



# FARM ENVIRONMENT PLAN









# ABOUT YOUR FARM ENVIRONMENT PLAN

This Farm Environment Plan document is the result of a tailored farm environment planning service provided to you through Tiaki Sustainable Dairying. It is part of the advantage you get through Farm Source as a member of the Fonterra Co-Operative. The purpose of this plan is to describe the environmental conditions present on your farm, given your farming operations while documenting existing good management practices and identifying any actions that should be taken to more effectively manage the environmental risks inherent in any farming operation. As any good plan should, this Farm Environment Plan includes sensible implementation timeframes for all identified actions. Now that this plan has been created it's the plan owners responsibility to ensure it is put into action and kept up to date as actions are completed or conditions on farm change. Tiaki Sustainable Dairying is here to help with that implementation and ongoing management through our team of Sustainable Dairying Advisors who can be contacted via the details below.

**PHONE:** 0800 65 65 68

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**FARM NAME:** Owl Farm

**SUPPLIER NUMBER:** 72847

**PLAN OWNER:** Owl Farm  
+64 (1) 2345 6789  
john.doe@ecan.govt.nz

**FARM ADDRESS:** 1716 Cambridge Road

**REGIONAL COUNCIL:** Waikato Region

**PLAN LAST EDITED DATE:** 22 December 2017

**CATCHMENT / FMU:** Waikato River: 237.45 ha - 100.00 %.

**LAND PARCELS:** Fee Simple, 1/1, Lot 1 Deposited Plan South Auckland 15400 and Lot 1 Deposited Plan South Auckland 88412 and Lot 5-8 Deposited Plan South Auckland 30324 and Lot 3-4 Deposited Plan 444339 and Lot 2-3 Deposited Plan 458241, 529,369 m2, Fee Simple, 1/1, Part

**POINTS OF NOTE:** This FEP has been developed to showcase the Farm Source FEP tool and report template.







**LOCATION:**



# FARM OVERVIEW MAP

The map below presents the land on which the farming operations covered in this document occur and identifies some key points of interest. More detailed maps looking at specific environmental management topics are contained throughout the document.










-  Accord Defined Stock Excluded Waterway
-  Non-Accord Defined Stock Excluded Waterway
-  Non-Accord Defined Stock Not Excluded Waterway
-  Farm Boundary
-  Compliant Crossing
-  Shed Location














# SUMMARY OF OPEN ACTIONS

This table includes all open or ongoing actions that have been agreed as part of this Farm Environment Plan. They are organized by their target due date. Where an action has been identified as especially important, an additional (Flag) icon may have been added.

CATEGORY	AREA REQUIRING ACTION	ACTION REQUIRED	TARGET DATE	PAGE NO.
 L1	Race Management - Crossing Over Main Waterway by Te Awa Cycleway/walkway	Dig Cut-out Both Sides of Race	30 JAN 18	14
 L5	Race Management - Farm Race Between Paddocks 48/49	Re Camber and Create Cut Outs	30 MAR 18	19
 L4	Crossing Point - Crossing Between Old Wetland	Retire Crossing Point	30 MAY 18	17
 E1	Effluent Storage - Current Effluent Pond	Construction of New Effluent Pond	30 MAY 18	34
 W6	Riparian Management Unit - Retired Area to be Planted Below the Kibby Block	Planting	30 NOV 18	36
 W7	Riparian Management Unit - Drain Heading Towards Mcgraths Boundary From Swimming Pool	Relocate Fence and Planting	30 MAY 19	37
 L2	Silage Storage - Silage Stack	Stop Using Alternative Silage Pad in the Paddock	31 MAY 19	15
 W8	Riparian Management Unit - Drain Leading From Driving Range Towards Waikato River	Relocate Fence and Planting	30 NOV 27	39
 E2	Effluent Irrigation - Effluent Irrigation System	Effluent Irrigation Buffer Zones	ONGOING	23/24
 L2	Silage Storage - Silage Stack	Silage Residue Management	ONGOING	15
 L3	Race Management - GMP: Entry/Exit Race	On-going Maintenance	ONGOING	16
 E2	Effluent Irrigation - Effluent Irrigation System	Irrigator Maintenance	ONGOING	23/24

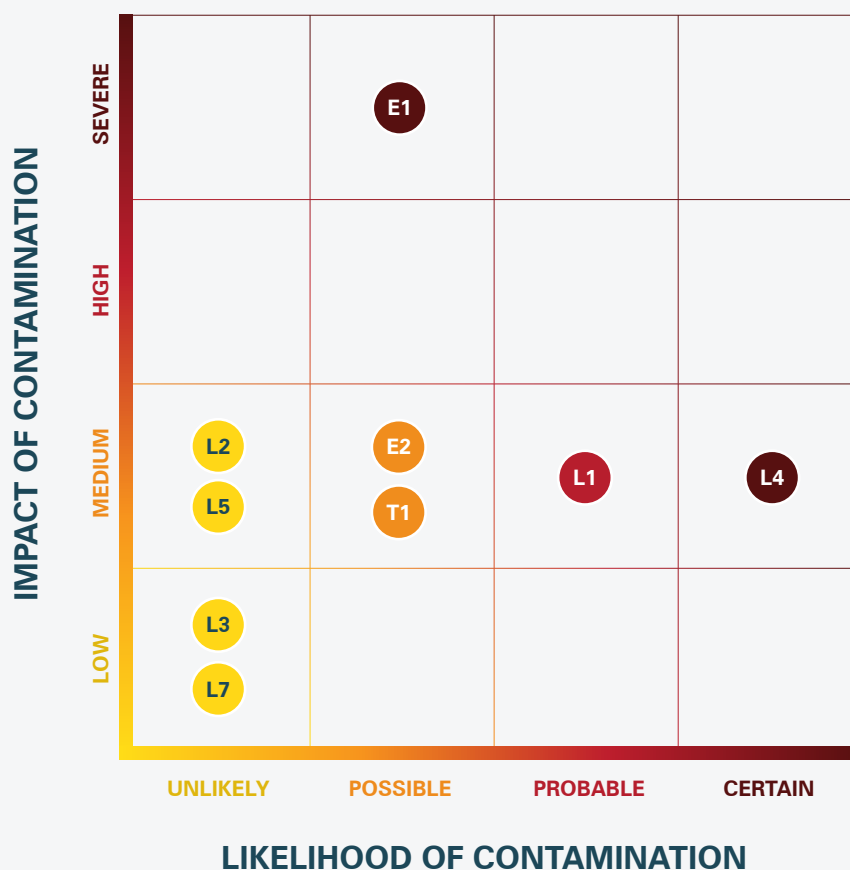
ACTIONS CONTINUE TO NEXT PAGE...

## SUMMARY OF OPEN ACTIONS CONTINUED:

CATEGORY	AREA REQUIRING ACTION	ACTION REQUIRED	TARGET DATE	PAGE NO.
 L5	Race Management - Farm Race Between Paddocks 48/49	Ongoing Maintenance	ONGOING	18
 L7	Sand Quarry - Sand Quarry	Ensure lip at far end remains in-tact	ONGOING	20
 W1	Riparian Management Unit - GMP: Riparian Planting in Paddocks 58 & 59	Maintenance	ONGOING	31
 W2	Riparian Management Unit - GMP: Drain in Paddock 47	Maintenance	ONGOING	32
 W3	Riparian Management Unit - GMP: Constructed Treatment Wetland	Maintenance	ONGOING	33
 W4	Riparian Management Unit - GMP: Riparian Planting Below Avantidrome	Maintenance	ONGOING	34
 W5	Riparian Management Unit - GMP: Reconstructed Wetland	Maintenance	ONGOING	35
 W9	Riparian Management Unit - Older Wetland Beside Effluent Pond	Maintenance	ONGOING	39
 W10	Riparian Management Unit - GMP: Riparian Buffer Between Farm and Waikato River	Maintenance	ONGOING	40
 W11	Riparian Management Unit - GMP: Mountain Biking Track	Maintenance	ONGOING	41
 T1	Wintering - Wintering Management	Continue to Investigate Future Options	ONGOING	29

# UNDERSTANDING THE RISKS ON YOUR FARM

This section provides some context to help understand the relative impact and likelihood of environmental risks that have been identified on your farm. The chart on this page together with the map on the following page can be useful when thinking about what environmental risk areas on your farm need the most focus.



## HOW ARE RISK RATINGS MEASURED?

The issues plotted on the chart above have been done so based upon two measures that are assigned to a specific area of your farm where an environmental risk has been identified. 1. Impact of contamination (on the vertical axis, or the first dial) is a measure of the potential scale or significance of contaminants that may be lost from this area of your farm. It's about quantifying how bad could the outcome for the environment be; 2. Likelihood of contamination (on the horizontal axis, or the second dial) is about the chance of the contamination actually occurring from that area of your farm. It takes into account things like how far the area might be from waterways as well as the slope or aspect of the area; When combined together the two measures also give an overall 'risk rating'. The measures and the combined rating are presented for each risk area along with other descriptive information about the risk area on the subsequent pages of this document.

Example:



# RISK RATING

The map below shows the location of the risk areas identified on your farm. The Risk Rating presented here is a combined measure of the impact and likelihood of contamination occurring from each risk area.

● LOW    ● MEDIUM    ● HIGH    ● SEVERE



- L1** Race Management - Crossing Over Main Fram Track by Te Awa Cycleway/walkway
- L2** Silage Storage - Silage Stack
- L3** Race Management - GMP: Entry/Exit Race
- L4** Crossing Point - Crossing Between Old Wetland
- L5** Race Management - Farm Race Between Paddocks 48/49
- L7** Sand Quarry - Sand Quarry

- E1** Effluent Storage - Current Effluent Pond
- E2** Effluent Irrigation - Effluent Irrigation System
- T1** Wintering - Wintering Management





# FARM MANAGEMENT



- F1** Wash Down Pad - Wash Down Pad
- F2** Water Meter - Water Metering
- F3** Waste Management/Recycling - Waste Management
- F4** Storage - PKE Feed Bunker



F1

WASH DOWN PAD

## Wash Down Pad

### GOOD MANAGEMENT PRACTICES:

A nibbed concrete wash-down pad has been constructed for water blasting motorbikes, tractors and implements. This has an overflow pipe in the back corner which directs all waste water back into the effluent system.

### IMAGES:



### OPEN ACTIONS:

**NO ACTION REQUIRED**



F2

WATER METER

## Water Metering

### GOOD MANAGEMENT PRACTICES:

A water meter measuring total water use is in place on the main bore coming into the farm dairy, with an additional water meter placed on the stock drinking water. Subtracting total stock drinking from total water take provides the total shed use volume. The farm also operates a HALO system which provides up to date information on usage and records historic usage which can be used for reporting. Hydrofan nozzles as well as a new pump have been installed to improve water efficiency on farm.

### IMAGES:



### OPEN ACTIONS:

**NO ACTION REQUIRED**



F3

WASTE MANAGEMENT/RECYCLING

## Waste Management

### GOOD MANAGEMENT PRACTICES:

The farm currently disposes of all silage plastic using a Plasback bin which is collected and taken off farm for recycling purposes when full. All other general waste is disposed off through the schools waste management system.

### IMAGES:



### OPEN ACTIONS:

**NO ACTION REQUIRED**





F4

STORAGE

## PKE Feed Bunker

### GOOD MANAGEMENT PRACTICES:

A concrete Archway bunker with sliding roof has been constructed for purpose of storing PKE. This has a good sized concrete apron meaning there is no generation of mud or potential for any loss of sediment.

### IMAGES:



### OPEN ACTIONS:

**NO ACTION REQUIRED**



# LAND MANAGEMENT



- L1** Race Management - Crossing Over Main Farm Track by Te Awa Cycleway/Walkway
- L2** Silage Storage - Silage Stack
- L3** Race Management - GMP: Entry/Exit Race
- L4** Crossing Point - Crossing Between Old Wetland
- L5** Race Management - Farm Race Between Paddocks 48/49
- L6** Cropping - GMP: Cropping Practices
- L7** Sand Quarry - Sand Quarry



L1

## RACE MANAGEMENT

# Crossing Over Main Waterway by Te Awa Cycleway/Walkway

IMPACT OF  
CONTAMINATION

+

LIKELIHOOD OF  
CONTAMINATION

=

HIGH RISK RATING

**DESCRIPTION:**

This is a low point in the race where runoff drains from either side towards the water course below. Although the scale of loss isn't significant it is directly discharging to an area above a water course. This is also visible from the Te Awa cycleway/walkway which heightens the risk from a perception perspective.

**PROXIMITY TO SURFACE WATER:**

10 Metres

**CONTAMINANT RISK TYPE:**

Phosphorus, Sediment, Microbial Pathogens

**IMAGES:****OPEN ACTIONS:****DIG CUT-OUT BOTH SIDES OF RACE**

Dig several cut-outs into both sides of race leading towards the crossing from both directions. Shifting cuts further up the race allows any runoff to flow through considerable vegetation prior to reaching water. This will allow for gradual uptake of nutrients and filtering of sediment.

**TARGET DATE:** 30 JANUARY 2018



L2

SILAGE STORAGE

## Silage Stack

IMPACT OF  
CONTAMINATION

+

LIKELIHOOD OF  
CONTAMINATION

=

LOW RISK RATING

### DESCRIPTION:

A concrete based bunker is used for storing maize and grass silage. The large concrete apron means mud is minimised. There was no evidence of silage residue or leachate in the surrounding area. This area is also located more than 500m from the nearest waterway so risk of any runoff contaminating surface water is low.

In the paddock beside the concrete pad there was an area used for a silage stack which didn't have a sealed base.

### SEALED:

Concrete

### LEACHATE:

Not Contained

### IMAGES:



### OPEN ACTIONS:

#### STOP USING ALTERNATIVE SILAGE PAD IN THE Paddock

Stop using the area beside the current bunker for silage storage, this isn't sealed and heightens the risk of leachate being lost to groundwater.

**TARGET DATE:** 31 MAY 2019

#### SILAGE RESIDUE MANAGEMENT

Ensure any left over silage residue is removed once the stack is completed. Ideally this would be spread to land in the muck spreader in conjunction with management of effluent solids.

**TARGET DATE:** ONGOING





L3

RACE MANAGEMENT

GMP: Entry/Exit Race

IMPACT OF  
CONTAMINATION



+



LIKELIHOOD OF  
CONTAMINATION

=

LOW RISK RATING

DESCRIPTION:

Wide races lead to and from the farm dairy which ensures cow flow remains continuous. This reduced pressure reduces the generation of effluent. Removal of willows from the side of the race 2 years ago has allowed the tracks to remain much drier as well as encourages cow flow during the hotter months. The race is usually maintained annually in winter, this year receiving pumice which was spread and compacted. There is a nibbed concrete pad either side of the entrance which contains effluent and directs into the sediment trap. There was no runoff evident and very little accumulation of effluent on the race.

IMAGES:



OPEN ACTIONS:

ONGOING MAINTENANCE

Ensure the entry/exit race is maintained annually through continuing to spread and compact a sufficient cap.

TARGET DATE: ONGOING



L4

CROSSING POINT

# Crossing Between Old Wetland

IMPACT OF  
CONTAMINATION



+



LIKELIHOOD OF  
CONTAMINATION

=

CRITICAL RISK RATING

**DESCRIPTION:**

A culverted crossing point allows access between an existing wetland and the paddock behind. This is one of two crossing points into the paddock but is the most frequently used due to convenience. With the construction of the treatment wetland beyond the pre-existing wetland there has been a significant increase in traffic which the crossing wasn't originally designed to manage. This additional compaction from heavy vehicles and machinery has led to slumping and erosion of the sides of the crossing which has lead to localised runoff of sediment.

**CONTAMINANT LOSS:**

Sediment

**DISTANCE TO SURFACE WATER:**

0 Meters

**IMAGES:**



**OPEN ACTIONS:**

## RETIRE CROSSING POINT

Crossing point is to be retired and revegetated. This will eliminate thoroughfare and strengthen soil structure significantly reducing any runoff of sediment.

**TARGET DATE:** 30 MAY 2018



RACE MANAGEMENT

Farm Race Between Paddocks 48/49



DESCRIPTION:

A low point in the race between paddocks 48 and 49 has restricted the ability for stormwater to run off and led the buildup of effluent and mud. There is no immediate risk of contamination given the base of the race is solid and this is more than 500m from the nearest waterway.

CONTAMINANT RISK TYPE: Sediment, Microbial Pathogens

OPEN ACTIONS:

RE CAMBER AND CREATE CUT OUTS

Remove built up effluent solids in summer and spread back to land using the muck spreader. Build the height off the race up to be slightly higher than the surrounding area. Race should also be re-cambered with regular cut-outs to encourage the continuous dispersal of runoff at a rate which soils and vegetation are capable of intercepting and absorbing.

TARGET DATE: 30 MARCH 2018

ON-GOING MAINTENANCE

Ensure cutouts are maintained annually by removing built up sediment. This will allow runoff to continue flowing freely and at regular intervals.

TARGET DATE: ONGOING



L6

CROPPING

## Cropping Practices

### GOOD MANAGEMENT PRACTICES:

Generally around 8-10% of the milking platform is cropped to ensure high quality summer feed as well as enable the pasture renovation policy. This summer turnips have been planted. There has also been some planting of a plantain/pasture mix and may in the future be additional maize grown on farm. The farm operates a no cultivation policy meaning all crops are direct drilled. This hasn't had any negative impacts on yields.

### IMAGES:



### OPEN ACTIONS:

**NO ACTION REQUIRED**





L7

SAND QUARRY

# Sand Quarry

IMPACT OF  
CONTAMINATION



+



LIKELIHOOD OF  
CONTAMINATION

=

LOW RISK RATING

DESCRIPTION:

There is an active sand quarry on farm which has been used to form pads for buildings and developments around the School. This quarry has essentially involved the removal of a hill. The angle of the slope face is such that they are not actively eroding and any sediment that does erode is captured in the base of the quarry. This quarry is some distance from any waterways and is not contributing any loss of sediment.

IMAGES:



OPEN ACTIONS:

ENSURE LIP AT FAR END REMAINS IN-TACT

Ensure if any further excavation occurs that you maintain the lip at the far end which effectively acts as a buffer reducing any ability of sediment to runoff.

TARGET DATE: ONGOING



# EFFLUENT MANAGEMENT

**E1**

Effluent Storage - Current Effluent Pond

**E2**

Effluent Irrigation - Effluent Irrigation System



E1

EFFLUENT STORAGE

Current Effluent Pond

IMPACT OF  
CONTAMINATION



+



LIKELIHOOD OF  
CONTAMINATION

=

CRITICAL RISK RATING

DESCRIPTION:

The current effluent pond has been tested using the Opus Pond Drop Test and has been identified as not meeting the sealing standard as required under Permitted Activity Rule 3.5.5.1. The farm has an effluent improvement plan created by Fonterra and has engaged consultants to size and project manage the construction of new effluent storage.

POND LINING:

Clay

IMAGES:



OPEN ACTIONS:

CONSTRUCTION OF NEW EFFLUENT POND

Owl Farm plans to construct an appropriately sized and sealed effluent pond this coming summer.

TARGET DATE: 30 MAY 2018



E2

EFFLUENT IRRIGATION

Effluent Irrigation System

IMPACT OF  
CONTAMINATION



+



LIKELIHOOD OF  
CONTAMINATION

=

MEDIUM RISK RATING

DESCRIPTION:

Effluent is currently applied to land in line with Waikato Regional Plan's Permitted Activity Rule 3.5.5.1. Effluent currently drains via multiple grates in the yard and farm dairy to two sediment traps before going into an in-ground effluent sump. From here effluent is either pumped directly to land when conditions suit via a cobra travelling raingun or diverted via an overflow pipe in the sump to an effluent pond where it can be stored until conditions suit land application. Generally the pond is desludged and completely emptied annually in summer but a trash pump is also available to manage levels and pump liquid back to the sump for land application when conditions suit. Effluent can be applied to approximately 48 hectares which is a fairly even mix of low and high risk soils. The current N loading from effluent applied is 45kgN/ha.

GOOD MANAGMENT PRACTICES:

Solids from the sediment traps are spread directly to land via a muck spreader when conditions suit. This is generally applied to areas which don't receive liquid effluent.

APPLICATION DEPTH TESTING: Yes Annually

SOLIDS MANAGEMENT: Spread Via Muck Spreader

IRRIGATION METHOD: Travelling Irrigator

APPLICATION DEPTH: <12 Millimetres

IMAGES:



IMAGES AND OPEN ACTIONS CONTINUE TO NEXT PAGE...



E2



OPEN ACTIONS:

EFFLUENT IRRIGATION BUFFER ZONES

Ensure buffer zones are built in around waterways and boundaries when placing effluent irrigator runs to prevent potential water way contamination and odour issues from neighbours.

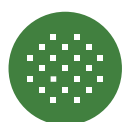
**TARGET DATE:** ONGOING

IRRIGATOR MAINTENANCE

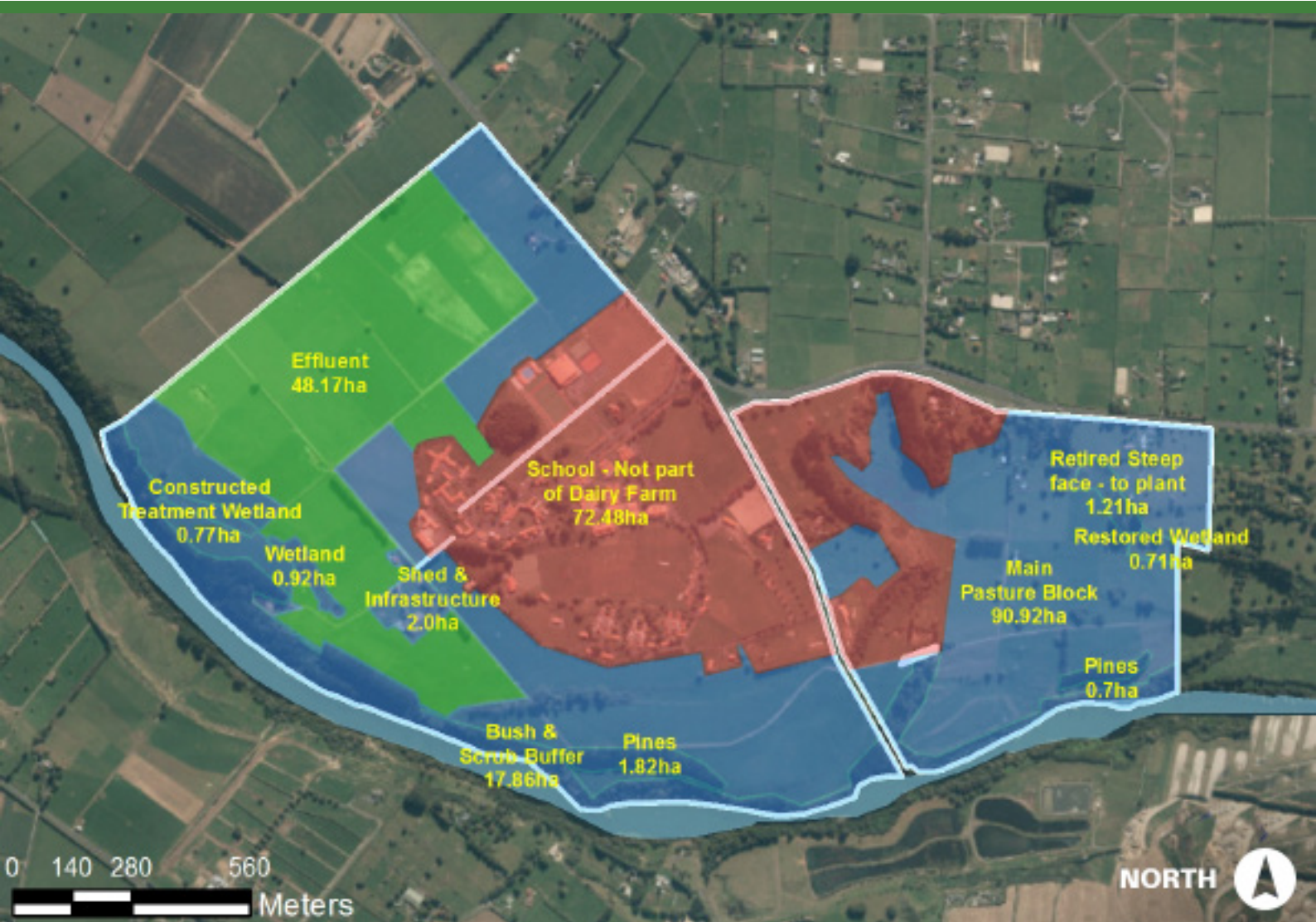
Ensure Irrigator and pump are greased and maintained monthly and serviced annually. Observe hydrants, mainlines and the drag hose regularly to ensure there are no leaks. Complete annual application depth and rate test to ensure appropriate levels are being applied from the cobra raingun.

**TARGET DATE:** ONGOING





# NUTRIENT MANAGEMENT





N1

## FERTILISER APPLICATIONS

## Management of Olsen P

## GOOD MANAGEMENT PRACTICES:

Soil testing is undertaken annually at Owl Farm as there have been some historic fertility issues which the owners are trying to amend. The farm is currently broken into 7 representative blocks which are tested. Olsen P's are largely within optimal ranges meaning maintenance applications of phosphorus are being applied. Two blocks are slightly higher than optimal at an Olsen P of 58, these blocks are receiving sub maintenance applications as the farm looks to mine phosphorus where possible.

## APPLICATION METHOD:

Tractor Spreader or Truck

## WATERWAYS SET BACK:

Yes

## IMAGES:

The image shows a printed soil analysis report. The top section is the 'Ballance ANALYSIS REPORT' header. Below it, client information for 'St Peters School' is provided. To the right, 'Hill Laboratories' logo and contact details are visible. The report includes a table of 'Soil Analysis Results' with columns for Sample Name, Soil Type, pH, Olsen Phosphorus, Organic Matter, Nitrogen, Potassium, Calcium, and Magnesium. The results are listed for 7 samples, with values ranging from 5.7 to 6.2 for pH and 0.02 to 0.25 for Olsen Phosphorus. A blue arrow points to the bottom of the table.

Sample Name	Soil Type	pH	Olsen Phosphorus (mg/l)	Organic Matter (%)	Nitrogen (mg/l)	Potassium (mg/l)	Calcium (mg/l)	Magnesium (mg/l)
1	As v	5.7	0.02	15	1	1	1	1
2	As v	6.1	0.02	13	10	12	30	
3	As v	6.3	0.02	13	11	16	20	
4	As v	5.9	0.02	10	14	13	28	
5	As v	6.3	0.02	21	21	14	21	
6	As v	6.4	0.02	48	17	15	28	
7	As v	6.2	0.02	47	50	15	27	

## OPEN ACTIONS:

☒ NO ACTION REQUIRED



## FERTILISER APPLICATIONS

# Fertiliser Management

**DESCRIPTION:**

Ballance is one of 7 industry partners supporting Owl Farm achieve its goal of demonstrating a sustainable profitable farm system, nutrient management is therefore a key target and one which the farm monitors carefully in close consultation with Ballance. No further actions have been recorded here other than acknowledgement of GMP as the farm operates to a nutrient management plan in conjunction with Ballance.

**GOOD MANAGEMENT PRACTICES:**

Fertiliser application matches plant requirements and minimises losses \* All fertiliser applications are recorded including – product, rate, date and location. \* A weather station allows soil temperatures and moisture levels to be identified prior to applying fertiliser (i.e. avoid winter months) \* Fertiliser applications are avoided during heavy rainfall to reduce runoff \* Nitrogen is applied – 'little and often - usually 30kgN/ha or less' and when pasture is actively growing.

**OPEN ACTIONS:****NO ACTION REQUIRED**



# WINTERING MANAGEMENT







T1

WINTERING

# Wintering Management

IMPACT OF  
CONTAMINATION



+



LIKELIHOOD OF  
CONTAMINATION

=

MEDIUM RISK RATING

**DESCRIPTION:**

All stock including young stock which come back to farm on the 1st of May are wintered on farm. lighter/freer draining soils are targeted for garzing during this time to reduce pugging and soil compaction. Stock are shifted regularly if pugging becomes obvious. Future management options are being considered which includes the potential to integrate stand off facilities to help manage this winter risk.

## CONTINUE TO INVESTIGATE FUTURE OPTIONS

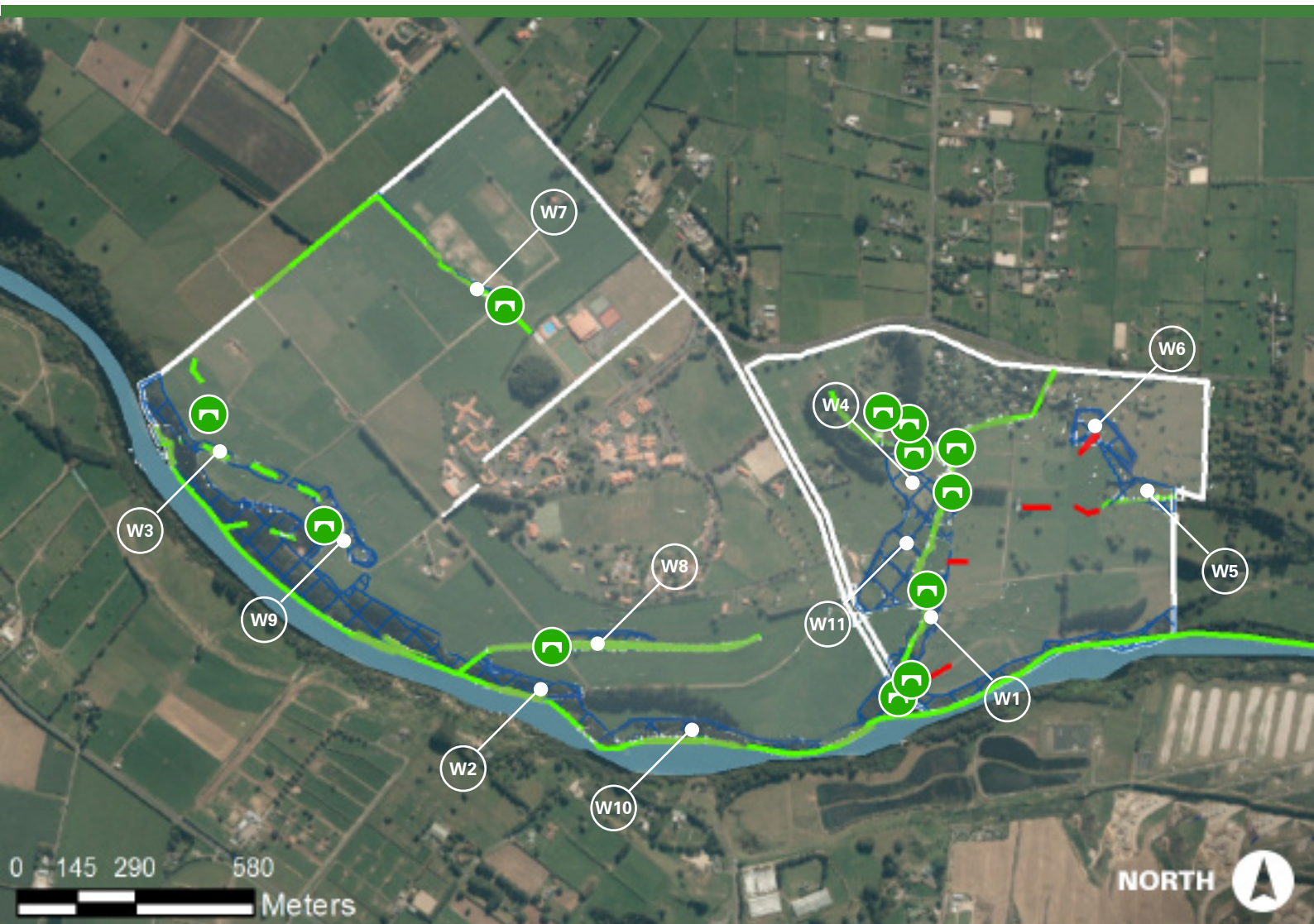
Continue with the current modelling exercise to determine what system will optimise sustainability, profitability and productivity.

**TARGET DATE:** ONGOING





# WATERWAYS MANAGEMENT



**W1** Riparian Management Unit - GMP:  
Riparian Planting in Paddocks 58 & 59

**W2** Riparian Management Unit - GMP:  
Drain in Paddock 47

**W3** Riparian Management Unit - GMP:  
Constructed Treatment Wetland

**W4** Riparian Management Unit - GMP:  
Riparian Planting Below Avantidrome

**W5** Riparian Management Unit - GMP:  
Reconstructed Wetland

**W6** Riparian Management Unit - Retired  
Area to be Planted Below the  
Kibby Block


**W7** Riparian Management Unit - Drain  
Heading Towards McGraths  
Boundary From Swimming Pool


**W8** Riparian Management Unit - Drain  
Leading From Driving Range  
Towards Waikato River

**W9** Riparian Management Unit - Older  
Wetland Beside Effluent Pond

**W10** Riparian Management Unit - GMP:  
Riparian Buffer Between Farm and  
Waikato River

**W11** Riparian Management Unit - GMP:  
Mountain Biking Track

 Compliant Crossing

 Accord Defined Stock Excluded  
Waterway

 Non-Accord Defined Stock  
Excluded Waterway

 Non-Accord Defined Stock Not  
Excluded Waterway



RIPARIAN MANAGEMENT UNIT

# GMP: Riparian Planting in Paddocks 58 & 59

DESCRIPTION:

This area has been retired, fenced and planted for a number of years with many mature native trees present.

WATERWAY TYPE: Accord Defined Waterway

FLOOD RISK: Low

FENCING STATUS: Permanently Fenced

PLANTING PROGRESS: 100%

OPEN ACTIONS:

MAINTENANCE

Maintenance – ensure fencing remains intact and management of weeds continues.

TARGET DATE: ONGOING



RIPARIAN MANAGEMENT UNIT

# GMP: Drain in Paddock 47

DESCRIPTION:

Fence realignment has taken place in the last season which has created a 1m buffer and allowed carex sector to be planted. In time this will create a filter to capture any potential sediment or phosphorus runoff.

WATERWAY TYPE: Accord Defined Waterway

FLOOD RISK: Low

FENCING STATUS: Permanently Fenced

PLANTING PROGRESS: 100%

PLANTING DATE: 07 November 2017

VEGETATION STATUS: Planted

IMAGES:



OPEN ACTIONS:

MAINTENANCE

Ensure fencing remains intact and management of weeds continues.

TARGET DATE: ONGOING



RIPARIAN MANAGEMENT UNIT

# GMP: Constructed Treatment Wetland

**DESCRIPTION:**

This is a constructed Treatment Wetland which has been designed and constructed purely for the ecosystems ability to intercept and denitrify shallow groundwater which springs to the surface and exits the farm to the Waikato River. There is water quality monitoring of shallow ground water prior to entering wetland as well as outlet monitoring once water leaves the wetland. This demonstrates what impact the wetland is having in extracting nitrates from water. Initial results demonstrate an effective reduction in nitrates.

**WATERWAY TYPE:** Non-Accord Waterway, Other Wetlands

**FLOOD RISK:** Low

**FENCING STATUS:** Permanently Fenced

**PLANTING PROGRESS:** 100%

**PLANTING DATE:** 30 September 2016

**VEGETATION STATUS:** Native Dominated

**IMAGES:**



IMAGES AND OPEN ACTIONS CONTINUE TO NEXT PAGE...





W3

IMAGES AND OPEN ACTIONS CONTINUED...



OPEN ACTIONS:

MAINTENANCE
Ensure fencing remains intact and management of weeds continues as per maintenance plan.
TARGET DATE: ONGOING





RIPARIAN MANAGEMENT UNIT

# GMP: Riparian Planting Below Avantidrome

**DESCRIPTION:**

All waterways in paddocks below the state highway and Avantidrome have been retired, fenced and planted in natives over the past couple of years.

**WATERWAY TYPE:** Accord Defined Waterway

**FLOOD RISK:** Low

**FENCING STATUS:** Permanently Fenced

**PLANTING PROGRESS:** 100%

**PLANTING DATE:** 30 September 2014

**VEGETATION STATUS:** Native Dominated

**OPEN ACTIONS:**

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

**TARGET DATE:** ONGOING



RIPARIAN MANAGEMENT UNIT

# GMP: Reconstructed Wetland

**DESCRIPTION:**

This area has been retired, fenced and planted in a mixture of carex, cabbage trees and manuka thanks to support from Waikato River Authority and Ngati Haua Mahi Trust.

**FENCING STATUS:** Permanently Fenced

**FLOOD RISK:** Low

**PLANTING PROGRESS:** 100%

**PLANTING DATE:** 30 September 2016

**VEGETATION STATUS:** Native Dominated

**IMAGES:**



**OPEN ACTIONS:**

## MAINTENANCE

Ensure fencing remains intact and management of weeds continues.

**TARGET DATE:** ONGOING



W6

## RIPARIAN MANAGEMENT UNIT

## Retired Area to be Planted Below the Kibby Block

**DESCRIPTION:**

This area of the platform has been retired for a number of years but will be planted in the next couple of years. Although not a waterway the tool has been used to suggest number of plants required. This area largely captured stormwater runoff from Te Awa lifecare above. The plants provide an excellent filter for any contaminants entering the farm.

**FENCING STATUS:** Permanently Fenced

**VEGETATION STATUS:** Rank Grass

**PLANTING DATE:** 30 September 2018

**UPPER ZONE PERCENTAGE:** 100%

**UPPER ZONE SPACING:** 1.5 Stems/m

**UPPER ZONE AREA:** 12404 m<sup>2</sup>

**UPPER ZONE COUNT:** 5525 Plants

**IMAGES:****OPEN ACTIONS:**

### PLANTING

Undertake spot spraying prior to planting. Ideally plant in autumn or spring to maximise survival rates. The attributes which have been referred to above indicate the total area to be fenced as 12,404m<sup>2</sup>, at 1.5m plant spacing this would equate to approximately 5525 plants being required. This can be used for sourcing appropriate numbers. Refer to DairyNZ Riparian Fact sheet which has been included for more information.

**TARGET DATE:** 30 NOVEMBER 2018



W7

## RIPARIAN MANAGEMENT UNIT

## Drain Heading Towards McGraths Boundary From Swimming Pool

**DESCRIPTION:**

This small artificial drain runs from the schools swimming pool towards the boundary and ultimately enters the Waikato River. Some issues with bank stabilization have been identified in recent years largely down to weight of grazing animals at the edge of drain, some localized damage has been identified near gateways where stock camping and high compaction are observed.

**WATERWAY TYPE:** Accord Defined Waterway

**FLOOD RISK:** Low

**FENCING STATUS:** Fence Requires Relocation

**VEGETATION STATUS:** Grazed Pasture

**UPPER ZONE SPACING:** 1.5 Stems/m

**UPPER ZONE COUNT:** 325 Plants

**IMAGES:****OPEN ACTIONS:**

### RELOCATING FENCE AND PLANTING

Look to progressively shift the fence backwards by 1-1.5m on either side of the drain starting closest to the school swimming pool. Once the fence has been relocated look at planting carex sector or similar to bind the soil and stabilise the banks. Continue to monitor the banks further down the waterway towards the boundary to determine whether this requires fence relocation and planting as well.

**TARGET DATE:** 30 MAY 2019



W8

## RIPARIAN MANAGEMENT UNIT

## Drain Leading From Driving Range Towards Waikato River

**DESCRIPTION:**

This area is currently permanently fenced however doesn't have any set back between the drain edge and the paddock. Contour is flat meaning overland flow and runoff of sediment/microbial bacteria is low. Although there is no short term plans for fence realignment and riparian planting this area would benefit in the long term. Not currently in the short term plan but would be in the 10 year plan.

**WATERWAY TYPE:**

Accord Defined Waterway

**FENCING STATUS:**

Permanently Fenced

**VEGETATION STATUS:**

Rank Grass

**IMAGES:****OPEN ACTIONS:****RELOCATE FENCE AND PLANTING**

Look to relocate fence and further plant out riparian margins to enhance biodiversity and eliminate what minimal runoff would be occurring. This action would be worth reviewing closer to time when action is planned so exact areas can be measured and plant numbers calculated.

**TARGET DATE:** 30 NOVEMBER 2027





RIPARIAN MANAGEMENT UNIT

# Older Wetland Beside Effluent Pond

**DESCRIPTION:**

Older Wetland which was retired, fenced and planted a number of years ago. Planted predominately with native wetland species such as roupo, cabbage trees and manuka.

**WATERWAY TYPE:** Non-Accord Waterway

**FLOOD RISK:** Low

**FENCING STATUS:** Permanently Fenced

**PLANTING PROGRESS:** 100%

**VEGETATION STATUS:** Native Dominated

**IMAGES:**



**OPEN ACTIONS:**

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

**TARGET DATE:** ONGOING



RIPARIAN MANAGEMENT UNIT

# GMP: Riparian Buffer Between Farm and Waikato River

DESCRIPTION:

The Waikato River boundaries the entire length of the dairy platform. There is an area of almost 18 hectares which is retired and acts as a buffer between the milking platform and the river. Although the buffer differs throughout the length there would be an average 50m between the farm and waterway.

WATERWAY TYPE: Accord Defined Waterway

FLOOD RISK: Low

FENCING STATUS: Permanently Fenced

PLANTING DATE: 31 May 2000

VEGETATION STATUS: Native Dominated

OPEN ACTIONS:

MAINTENANCE

Ensure fencing remains intact and weeds management continues.

TARGET DATE: ONGOING



RIPARIAN MANAGEMENT UNIT

# GMP: Moutain Biking Track

**DESCRIPTION:**

Although this area is now retired from the milk platform it is now fully fenced and planted in natives with support from Ngati Haua Mahi Trust and Waikato River Authority Funding.

FLOOD RISK:	Low
FENCING STATUS:	Permanently Fenced
PLANTING DATE:	30 September 2015
VEGETATION STATUS:	Native Dominated
PLANTING PROGRESS:	100%

**IMAGES:**



**OPEN ACTIONS:**

MAINTENANCE
Ensure fencing remains intact and management of weeds continues.
TARGET DATE: ONGOING



# THANK YOU

**DISCLAIMER:**

\*Provision of advice in relation to effluent storage, effluent irrigation systems and the management of other environmental risk areas on farm.


The advice that Fonterra Co-operative Group Ltd (Fonterra, we, us) provides to farmers in relation to effluent storage capacity and other environmental compliance practices, including mitigation actions described in Farm Environment Plans, is based on the information and assumptions that farmers and their agents have provided to us and on our knowledge and understanding of current best practice in the industry. Fonterra does not purport to replace sound engineering or other professional advice and as such we strongly encourage farmers to seek independent expert advice before any construction, upgrades, or other change to your on farm practices. Farmers are ultimately responsible for the environmental compliance of their farm and on farm practices. Fonterra gives no warranties (express or implied) and, to the maximum extent permissible by law, excludes all liability in contract or tort (including, without limitation, liability for negligence) or otherwise in relation to the advice provided.

# OPEN ACTIONS CHECKLIST

This table can be printed as an ongoing checklist of all open or ongoing actions you have agreed to carry out as part of this Farm Environment Plan.

## FEATURE & ACTION REQUIRED

## TARGET DATE

 Race Management - Crossing over main waterway by Te Awa Cycleway/Walkway

L1

### DIG CUT-OUT BOTH SIDES OF RACE


Dig several cut-outs into both sides of race leading towards the crossing from both directions. Shifting cuts further up the race allows any runoff to flow through considerable vegetation prior to reaching water. This will allow for gradual uptake of nutrients and filtering of sediment.

30 JAN 18

NOTES:

COMPLETED?



 Race Management - Farm Race between paddocks 48/49

L5

### RE CAMBER AND CREATE CUT OUTS


Remove built up effluent solids in summer and spread back to land using the muck spreader. Build the height off the race up to be slightly higher than the surrounding area. Race should also be re-cambred with regular cut-outs to encourage the continuous dispersal of runoff at a rate which soils and vegetation are capable of intercepting and absorbing.

30 MAR 18

NOTES:

COMPLETED?



 Crossing point - Crossing between old wetland

L4

### RETIRE CROSSING POINT

Crossing point is to be retired and revegetated. This will eliminate thoroughfare and strengthen soil structure.

30 MAY 18

NOTES:

COMPLETED?





## FEATURE &amp; ACTION REQUIRED

## TARGET DATE



Effluent Storage - Current Effluent Pond

**CONSTRUCTION OF NEW EFFLUENT POND**

30 MAY 18

Owl Farm plans to construct an appropriately sized and sealed effluent pond this coming summer.

NOTES:

COMPLETED?



Riparian Management Unit - Retired area to be planted below the kibby block

**PLANTING**

30 NOV 18

Undertake spot spraying prior to planting. Ideally plant in autumn or spring to maximise survival rates. The attributes which have been referred to above indicate the total area to be fenced as 12,404m<sup>2</sup>, at 1.5m plant spacing this would equate to approximately 5525 plants being required. This can be used for sourcing appropriate numbers. Refer to DairyNZ Riparian Factsheet which has been included.

NOTES:

COMPLETED?



Riparian Management Unit - Drain heading towards McGraths Boundary from swimming pool

**RELOCATING FENCE AND PLANTING**

30 MAY 19

Look to progressively shift the fence backwards by 1-1.5m on either side of the drain starting closest to the school swimming pool. Once the fence has been relocated look at planting carex sector or similar to bind the soil and stabilise the banks. Continue to monitor the banks further down the waterway towards the boundary to determine whether this requires fence relocation and planting as well.

NOTES:

COMPLETED?



Silage Storage - Silage stack

**SILAGE RESIDUE MANAGEMENT**

31 MAY 19

Ensure any left over silage residue is removed once the stack is completed. Ideally this would be spread to land in the muck spreader in conjunction with management of effluent solids.

NOTES:

COMPLETED?



## FEATURE &amp; ACTION REQUIRED

## TARGET DATE



Riparian Management Unit - Drain leading from driving range towards Waikato River

**RELOCATING FENCE AND PLANTING****30 NOV 27**

Look to relocate fence and further plant out riparian margins to enhance biodiversity and eliminate what minimal runoff would be occurring. This action would be worth reviewing closer to time when action is planned so exact areas can be measured and plant numbers calculated.

**NOTES:****COMPLETED?**

Effluent Irrigation - Effluent irrigation system

**EFFLUENT IRRIGATION BUFFER ZONES****ONGOING**

Ensure buffer zones are built in around waterways and boundaries when placing effluent irrigator runs to prevent potential water way contamination and odour issues from neighbours.

**NOTES:****COMPLETED?**

Sand Quarry - Sand Quarry

**ENSURE LIP AT FAR END REMAINS IN-TACT****ONGOING**

Ensure if any further excavation occurs that you maintain the lip at the far end which effectively acts as a buffer reducing any ability of sediment to runoff.

**NOTES:****COMPLETED?**

Race Management - GMP: Entry/exit race

**ONGOING MAINTENANCE****ONGOING**

Ensure the entry/exit race is maintained annually through continuing to spread and compact a sufficient cap.

**NOTES:****COMPLETED?**

## FEATURE &amp; ACTION REQUIRED

## TARGET DATE



Effluent Irrigation - Effluent irrigation system

E2

**IRRIGATOR MAINTENANCE**

Ensure Irrigator and pump are greased and maintained monthly and serviced annually. Observe hydrants, mainlines and the drag hose regularly to ensure there are no leaks. Complete annual application depth and rate test to ensure appropriate levels are being applied from the cobra raingun.

ONGOING

NOTES:

COMPLETED?



Race Management - Farm Race between paddocks 48/49

L6

**ON-GOING MAINTENANCE**

Ensure cutouts are maintained annually by removing built up sediment. This will allow runoff to continue flowing freely and at regular intervals.

ONGOING

NOTES:

COMPLETED?



Silage Storage - Silage stack

L2

**STOP USING ALTERNATIVE SILAGE PAD IN THE Paddock**

Stop using the area beside the current bunker for silage storage, this isn't sealed and heightens the risk of leachate being lost to groundwater.

ONGOING

NOTES:

COMPLETED?



Riparian Management Unit - GMP: Riparian planting in paddocks 58 &amp; 59

W1

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

ONGOING

NOTES:

COMPLETED?



## FEATURE &amp; ACTION REQUIRED

## TARGET DATE



Riparian Management Unit - GMP: Drain in paddock 47

W2

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

ONGOING

NOTES:

COMPLETED?



Riparian Management Unit - GMP: Constructed Treatment Wetland

W3

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues as per maintenance plan.

ONGOING

NOTES:

COMPLETED?



Riparian Management Unit - GMP: Riparian planting below Avantidrome

W4

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

ONGOING

NOTES:

COMPLETED?



Riparian Management Unit - GMP: Reconstructed wetland

W5

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

ONGOING

NOTES:

COMPLETED?



## FEATURE &amp; ACTION REQUIRED

## TARGET DATE



Riparian Management Unit - Older Wetland beside effluent pond

W9

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

ONGOING

**NOTES:**

COMPLETED?



Riparian Management Unit - GMP: Riparian Buffer between farm and Waikato River

W10

**MAINTENANCE**

Ensure fencing remains intact and weeds management continues.

ONGOING

**NOTES:**

COMPLETED?



Riparian Management Unit - GMP: Mountain Biking Track

W11

**MAINTENANCE**

Ensure fencing remains intact and management of weeds continues.

ONGOING

**NOTES:**

COMPLETED?



Wintering - Wintering Management

T1

**CONTINUE TO INVESTIGATE FUTURE OPTIONS**

Continue with the current modelling exercise to determine what system will optimise sustainability, profitability and productivity.

ONGOING

**NOTES:**

COMPLETED?

