



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's 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 and the management of these conditions. From this, mitigations to potential impacts to water quality are documented and additional mitigations maybe planned, with sensible timeframes. Underpinning this plan, are the agreed national Good Farming Practices that are supported by the agricultural and horticultural sectors. Industry bodies along with Regional Councils and Central Government have developed the Good Farming Practice: Action Plan for Water Quality 2018 in a commitment to swimmable rivers and improving the ecological health of our waterways. The Dairy Industry Strategy (Dairy Tomorrow), as well as the Good Farming Practice: Action Plan for Water Quality 2018, both align with the goal for all dairy farms to have a Farm Environment Plan by 2025. Now that this plan has been created it's the plan owner's 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.

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FARM DETAILS

FARM NAME

LUDF

SUPPLIER NUMBER

37581

PLAN OWNER

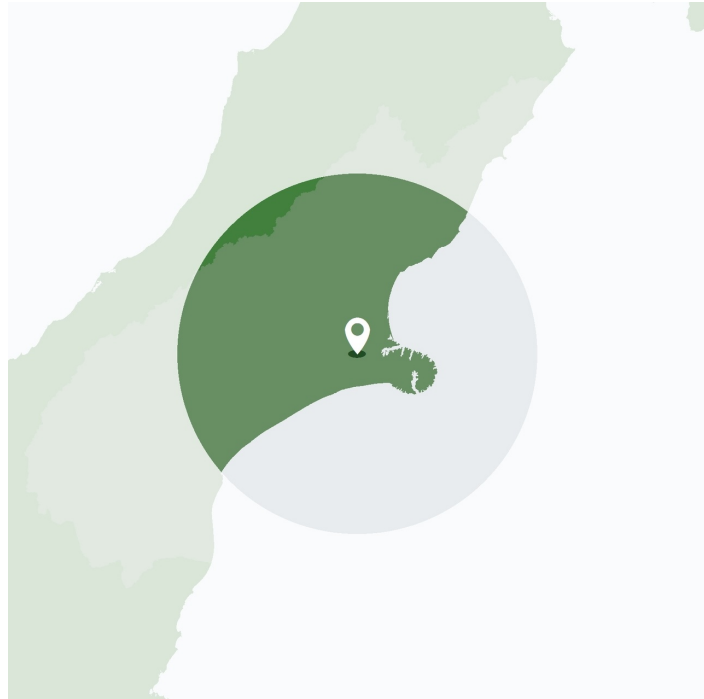
Christine Lyne

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FARM ADDRESS

SHANDS RD, Burnham

LOCATION



REGIONAL COUNCIL

Canterbury

PLAN LAST EDITED DATE

15 August 2019

POINTS OF NOTE

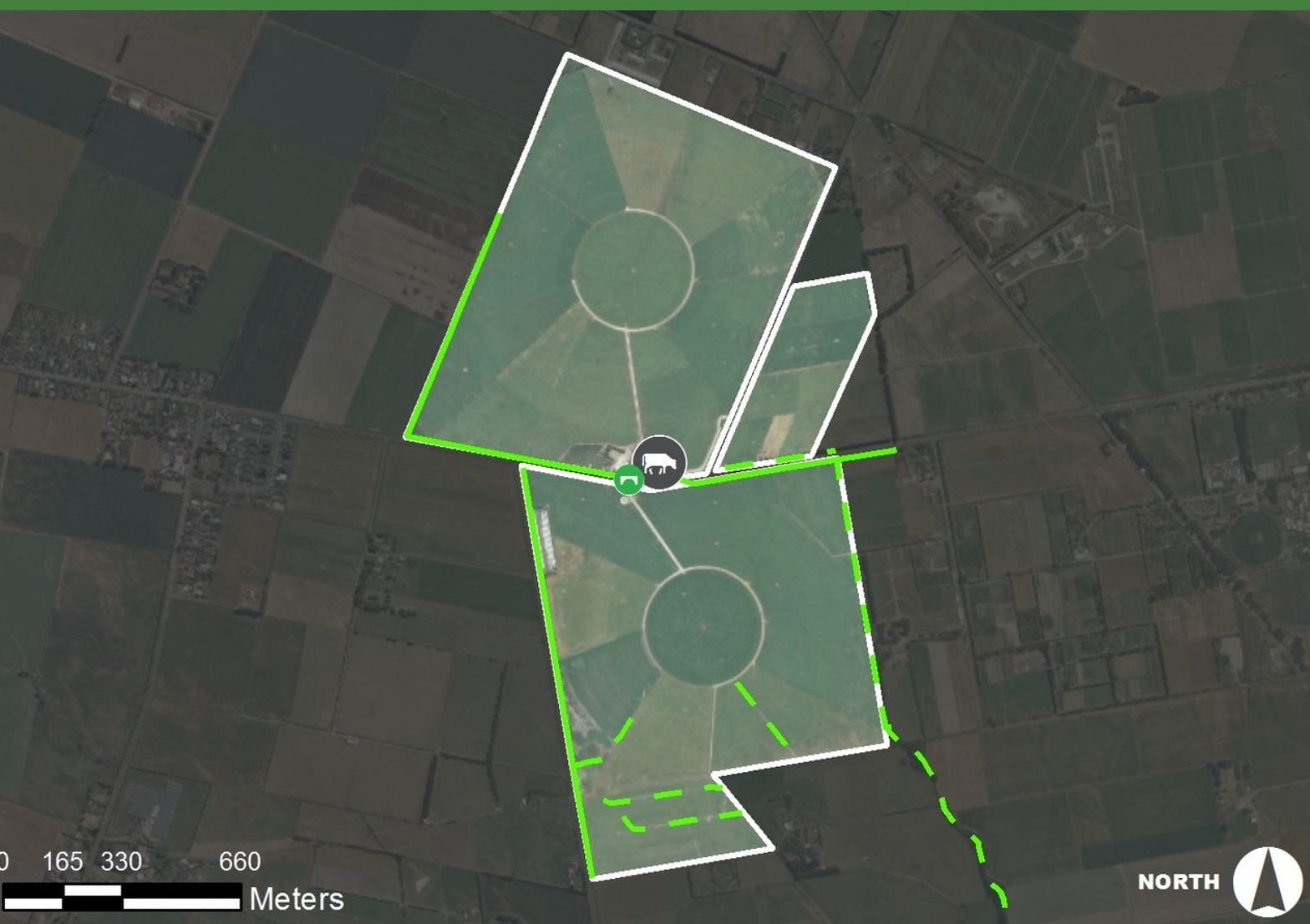
Sergeants Old extension: 0.00 ha - 0.00 %. Sergeants New: 0.60 ha - 0.33 %. Sergeants New: 0.01 ha - 0.01 %. Phosphorus Sediment Risk Area: 39.35 ha - 21.72 %. Type:Water Permit (s14),ID:CRC916834,Expiry:2028-08-31: 0.01 ha - 0.00 %. Type:Discharge Permit (s15),ID:CRC143396,Expiry:2044-03-31: 0.01 ha - 0.00 %. Type:Land Use Consent (s9),ID:CRC180605,Expiry:2032-10-17: 0.01 ha - 0.00 %.

LAND PARCELS

Fee Simple, 1/1, Part Rural Section 2803 and Part Rural Section 3031, 44,515 m², Fee Simple, 1/1, Rural Section 39059, 24,711 m², Fee Simple, 1/1, Part Rural Section 3684, 40,469 m², Fee Simple, 1/1, Part Rural Section 3684, 121,406 m², Fee Simple, 1/1, Lot 1 Deposited Plan 21595, 1,115 m², Fee Simple, 1/1, Rural Section 4426, Rural Section 4565 and Rural Section 6028, 445,154 m², Fee Simple, 1/1, Part Rural Section 2719, 323,597 m², Fee Simple, 1/1, Part Rural Section 2803 and Part Rural Section 3031, 197,181 m², Fee Simple, 1/1, Rural Section 2718, Rural Section 2775 and Part Rural Section 6377, 615,325 m²

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 | | Compliant Crossing |
| | Accord Defined Stock Not Excluded Waterway | | Non-Compliant Crossing |
| | Non-Accord Defined Stock Excluded Waterway | | Non-Compliant Non-Regular Crossing |
| | Non-Accord Defined Stock Not Excluded Waterway | | Dispensation Crossing |
| | Farm Boundary | | Dairy Shed |

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	FEATURE TYPE & NAME	ACTION REQUIRED	TARGET DATE
 	Overland Flow Path	Stock exclusion	30 Jan 19
 	Water Use	Record maintenance	Ongoing



FARM MANAGEMENT



F1 Cultural Landscapes and Phosphorus Mangement zone

F2 Chemical shed



Cultural Landscapes and Phosphorus Management zone

DESCRIPTION:

The farm is located in the Cultural Landscapes and Phosphorus zone.

Mahinga kai relates to the traditional value of food resources and their ecosystems. There are actions done on farm relating to Mahinga Kai and minimising sediment and nutrient loss, these are identified on the farm maps in this report. Specific actions are summarised below.

This farm has waterways that are on the boundary of the property and some on the South block, there is a riparian management plan developed to ensure that these areas are protected and filtered from sediment and nutrient contamination.

Any pest species are controlled or removed.

The farm has planted four corners to enhance biodiversity and these are actively managed.

The Selwyn district is particularly sensitive due to the contribution practises can play to Te Waihora/Lake Ellesmere.

This farm has waterways that are on the boundary of the property and some on the South block, there is a riparian management plan developed to ensure that these areas are protected and filtered from sediment and nutrient contamination.

Any pest species are controlled or removed.

The farm has planted four corners to enhance biodiversity and these are actively managed.

Management of P levels:

Phosphorus is annually tested in the soil and managed accordingly upon guidance from the fertiliser representative. The nutrient management section of the plan discusses the current phosphorus management.

Waterways protection:

All waterways or areas holding water will be fenced to exclude stock with a buffer zone to help filter any run off of nutrients

Management of Sediment:

Lanes and culverts are maintained to divert run off of nutrients away from the waterways.

Native vegetation:

Areas of native planting maintained and enhanced through management as per the details in the Waterways Management section of this plan.

Management of risk areas:

Areas of differing soil types that require different management is done on farm as per land management section of this plan.

OPEN ACTIONS:

✔ NO ACTION REQUIRED

F2 Chemical shed

DESCRIPTION:

There is a chemical shed on farm that stores dairy shed chemicals and chemicals for spot spraying. The chemical shed is lockable and has appropriate signage.

IMAGES:



OPEN ACTIONS:

✓ NO ACTION REQUIRED

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LAND MANAGEMENT



- L1 Regrassing and Cultivation
- L2 Overland Flow Path
- L3 Planting - Native planting

- L4 Laneways
- L5 Underpass



Regrassing and Cultivation

DESCRIPTION:

All stock go off farm for winter and no fodder crops are grown on the farm. All cultivation that is done on farm is for regrassing which is on average less than 10% annually. The preferred method is direct drill but if there are level issues or compaction then minimum tillage is used.

All waterways are fenced off so there are buffer distances from the waterways. The ground is only cultivated in the drier period so there is minimal chance of any run off of sediment or phosphorus to the drains. Cultivation records are kept.

Good Management Practice:	<p>Reduce periods of bare soil between crops and pasture to reduce erosion and leaching</p> <ul style="list-style-type: none"> * Bare paddocks are re-sown as soon as practical * Erosion damaged areas are rest and re-sown * Compacted soils are subsoil, ripped or cultivated <p>Evidence - cultivation information</p>
Regrassing amount:	<10% annually
Cultivation type:	Direct drill, minimum tillage
Good Management Practice:	<p>Minimise losses of sediment and nutrient to water, and maintain soil structure</p> <ul style="list-style-type: none"> * Pugging and compaction of soils is avoided * No tillage or low impact cultivation methods and timing are considered <p>Evidence - Cultivation information</p>
Cultivation timing:	Nov-March

OPEN ACTIONS:

✔ NO ACTION REQUIRED

L2 Overland Flow Path

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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MEDIUM RISK RATING

DESCRIPTION:

There are two overland flow paths that run through the paddock and run directly to the drain allowing nutrients and sediment to flow directly into the waterway.

All sediment and phosphorus risk areas need to be managed to ensure they don't have an affect on the water quality.

IMAGES:



OPEN ACTIONS:

Stock exclusion

Stock exclude this area when cows are in this paddock, this could be temporary or permanent fencing.

TARGET DATE: 30 Jan 2019

Planting L3 Native planting

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

The corners of north block have been fenced and planted in natives, this decision was made to add biodiversity corridors and shelter to the farm. The fenceline has also been planted with native plants as a shelterbelt and biodiversity corridor. Carex are planted to stop erosion of the bank. The plantings are planted and maintained by Steve Braileford.

Good Management Practice:

Areas of native plants or significant biodiversity are protected

- * Areas are identified on the farm map
- * Stock are fenced out of the area
- * Weeds are controlled within the area
- * Animal pests are trapped or poisoned

Evidence - FEP map, visual assessment, invoices

Good Management Practice:

Stock are excluded from waterways

- * All permanently flowing waterways (including wetlands) are fenced
- * A riparian management plan has been developed (include any plantings)
- * Drains are well managed

Evidence - visual assessment, FEP

IMAGES:



OPEN ACTIONS:

✔ NO ACTION REQUIRED



Laneways

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

The lanes are in very good condition and are maintained when necessary. This means that only every 4 years the lanes are scraped back and heavy rolled. Crusher dust will be applied when necessary. Records are kept when lane maintenance occurs. There are no lanes near any of the waterways.

Good Management Practice:

Tracks, feed areas, gateways and troughs are located away from waterways

- * Tracks are located away from waterways where practical
- * Supplement is feed out away from waterways
- * Water troughs are located away from waterways in a dry area of paddocks
- * Gateways are in a dry point and are wide enough for good cow flow to reduce pugging

Evidence - Farm map, visual assessment

OPEN ACTIONS:

 NO ACTION REQUIRED

L5 Underpass

IMPACT OF CONTAMINATION



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LIKELIHOOD OF CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

There is a underpass that joins the north block and the south block. Any effluent collected from the underpass is directed into the effluent system which is in close proximity.

Good Management Practice:

Effluent system meets code of practice

* Effluent is collected from all sources: dairy sheds, yards, feeds pads, underpasses

Evidence - design plans

IMAGES:

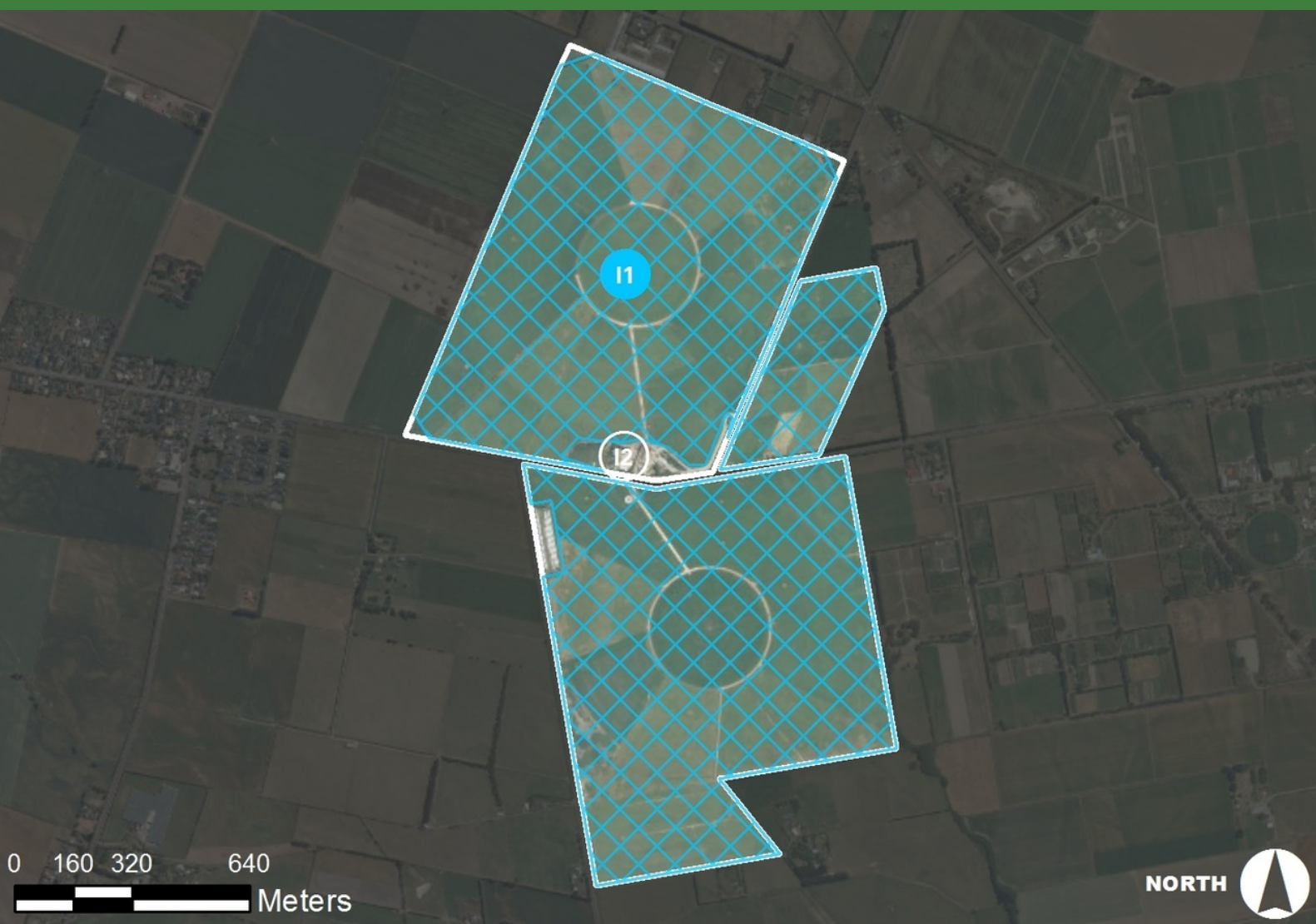


OPEN ACTIONS:

 **NO ACTION REQUIRED**



IRRIGATION MANAGEMENT



I1 Irrigation Management

I2 Water Use

11 Irrigation Management

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

The farm irrigates 175 ha. All water takes via bores are consented and monitored via water meters and telemetry. This measures irrigation and stock water.

The irrigation methods on farm are 115ha of pivots, 36ha of long line sprinklers, 12ha of hard hose guns and 10ha of k line. The system was designed by Waterforce as per design plans. Irrigation events are recorded. The gun has set locations for its runs as does the sprinklers and k lines by using GPS on the bike.

Annual servicing is completed by Waterforce on the irrigation system and is recorded. Regular maintenance is undertaken by the team and recorded. Annual application depth testing is done on the irrigation methods and recorded. Regular staff training is done in house at the start of the season on the irrigation system as well as staff are completing AGito courses and the irrigation managers course through IrrigationNZ.

Irrigation scheduling relies on the Aquaflex soil moisture tape which is applied at four sites over the four main soil types. There is also a VRI system in place on the north pivot, which is used to vary the amount of water across the different soil types and exclude non productive areas. The effluent will be getting Scada shortly so they can use solarnoides on the effluent line.

Maintenance and servicing is carried out regularly, invoices are kept as records. A bucket test has been carried out to show that the irrigation systems are working efficiently however this should be carried out an

Good Management Practice:

Design, calibrate and operate irrigation systems to use water efficiently

- * Irrigation system(s) are evaluated annually to check application efficiency and performance (consider using a skilled professional to assess)
- * Routine bucket tests are carried out to assess performance
- * Inspect and maintain regularly
- * All staff are trained to use the system (Consider Irrigation NZs operator and manager training)

Evidence - Invoices, maintenance records, certificates, staff training records

Sprinklers application depth/return period:

35mm 8 days peak only

Gun application depth/return period:

25mm 8 days peak only

Sprinkler shift ratio:

North block - 2 hours on/ 1 off, South block - 2 hours on/ 2 off

K line application depth/return period:

35mm 8 days peak only

Good Management Practice:

Irrigation rates and timing match plant requirements

- * Irrigation is done to replace soil moisture deficit only
- * Soil moisture levels and weather when scheduling irrigation are assessed by: --Estimating soil moisture levels with a soil water budget or --Monitoring soil moisture levels with real time soil moisture

equipment

- * All water use on farm is measured (water meters)
- * Large water takes are measured (telemetry)
- * Irrigation events are recorded - when, where, amount

Evidence - Aquaflex reports, telemetry reports, irrigation event records

Pivot application depth/return period: 5.8mm 4 days a week peak, 5.8mm 3 days a week shoulders

IMAGES:



OPEN ACTIONS:

 **NO ACTION REQUIRED**

I2 Water Use

IMPACT OF CONTAMINATION



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LIKELIHOOD OF CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

There are water meters installed on all bores to measure water usage.

There are systems in place to detect losses such as the dosetron which is an indicative measure of stockwater losses and also monitored through recording daily water usage volumes.

There is a water meter installed to measure the water use on the cowshed. The water use on the cowshed is recorded daily. Water use is reduced at the cowshed by recycling cooler water for stock use and the new effluent clean water technology for the yard wash.

Troughs are checked daily and any leaks are fixed as soon as possible.

Good Management Practice:

Water use for the dairy shed and stock water is efficient

- * Measure all water use on farm (water meters)
- * Minimise water wastage from the dairy shed
- * Ensure all leaks are fixed as soon as possible
- * Check water troughs daily where animals are grazing

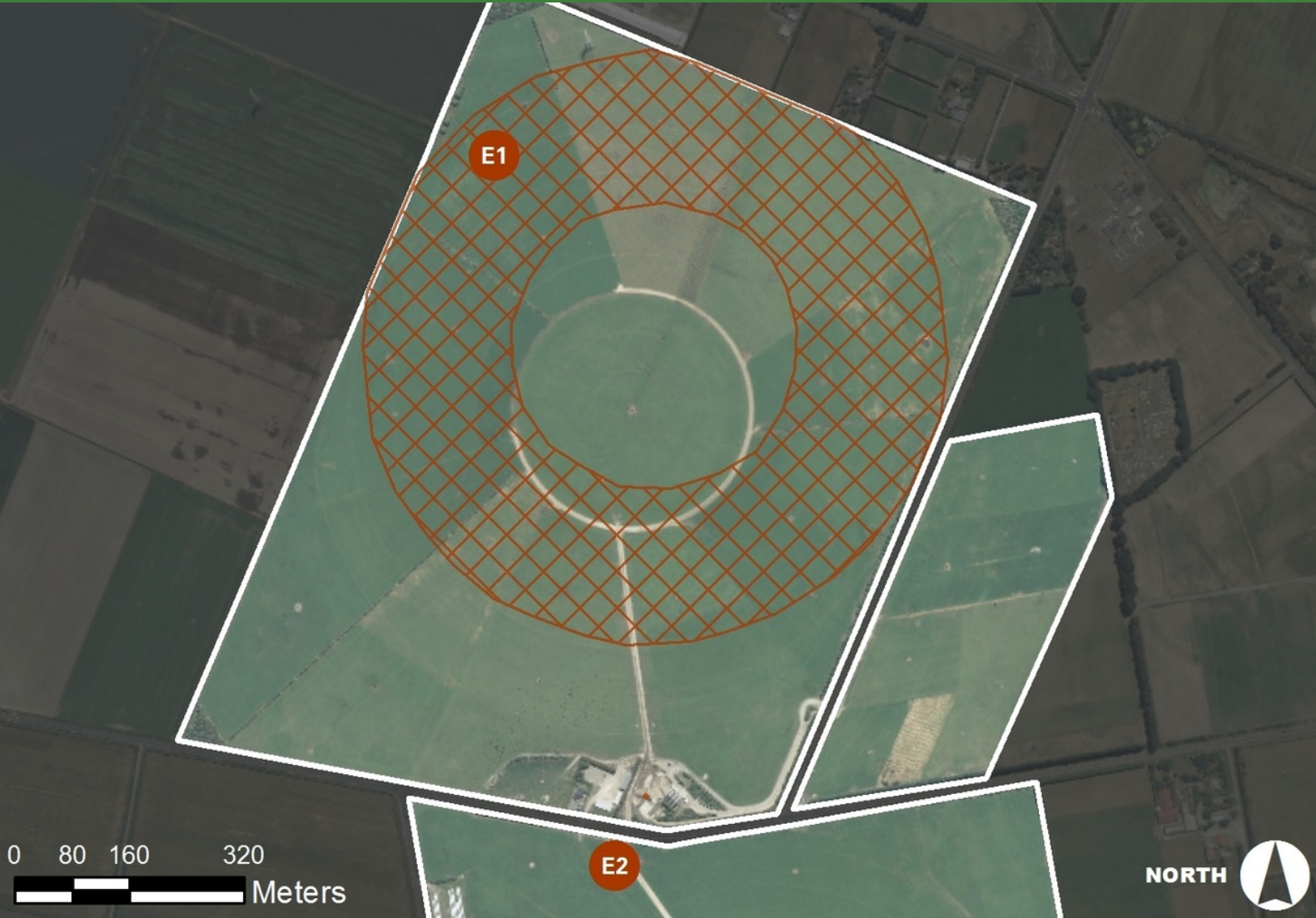
Evidence - Visual assessment, water meter logs

OPEN ACTIONS:

Record maintenance
Keep a record of all maintenance that is completed on farm
TARGET DATE: Ongoing



EFFLUENT MANAGEMENT



E1 Effluent Irrigation

E2 Effluent Storage



Effluent Irrigation

DESCRIPTION:

Effluent is applied to 34ha of the farm, underslung from the pivot.
Effluent applications are recorded in the dairy diary daily.

Deferred irrigation is used in wet conditions and the aquaflex is used to determine if effluent should be applied. This is in accordance with consent conditions which Peter and the staff are aware of.

The nutrient value of the effluent has been tested weekly, this is considered for fertiliser and nitrogen decisions.

A regular maintenance programme is in place to ensure efficient and compliant use of effluent. On a daily basis filters at the sump are cleaned and pots unblocked. Details of repairs and maintenance are recorded in the dairy diary.

A contractor is used to remove solids or effluent if there is an issue.

Irrigation method: Exported

Good Management Practice: Effluent applied at correct depth, rate and time

- * Adjust effluent application timing and rates based on soil moisture levels
- * Spread nutrient load evenly across the largest area practical
- * Test for high potassium (K) levels on effluent block to avoid animal health issues
- * Adjust fertiliser application to effluent areas based on soil tests

Nutrient value of effluent: Tested weekly

Application depth testing: Yes > annually

Application depth: <12Millimetres

Good Management Practice: Spreading equipment is well maintained and calibrated

- * Calibrate effluent irrigator/spreading equipment
- * Inspect and maintain effluent equipment regularly
- * Service effluent pumping equipment routinely

Good Management Practice: All effluent systems

- * Understand and comply with effluent consent conditions and regional rules
- * Have an effluent management plan
- * Record all effluent applications

IMAGES:



OPEN ACTIONS:

✓ NO ACTION REQUIRED

E2 Effluent Storage

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

The effluent storage system consists of a concrete stone trap, and sump which is pumped into a concrete lined saucer. Plucks designed and build the storage system as per design plans which are on record. The storage system is fenced off.

Recently they have installed Clear Tech which separates and cleans the effluent so that the clear water can be reused for wash down water. Current testing is showing a 70% water reduction. This has meant that they are now getting 16 days storage in their saucer.

Effluent is applied as often as possible to ensure that the pond level is never high.

The storage system is annually serviced and regular maintenance is undertaken and recorded.

Effluent loss to waterways is a major risk to water quality because of the nutrients and faecal bacteria it contains.

The risk to water quality is low as there is sufficient storage and the system is fully contained and sealed.

Solids management:	Spread immediately
Pond lining:	Concrete
Good Management Practice:	<p>Effluent system meets code of practice</p> <ul style="list-style-type: none"> * Effluent is collected from all sources: dairy sheds, yards, feeds pads, underpasses * The system design is appropriate for the soil type, topography, and climate <p>Evidence - Design plans, pond calculation</p>
Good Management Practice:	<p>Sufficient suitable storage available</p> <ul style="list-style-type: none"> * Dairy Effluent Storage calculator has been used to work out storage needs * Effluent is applied whenever possible to keep storage low * Storage facilities are sealed * Effluent solids that accumulate are routinely removed * Safety barriers, equipment and signage are in place <p>Evidence - Pond calculation, application records, design plans, visual assessment</p>
Sump volume:	45,000 litres
Saucer volume:	300,000 litres

IMAGES:

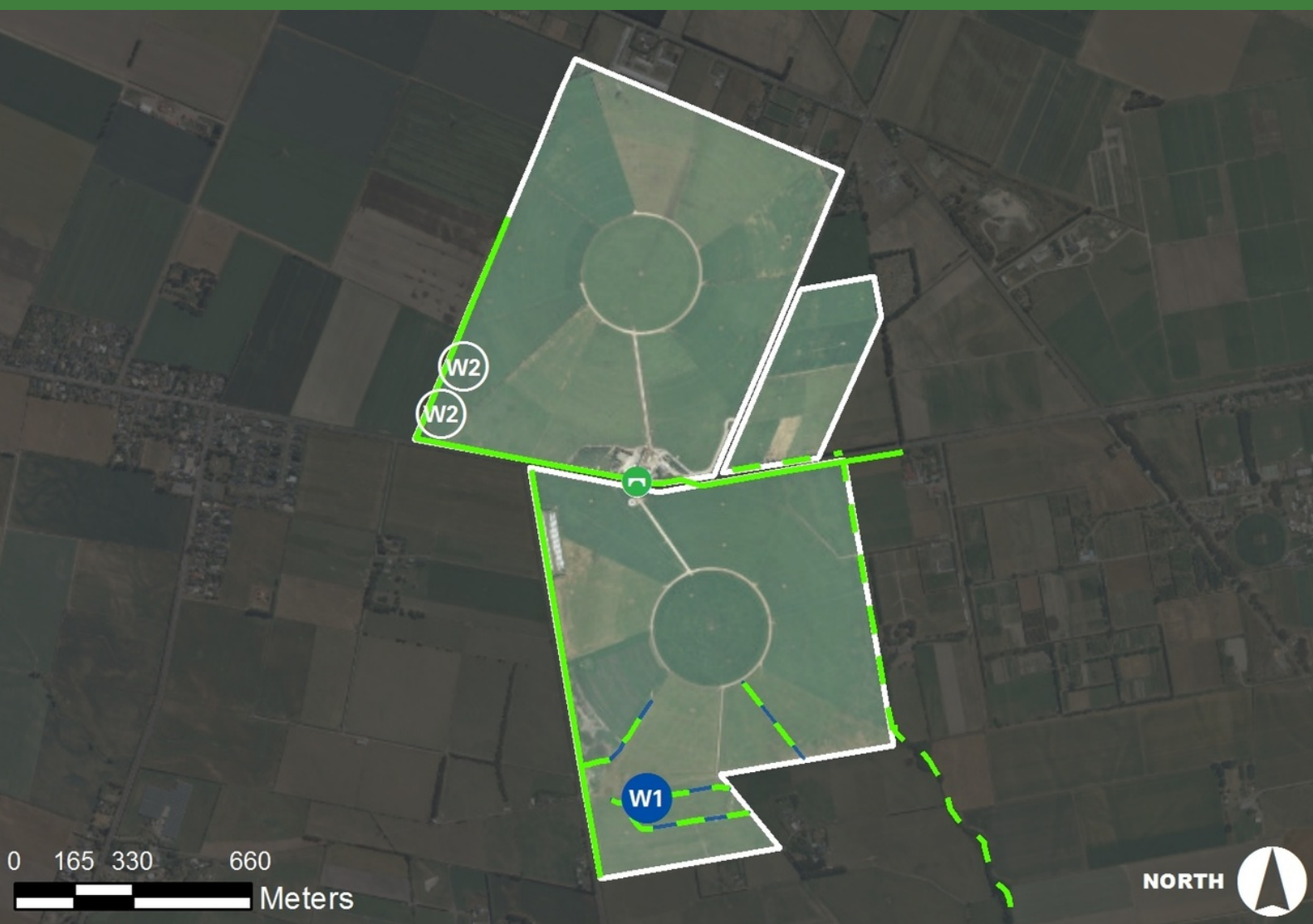






OPEN ACTIONS:







✔ NO ACTION REQUIRED



WATERWAYS & BIODIVERSITY MANAGEMENT



-  Riparian Management Unit - Waterways on south block
-  Riparian Management Unit - Waterway on boundary
-  Accord Defined Stock Excluded Waterway
-  Accord Defined Stock Not Excluded Waterway

-  Non-Accord Defined Stock Excluded Waterway
-  Non-Accord Defined Stock Not Excluded Waterway
-  Compliant Crossing
-  Non-Compliant Crossing
-  Non-Compliant Non-Regular Crossing
-  Dispensation Crossing



Riparian Management Unit

Waterways on south block

DESCRIPTION:

The waterways on the south block are intermittently flowing drains. They are all permanently fence to prevent stock access. All waterways are fenced with a 3m average distance. There are also concrete troughs in place to act as a sediment trap.

Fencing status: Permanently Fenced

Good Management Practice: Stock are excluded from waterways

- * All permanently flowing waterways (including wetlands) are fenced
- * Any temporary streams are temporarily fenced if grazing while water is flowing
- * A riparian management plan has been developed (include any plantings)
- * Drains are well managed

Evidence - Visual assessment, FEP

Vegetation status: Rank Grass

Waterway type: Non-Accord Waterway

IMAGES:



OPEN ACTIONS:

✔ NO ACTION REQUIRED



Riparian Management Unit

Waterway on boundary

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

There are two areas where waterways boundary the property. These have been planted to reduce the risk of sediment and nutrients entering the waterway. They are planted with natives either side. One edge is planted with Sedge and has a 3m buffer the other edge is planted with flax and pittosporums with a 5m buffer.

Good Management Practice:

Areas of native plants or significant biodiversity are protected

- * Areas are identified on the farm map
- * Stock are fenced out of the area
- * Weeds are controlled within the area
- * Animal pests are trapped or poisoned

Evidence - Farm map, visual assessment, invoices

Flood risk:

Low

Vegetation status:

Native Dominated

Fencing status:

Permanently Fenced

Good Management Practice:

Stock are excluded from waterways

- * All permanently flowing waterways (including wetlands) are fenced
- * A riparian management plan has been developed (include any plantings)

Evidence - RMP, visual assessment

Waterway type:

Accord Defined Waterway

IMAGES:



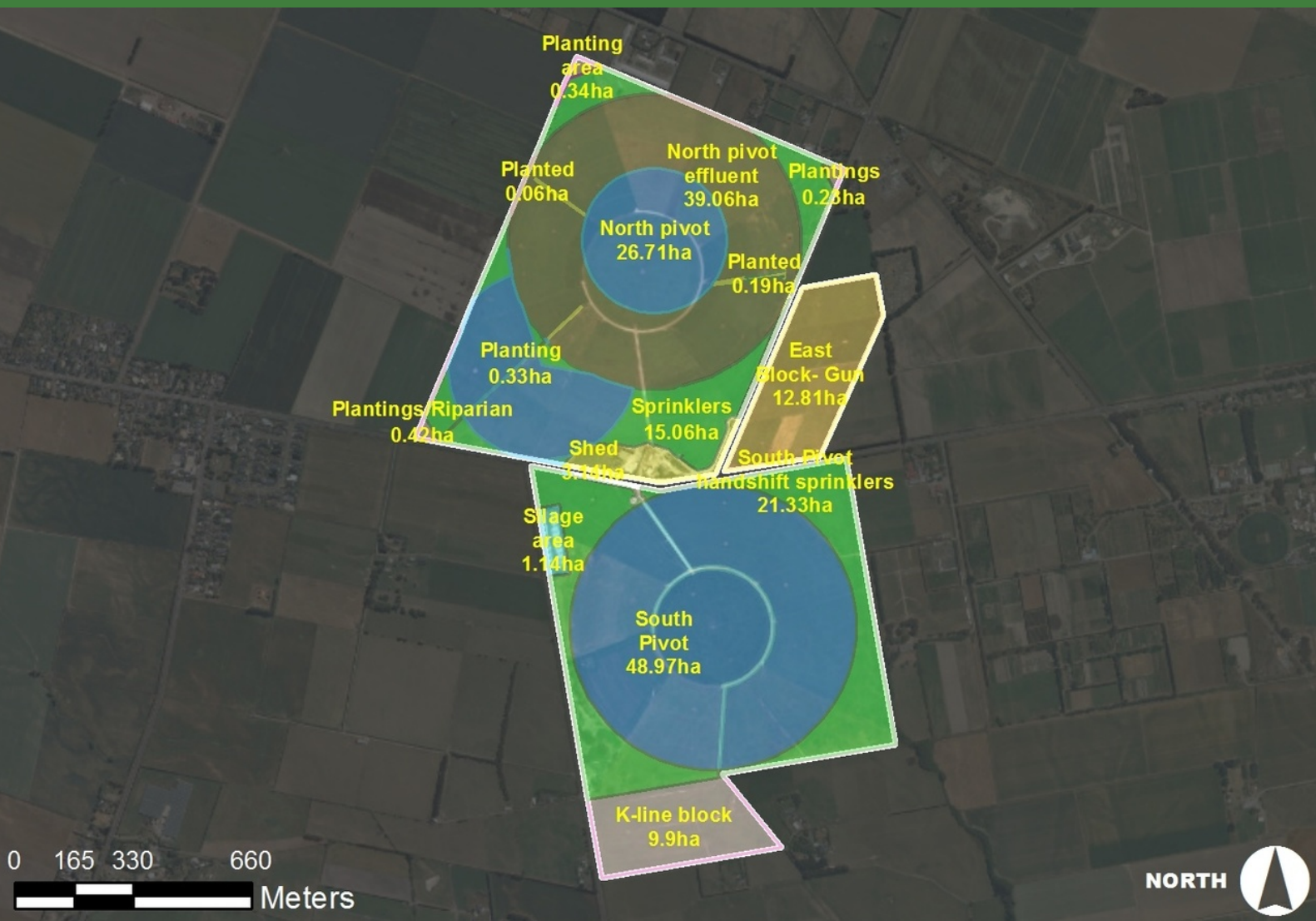


OPEN ACTIONS:

✔ NO ACTION REQUIRED



NUTRIENT MANAGEMENT



N1 Nutrient Management

N1 Nutrient Management

IMPACT OF
CONTAMINATION



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LIKELIHOOD OF
CONTAMINATION

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LOW RISK RATING

DESCRIPTION:

The farm annual soil tests at block level and every second year at paddock level. All crop paddocks are soil tested before crops are sown. The soil test results provide the foundation of the fertiliser recommendations for the season. Ensure that all soils stay within optimum levels and meet plant demands. The effluent block is always monitored for nutrients. The aquaflex is used to identify suitable soil temp and moisture conditions for applying fertiliser. They use Spreading Canterbury to apply fertiliser with Trac map and get regular reporting. They do variable rate fertiliser applications depending on soil test results and the effluent area receives reduced nutrients. All fertiliser is based on plant demands and this is worked through with farm consultant and fertiliser representative. They complete an annual actual nutrient budget via their milk company. The farm uses an average of 163 units of N.

Good Management Practice:

Fertiliser application matches plant requirements and minimises losses

- * All fertiliser applications are recorded -- product, rate, date, location (If a contractor is used the information is gathered from them)
- * Soil temperature and moisture levels are assessed before applying fertiliser (i.e. avoid winter months)
- * Fertiliser applications are avoided: --When heavy rainfall is forecast and runoff is likely --Close to waterways
- * N is applied little and often and when pasture is actively growing
- * Pasture or crop growth and feed requirements are assessed before applying N

Evidence - My Ravensdown, invoices, pasture wedge

Proof of placement:

My Ravensdown

Pasture measurement:

Plate meter - weekly, Satellite data

Olsen P:

Ranges 19-50 in maintenance phase

Good Management Practice:

Monitor and maintain P levels at the economic optimum

- * Olsen P trends continue to be monitored over successive years
- * Olsen P is maintained in the optimum range
- * Fertiliser applications are tailored for different management blocks

Evidence - Soil test results, fertiliser recommendations

Good Management Practice:

Fertiliser spreading equipment is well maintained and calibrated

- * Paddocks are checked for paddock stripes after spreading
- * Contractors are Spreadmark accredited

Evidence - Contractor information, visual assessment

Good Management Practice:

General nutrient management

- * Soil-testing is done each year for each different management block

- * Soil-testing is done well before crops are planted to identify nutrient levels
- * A nutrient budget is used to help fertiliser decision-making
- * Farm nutrient information is supplied to Fonterra at the end of each season

Evidence - Soil test results, Fonterra Nitrogen report, nutrient budget

Spreading Contractor:

Spreading Canterbury

Fertiliser stored:

Off farm, contractor supplies

Spreadmark Certified:

Yes

OPEN ACTIONS:

 **NO ACTION REQUIRED**

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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.