clean udders (see DairyNZ's SmartSAMM – [www.smartsamm.co.nz](http://www.smartsamm.co.nz)).
- ❖ Implement a calm, consistent routine to reduce stress in animals and, in turn, effluent in the dairy (see DairyNZ's Milksmart – [www.milksmart.co.nz](http://www.milksmart.co.nz)).
- ❖ Maintain the dairy (paint/surfaces) to minimise the need for continual wetting.
- ❖ For rotaries, use air jet or other methods instead of water to back cows off.

### Efficiency options

Here are a few more tips for efficient water use and to reduce water loss.

- Ensure high standard of water quality (if treatment is required).
- Do regular checks for pump pressure, line restrictions and possible leaks.
- Reduce the number of hand-held hoses in use throughout the dairy.

As a measure of efficiency, yard wash water use should not exceed milk cooling water.

