

Appendix C Farm Management Plan for Wharenui



Wharenui Farm

Farm Management Plan

September 2017

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Appendices

- Appendix A – Farm Map
- Appendix B – OVERSEER Nutrient Budgets
- Appendix C – Records

1. Introduction

1.1 Purpose of Plan

The Farm Management Plan (FMP) has been prepared in accordance with Schedule 7 of the Land and Water Regional Plan (LWRP) and Schedule 2 of the Hurunui Waiau Water Allocation Plan.

In addition, the FMP has been prepared to give effect to land use consent CRC169646, which is held by Mr NJ & Mrs LM Harris and Harakeke Nominees Limited.

1.2 Property Details

Wharenui Farm has a total property area of approximately 341 hectares; legal descriptions for the irrigated area are listed in Table 1-1.

Table 1-1 Legal Description

Legal Description	Area of Land Parcel (ha)
Section 8 Block XIX Lowry Peaks SD	118.3
Section 7 Block XVIII Lowry Peaks SD	90.6
Section 2 Block XIX Lowry Peaks SD	6.3
Section 3 Block XIX Lowry Peaks SD	10.9
Section 4 Block XIX Lowry Peaks SD	31.6
Section 5 Block XIX Lowry Peaks SD	81.9
Section 7 Block XIX Lowry Peaks SD	1.1

A summary of the make up of the farm is provided in Table 1-2 below.

Table 1-2 Farm Information

Farm Information	Description				
Property Area (ha)	341				
Effective Area (ha)	344*				
Area Under Irrigation (ha)	Water	306	Effluent	54	
Irrigation Type (ha)	Water	Centre Pivot	Effluent	Centre Pivot	
Enterprise Type	Dairy	Dairy Grazing	Sheep & Beef		

*Area based on natural boundaries rather than cadastral boundaries

The address and contact person for the farm is provided in Table 1-3.

Table 1-3 Site Address and Contact Details

Physical Address	Address for Service
Wharenui Farm 995 Domett Road Domett	Wharenui Farm c/- 315 Highsted Road Casebrook Christchurch Attn: Nick Harris
	Phone: 027 227 2001

1.3 Farm Map

An aerial photograph of the farm showing the following is provided as Figure 1, Appendix A.

- Farm property boundaries;
- The land management units (LMU) on the farm;
- The location of permanent or intermittent waterways;
- The location of riparian vegetation and fences adjacent to waterbodies;
- The location of wetlands on the farm; and
- The location of exotic vegetation and riverbank protection vegetation.

1.4 Consent Details

The following consents are actively used or will be used on Wharenui Farm (Table 1-4)

Table 1-4 Consent Details

Consent	Activity	Status
CRC169643	To discharge diluted dairy effluent into air and onto land for a maximum of 1100 cows	Issued - inactive
CRC169646	To use land for farming	Active
CRC169648	To take and use water at a combined rate not exceeding 206 L/s with a volume not exceeding 17,000 m ³ /day and 1,904,000 m ³ /yr	Active
CRC170477	To discharge to land and air processing wastewater, wastewater from animal handling areas and stock yards and runoff from the composting operation associated with a meat processing plant	Issued - inactive

2. Land Management

2.1 Land Management Units

Wharenui Farm comprises approximately 341 ha on the north bank of the Hurunui River between State Highway 1 (SH1) and Darrocks Road, Domett. The farm has been separated into four land management units (LMU). Two large management units (LMU1 and LMU2) comprise the majority of the farm and reflect the two dominant landform types, being lower and upper terrace. River flats comprise the third LMU and encompasses the area adjacent to the Hurunui River. A fourth LMU is located on the eastern edge of the farm and represents an isolated section of the upper terrace. Both the upper (LMU2) and lower terrace (LMU1) will be irrigated. Riparian areas and terrace seepage zones will be fenced. Vegetation along the Hurunui River margin will be maintained to reduce erosion.

The upper terrace consists of deep/heavy Mayfield silt loams (PAW 80 mm) at the eastern end tapering to lighter Darnley stony silty loam (PAW 70 mm) towards SH1. Loess underlies the soil on the upper terrace limiting drainage. The lower terrace comprises bands of soils running parallel with the Hurunui River, starting at the SH1 end these are heavy Wakanui deep silty loam (PAW 100 mm), Barrhill moderately deep silty loam (PAW 100 mm), Waimakariri moderately deep loam (PAW 110 mm), and lighter Selwyn sandy loam with underlying stone (PAW 100 mm). Rangitata stony soils (PAW 70 mm) are present along the Hurunui River margin.

Therefore, runoff and lateral movement of drainage water are the most common pathways for excess water / soil-water and nutrients off the terrace. There are a number of ephemeral streams on the property that drain the hill country, which typically flow in response to rainfall runoff events. In addition, there are a series of terrace seeps and historic drainage networks that capture the seepage water and convey the water across the property. These drainage systems provide a mechanism for capturing seepage water and sub-surface drainage. The ephemeral streams convey water to the lower terraces where water seeps to ground. In significant rainfall events the waterways are understood to discharge directly to the Hurunui River.

2.2 Land Management Practices

Wharenui Farm has stated that, to the best of their knowledge, the irrigation areas do not contain any livestock dips or farm rubbish pits.

Fencing and stock exclusion from the drains and ephemeral creeks are important management tools to minimise nutrient losses to surface waterways and preventing soil/bank erosion.

Irrigation and fertiliser applications are to be managed in accordance with industry guidelines to avoid runoff/excess drainage and fertiliser loss. This includes avoiding the application of fertiliser within 20 m of any wetland or natural surface water body. Additional riparian planting to manage run-on water from the critical source areas which may contribute phosphorus to the waterways should be undertaken as the property is developed. This may also include the use of erosion and sediment controls, including the development of sedimentation ponds. Other measures also include following the New Zealand code of practice for fertiliser use, using soil tests and OVERSEER nutrient budgets to plan the farm's nutrient requirements. Irrigation infrastructure will be designed and evaluated to Irrigation New Zealand code of practice. Irrigation will be scheduled on the basis of crop type, rainfall, soil type, and soil moisture monitoring should be used to inform irrigation scheduling.

Historical drainage networks should be maintained and where possible enhanced to increase land productivity. Drainage water is to be captured and passed through constructed wetlands, or recycled as stockwater/irrigation, or to an alternative treatment system to minimise effects on waterways.

Soil management will be implemented on farm to ensure that soil health is maintained, with a focus on the land management units where irrigation is applied. This will be carried out by avoiding pugging of vulnerable paddocks in wet periods, utilising low tillage cultivation techniques to avoid wind erosion, avoid irrigation after heavy rainfall to minimise runoff and using Fertmark fertilisers to avoid contamination of soil.

When required, effluent management will be carried out on farm to prevent contamination of ground and surface water during disposal of effluent. This will be undertaken by preparing an effluent disposal plan, which including a spill response plan and effluent applied to land on farm is included in the OVERSEER nutrient budget. Offal pits will be managed and located on the farm to minimise risks to health and water quality.

3. Environmental Objectives

The following environmental objectives for the property were derived from the Beef & Lamb FMP template, which has been approved for use by Environment Canterbury.

3.1 Nutrient Management

The objective for nutrient management is to minimise nutrient losses to water while managing soil fertility for optimal pasture and crop productivity.

Table 3-1 Current Good Farm Environmental Practices for Nutrient Management

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Y	N			
		Implement the best management practices in the 'Code of Practice for Nutrient Management' (NZFMRA).	Fertiliser records and farm maps detailing where applied	
		Ensure all OVERSEER models are kept up to date with inputs e.g. brought in feed and stock numbers.	OVERSEER model	
		Use Spreadmark contractors and apply fertiliser according to Spreadmark standards.	Farm records	
		Apply nutrients where and when needed in accordance to soil monitoring and budgeting. Timing of fertiliser applications avoid saturated soil, and heavy rainfall to minimise losses.	Soil results and OVERSEER budget	
		Managing soil and solid waste to avoid nutrient losses to water. Note paddocks of particular vulnerability and Phosphorus Critical Source Zones to manage runoff.	Farm Map	

Does my management achieve the objectives above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-2 Actions Required for Improvement to Nutrient Management

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, medium of high to be used to indicate level of importance of action being implemented

3.2 Irrigation Management

The objective for best practice irrigation management is to use water efficiently, minimising runoff and drainage.

Table 3-3 Current Good Farm Environmental Practices for Irrigation Management

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Yes	No			
		Plan and schedule irrigation so that it is applied according to evapotranspiration, rainfall and soil moisture status.	Soil moisture probes	
		Avoid ponding of irrigation water as far as possible.	Application rate and soil moisture probes	
		Avoid inefficient application of irrigation and ensure it is applied at a rate lower than the soil moisture holding capacity of the soil.	Application rate and soil moisture probes	
		Avoid drainage of irrigation water to adjacent properties or to surface water or groundwater.	Application rate and soil moisture probes;	
		Comply with Regional council consent, and ensure that the irrigation infrastructure is designed by an Irrigation New Zealand accredited designer and INZ design standards.	Documentation from designer and regular maintenance checks.	

Does my management achieve the objects above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-4 Actions Required for Improvement to Irrigation Management

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, medium of high to be used to indicate level of importance of action being implemented

3.3 Soils Management

The objective for best practice soils management is to maintain or improve (if necessary) the physical condition of our soil.

Table 3-5 Current Good Farm Environmental Practices for Soils Management

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Yes	No			
		Avoid damage to soil structure and health, by minimising pugging in wet conditions and not utilising vulnerable paddocks in these conditions.	Visual	
		Reduce the potential for wind erosion by: <ul style="list-style-type: none"> Avoiding the time soils are exposed during cultivation or using methods such as direct drilling. Using appropriate seedbed preparation 	Farm Records	
		Carry out on-farm monitoring of soil quality indicators on an annual basis. Initial focus is to be for areas that are being irrigated.	Soil records	
		Avoid risk of soil contamination by using fertilisers that are 'Fertmark' compliant.	Farm Fertiliser records	

Does my management achieve the objectives above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-6 Actions Required for Improvement to Soils Management

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, Medium, or High to be used to indicate level of importance for action to be implemented

3.4 Wetland and Riparian Management

The objective is to protect our waterways on our farm by maintaining riparian margins and wetland to improve health and vitality of the waterway system.

Table 3-7 Current Good Farm Environmental Practices for Wetland and Riparian Management

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Yes	No			
		Excluding stock from waterways.	Visual evidence. Fencing waterways / hot wire for flood prone waterways	
		Riparian margins and fencing to be installed on either side of Honeymoon Creek by 2016/2017 or before irrigation is applied. Use of Hot Wire to reflect flood prone nature of waterway.	Visual evidence. Fencing waterways.	
		Wetland and fencing to be installed to capture and treat the perched groundwater coming from the terrace seeps and existing drains by 2016. Use of hot wire fencing until permanent fencing is acceptable.	Visual evidence. Fencing waterways.	
		Ensure that fertiliser and pesticides are applied at a distance where they won't get into a waterway.	Fertiliser contractor map.	
		Manage waterways by planting suitable and approved scrubs and trees. (e.g. Environment Canterbury and NIWA)	Visual.	

Does my management achieve the objectives above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-8 Actions Required for Improvement to Wetland and Riparian Management

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, Medium, or High to be used to indicate level of importance for action to be implemented.

3.5 Collected Animal Effluent Management

The objective of effluent management is to manage the effluent system to maximise the benefits of the effluent while avoid, remedy or mitigate the contamination of groundwater and surface water.

Table 3-9 Current Good Farm Environment Practices for Collected Animal Effluent Management

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Yes	No			
		Maintenance of the effluent irrigator, ensuring it is functioning correctly.	Maintenance records	
		Ensuring ponding doesn't occur and location of effluent applied is recorded.	Maintenance records	
		Ensuring that effluent does not occur: <ul style="list-style-type: none"> • Within 20 metres of a surface waterbody • Within 30 metres of any bore or spring • On any land that has been irrigated within the previous 24 hours or in next 24 hours. 	Effluent Management Plan Map showing effluent area buffer zones.	
		There are spill procedures in place.	Effluent Management Plan	
		Maintain the effluent pond, recording the frequency that it is desludged.	Effluent Management Plan	

Does my management achieve the objectives above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-10 Actions Required for Improvement to Collected Animal Effluent Management

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, Medium, or High to be used to indicate level of importance for action to be implemented.

3.6 Livestock Management

The objective to manage waterbodies on farm to ensure that stock are excluded as far as practicable from water, to avoid damage to the bed and margins of the waterbodies, and to avoid the direct input of nutrients, sediment and microbial pathogens.

Table 3-11 Current Good Farm Environmental Practices for Livestock Management

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Yes	No			
		Excluding stock from waterways by 2016 for irrigation parts of the property.	Visual evidence. Fencing Waterways.	

Does my management achieve the objectives above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-12 Actions Required for Improvement for Livestock Management

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, Medium, or High to be used to indicate level of importance for action to be implemented.

3.7 Offal Pits and Wastewater Discharges

The objective is to manage the number and locations of offal pits and the discharge of wastewater from Harris Meats to minimise risks to health and water quality.

Table 3-13 Current Good Farm Environmental Practices for Offal Pits and Wastewater Discharges

Checklist		Good farm environmental management practices currently carried out	Evidence required	Note
Yes	No			
		Were Offal Pits used this year?	Record	
		Reduce number of offal pits.	Visual / records of offal pits (location)	
		Locate offal pits on farm in appropriate place.	Visual / record of offal pit location and date used.	
		Irrigation of wastewater to areas of land that are clearly identified to avoid additional fertiliser being applied	Record and map of disposal field	
		Maintain wastewater irrigator and infrastructure to avoid leakages and ponding of wastewater	Visual / records of application rates etc as per consent conditions	
		Avoid runoff to drainage and wetlands associated with wastewater applications.	Visual / records / surface water monitoring	

Does my management achieve the objectives above?

Objectives Achieved	YES	Objectives Not Achieved	NO

If you answered NO above, please fill out the table below.

Table 3-14 Actions Required for Improvement to Offal Pits and Wastewater Discharges

Level	Agreed actions for improvement	Person responsible	Timeframe	Evidence required	Completion date	Cost

Level: Low, Medium, or High to be used to indicate level of importance for action to be implemented

4. Nutrient Budgets

Table 4-1 OVERSEER Nutrient Budget

Nutrient Budget	Description
Date of last nutrient budget	
OVERSEER version	
Consented N Baseline (kg/ha/yr)	

Please see the latest nutrient budget included as Appendix B.

5. Record Keeping

To maintain an accurate account of the nutrient balance on the property the following records are to be kept and updated on an ongoing basis

Farm Records	Description
Unique Paddock IDs	Map indicating a unique ID for each paddock on the farm.
Monthly stocking rates for the two LMU	Type, number, class of stock on the farm
Annual crop yields	Dry matter removed;
Ground cover for each paddock	Type of cover – pasture, fodder, crops, forestry, wetlands, riparian. Update records when land use cover changes
Stock management	Keep records of stock incoming and outgoing and births, deaths, culls
Fertiliser application	Records provided by Fertmark contractor on applications areas and loading rates of fertiliser, date of application, etc
Supplementary Feed	Record of incoming and outgoing supplementary feeds / type of feed and any nutrient information (% nitrogen content of DM)
Effluent Management (if ponds are constructed)	Land area used for effluent disposal, loading rates of Nitrogen (mm/d and kgN/ha/yr)
Irrigation Management	Areas of farm that are irrigated, rates, volumes and system type.

Appendices

Appendix A – Farm Map

Appendix B – OVERSEER Nutrient Budgets

Appendix C – Records

This section is to be maintained by the Farm Manager, with records inserted into the FMP on an ongoing basis.

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