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Nutrient Budget Report

2022-2023 Year End

Prepared by Jennifer Armstrong
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CNMA
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PO Box 85094
Lincoln University
Christchurch 7647

Customer Number: 7095663
Date: 2nd February 2024
Reviewed by: Arron Hutton (CNMA)

Executive Summary

This document reports on the 2022-23 year end period for Lincoln University Dairy Farm (LUDF), which is located at 1504 Shands Road, Lincoln. Overseer®FM version 6.5.4 (v5.9.1) has been used to create the nutrient budget presented in this report. The property has a total consented area of 168.2 ha (160.4 ha effective) and operated as an irrigated dairy property during the 2022-23 year end period. This document is for the purpose of providing current modelled nutrient loss values for year-end reporting for LUDF.

The farm holds land use consent CRC180605 to use land for a farming activity. The property is located within the Selwyn Te Waihora Nutrient Allocation Zone of Canterbury's Land and Water Regional Plan. The property also holds effluent consent CRC143396, and groundwater irrigation consent CRC010786, both were active during the reporting year.

The month end date used for the year end 2022-23 nutrient budget was June, which was the end month used in the baseline files, and therefore allows for a comparison of N loss against the baseline files and previous year end files. As a result, the farm system from the 1st July 22 - 30th of June 23 has been captured.

During the 2022-23 season LUDF had an irrigated area of 160.4 ha: 120 ha of pivot, 8.4 ha of fixed grid, 9.9 ha of k line, and 22.1 ha of long line lateral irrigated area. The Friesian x Jersey dairy cows were milked with a 10 milkings in 7 days variable regime throughout the season. The herd was grazed on pasture, and additional pasture baleage was fed to assist production goals.

The key influences on Nitrogen loss for the farm are :

- **Soil type, drainage, and Profile Available Water (PAW)**
- **Irrigation method and management**
- **Nitrogen Use**

The year end 2022-23 modelled nutrient losses (N and P), are summarised in Table 1, below.

Table 1 - Modelling Results

	Year End 2022-23
System Type	Dairy
Area (ha)	168.2
Nitrogen leaching loss to water (total kg N)	4,378
Nitrogen leaching loss to water (kg N/ha)	26
Phosphorus runoff to water (total kg P)	168
Phosphorus runoff to water (kg P/ha)	1.0

Contents

Abbreviations

General

Refer to irrigation map in Appendices for further information

North Pivot	Pivot 1 irrigated area located on the North block
North Pivot 2	Pivot 2 irrigated area located on the North block
North Pivot 3	Pivot 3 irrigated area located on the North block
North Block Fixed Grid	Fixed Grid irrigated area located on the North block
South Block Sprinklers	Long – line lateral sprinkler irrigated area located on the South block
South Pivot	Pivot irrigated area located on the South block
Effluent Block Pivot	Pivot 1 liquid effluent area located on the North block
Eff	Effluent Area (spread via gun)
Non-Eff	Non Effluent Area
PL	Plantain
LUDF	Lincoln University Dairy Farm
PET	Potential Evapotranspiration

Overseer® FM Blocking Names Protocol

Block name > Irrigation Type > Effluent or non-effluent > Soil Type >Plantain (or blank)

No crop blocks were modelled in the 2022-23 year end nutrient budget as per client provided information.

Soils

See Table 3 for Soils Information

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3. This Plan complies with the industry standard "Code of Practice for Nutrient Management (with emphasis on Fertiliser Use)" (hereafter referred to as 'the code'). The Code can be found on-line in full at: http://www.fertiliser.org.nz/Site/code_of_practice

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Jennifer Armstrong
Principal Farm Environmental Consultant
Dated: 2nd February 2024

Introduction

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The farm holds land use consent CRC180605 to use land for a farming activity. The property is located within the Selwyn Te Waihora Nutrient Allocation Zone of Canterbury's Land and Water Regional Plan. The property also holds effluent consent CRC143396, and groundwater irrigation consent CRC010786, both were active during the reporting year.

The month end date used for the year end 2022-23 nutrient budget was June, which was the end month used in the baseline files, and therefore allows for a fair comparison of N loss against the baseline files and previous year end files. As a result, the farm system from the 1st July 22 - 30th of June 23 has been captured.

Overseer®FM modelling of the 2022-23 system has been undertaken in accordance with the Overseer®FM 6.5.4 (v5.9.1) "user guide" and has been reviewed by a certified nutrient management advisor. The following report summarises the respective Overseer®FM 6.5.4 (v5.9.1) nutrient budgets and key assumptions made.

Property Details

Table 2 - Property Information

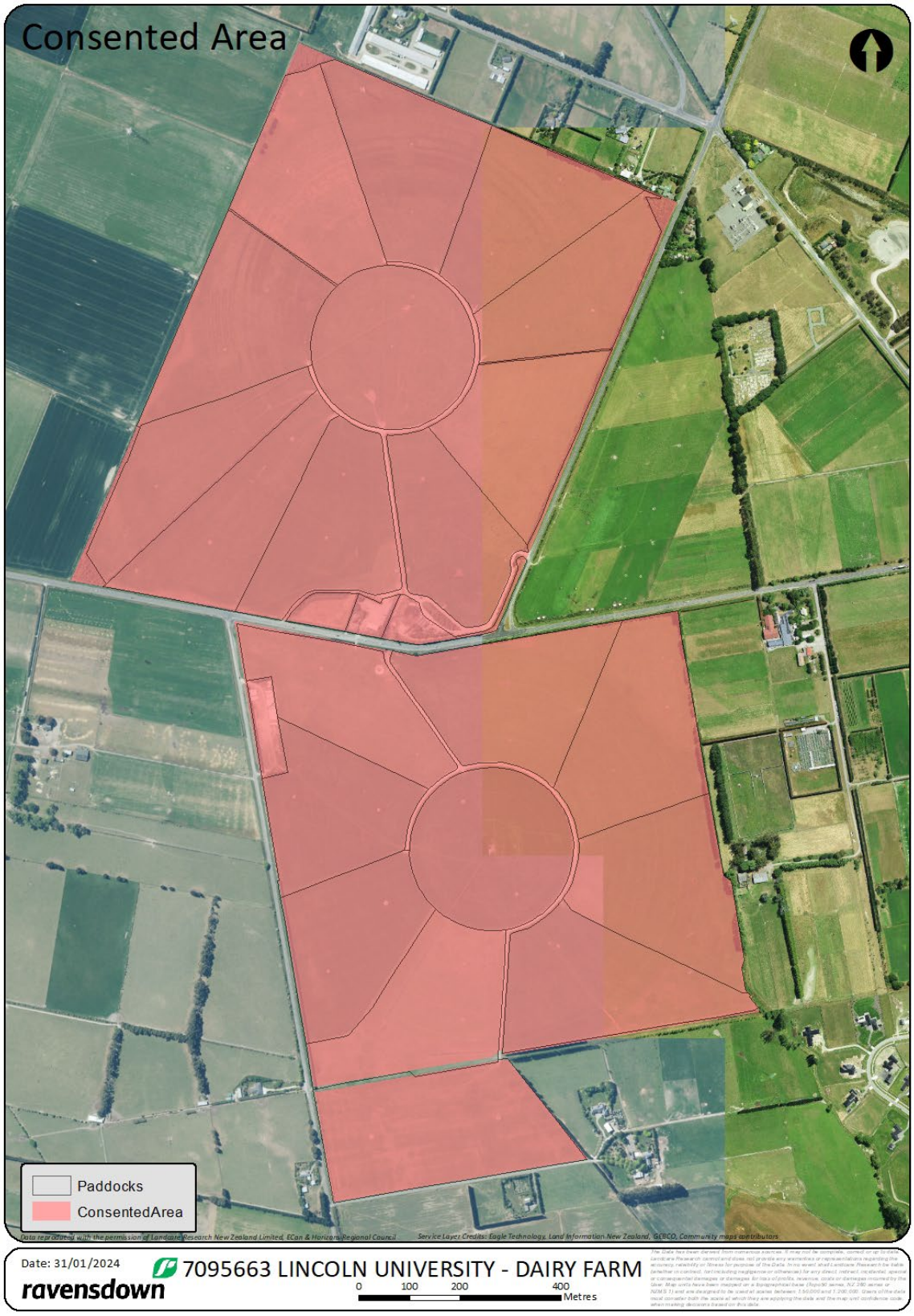
Property	Details
Location address	1504 Shands Road, Lincoln 7647
Legal description	RS6028; RS4565; RD4426; Part RS3684; Part RS3031; Part RS2803; Part RS2719; RS2775; RD2718; Part RS6377
Total consented area (ha)	168.2
Overseer®FM blocked area (ha)	164.8, inc. plantings (1.3 ha) and House (3.1 ha)
Effective area (ha)	160.4
Topography	Flat
Rainfall (mm/yr)	609
Temperature (°C)	12.1
PET (mm/yr)	923
Latitude/Longitude	-43.6444; 172.4433
Distance from coast (km)	30

Climate information is from the climate data tool in Overseer.

Farm Maps

Map 1 –Farm Titles Map

Map 2 – Consented Area Map (modelled area)



Farm System Analysis

2022-2023 Year End Farm System

LUDF has a total consented area of 168.2 ha, an effective pastoral area of 160.4 ha, the remaining 'blocked' area as modelled in Overseer®FM comprises of 1.3 ha of trees and scrub, and 3.1 ha of house. The non-productive area of 3.4 ha is made up of a dairy shed and associated yards/infrastructure, buildings, trees, and laneways. Modelled areas have remained the same as previous year end modelling. The property consists of flat topography, and during the 2022-23 year end period operated as an irrigated seasonal supply dairy farm, with dry dairy cows wintered off farm and replacement heifers off farm from weaning. In accordance with previous nutrient budget work completed for the property, the year-end has been modelled with a June end date and therefore a reporting period of 1st of July 2022 through to the 30th of June 2023 has been modelled.

Soils

There are seven soil types present on the property as shown in the table below. Soil effective areas per block remain in line with the baseline modelling. The sibling name for the soil types are used throughout this report when referring to different blocks. Each block name contains the soil type of such block.

Table 3 - Soils

Sibling Name	Eff Area (ha)	Soil Order	Texture	Drainage	PAW 0-60cm
Flax_4a.1	39.0	Gley	Silt over clay	Poorly drained	105
Waka_3a.1	32.8	Pallic	Silt over sand	Imperfectly drained	99
Waka_1a.1	31.4	Pallic	Silt	Imperfectly drained	96
Temp_1a.1	26.6	Pallic	Silt	Moderately well drained	99
Temp_2a.1	11.4	Pallic	Silt	Moderately well drained	105
Barr_5a.1	10.0	Pallic	Loam over sand	Well drained	99
Temp_4a.1	9.2	Pallic	Silt	Moderately well drained	105
Total effective	**160.4**				

Information sourced from OverseerFM

Soil Fertility

Soil test results have been calculated based on the most recent soil tests taken (being in June 2022 and July 2023). Soil test results have been averaged across paddocks contained in each management block, being 'effluent' and 'non effluent', and have been modelled as tabulated below.

Table 4 - Soil Fertility

Block	Olsen P	K	Ca	Mg	Na	Org-S
Non Effluent	34	10	11	32	11	9
Effluent	38	18	11	34	10	8

Stock System Information (Dairy)

Lincoln University Dairy Farm milking herd details modelled in the 2022-23 year end are based on information provided by Peter Hancox. Stock movements after calving have been modelled on the 16th of each month, with the exception of; 469 animals modelled as off farm from the 28th May. Monthly animal numbers have been modelled. No breeding bulls were on farm during the season.

Dairy

Table 5 - Dairy Herd

Herd		2022-23 Year End Farm System			
Cows	Breed	F x J			
	Mean calving date	8th August			
	Dry-Off date	28th May			
	Peak cows (1 December)	537			
	Average live weight (kg)	541			
	Cow Numbers	**Month**	**# Milking Cows**		**In shed feeding (Y/N)**
		July 2022	95		N
		Aug 2022	430		N
		Sept 2022	527		N
		Oct 2022	539		N
		Nov 2022	539		N
		Dec 2022	539		N
		Jan 2023	537		N
		Feb 2023	534		N
		Mar 2023	530		N
		Apr 2023	525		N
		May 2023	408		N
		Jun 2023	-		-
Dairy Information	Production kg/MS	247,291			
	Lactation length (days)	293			
	Once a day milking	10 in 7 (modelled as 'once a day milking – half the season')			
	Calves fed milk powder	No			
Replacements	Rate %	28			
	On/off farm when	All replacements remain on farm until they join the milking herd.			

Note: numbers reported are what are on farm as at month end. Movements within the month are reported in Overseer®FM.

Pasture Fertiliser

Fertiliser modelled as applied to pasture has been based on information recorded in the LUDF Hawkey account for the 2022-23 period for 1st July 22 - 30th of June 23.

Fertiliser has been modelled the same across all blocks due to the change in effluent infrastructure during the year end period. This modelling is in line with Agronomy Plans as prepared for the 2022-23 season. Therefore, fertiliser has been calculated from per-paddock applications in Hawkeye, averaged across all effective pasture areas, and applied the same across each management block.

It's important to note that, due to the prorating of fertiliser applications across paddocks, application rates may appear slightly lower than the actual amounts applied. The nitrogen content of Flowfert N has been calculated at 18% N.

It should also be noted that fertiliser recorded as purchased under the LUDF Ravensdown account, was also applied to additional blocks owned by the client. It is assumed that these blocks correspond to those recorded in the client's Hawkeye account, and as such, fertiliser applications documented in Hawkeye have been deducted from the total NPKS purchases. This modelling approach, coupled with the underlying assumptions, has resulted in slight discrepancies when comparing against NPKS fertiliser purchase records.

Table 6 – Total NPKS modelled vs purchased

Block	Total kg N	Total kg P	Total kg S
LUDF (modelled)	28,589	5,775	10,152
Other Blocks (not modelled)	3,901	601	739
Total combined NPKS (as calculated from Hawkeye)	**32,490**	**6,376**	**10,891**
Purchased	**32,682**	**7,195**	**11,067**

Fertiliser applications modelled have been tabulated on the following page:

Pasture Fertiliser

Table 7 - Fertiliser

Month	Whole Farm					
	Product	Kg/ha or L/ha	N	P	K	S
			Kg N/ha	Kg P/ha	Kg K/ha	Kg S/ha
Sept 22	Ammo 31	53	16			7
Sept 22	Sulphur Super 15	202		17		30
Sept 22	Superphosphate	207		19		23
Sept 22	Urea	7	3			
Sept 22	Flowfert N	57	10			
Oct 22	Ammo 31	24	7			3
Oct 22	Urea	50	23			
Nov 22	Urea	52	24			
Dec 22	Urea	47	22			
Jan 23	N Protect	49	22			
Feb 23	N Protect	24	11			
Mar 23	Urea	29	13			
Mar 23	Urea	10	5			
Apr 23	Urea	47	22			
TOTAL			**178**	**36**		**63**

Pasture Species and Production

The predominant pasture species on farm was ryegrass/white clover. There was 8.2 ha of pure plantain pasture sward, these blocks have been labelled with 'PL' in Overseer®FM blocking and modelled as plantain crop.

Relative productivity across pasture blocks has been modelled the same as previous year end modelling to maintain consistency standards.

Table 8 - Pasture

Block Name	Relative Productivity	Overseer®FM assumed Utilisation %	Overseer®FM Estimated Pasture Production TDM/ha/yr
Irrigated pasture	1	85	18.9

It should be noted that this estimated pasture production is based on default South Island pasture ME values and may be different to actual ME values and actual utilisation values on this farm which in turn would influence estimated pasture production.

Irrigation Systems and Management

During the 2022-23 year end period all of the effective pastoral area, at 160.4 ha was modelled as irrigated; 120 ha via pivot, 8.4 ha via fixed grid, 9.9 ha via k line and 22.1 ha via long line lateral irrigated area. Please refer to 'Irrigation Map', in appendices, for further information regarding the location of irrigation on farm. Its should be noted that an area of long line lateral was converted into fixed grid during the 2022-23 year end period, however this was not modelled due to not being utilised in the modelled period.

The property holds groundwater consent CRC010786, which was active during the 2022-23 year end period; The rate at which water is taken from bore M36/3067, 305 millimetres diameter and 93.0 metres deep, at or about map reference NZMS 260 M36:659-288, shall not exceed 98 litres per second.

Soil Moisture Monitoring was used on farm during the 2022-23 period, with four Aquaflex soil moisture tapes installed across the four primary soil types (being, Flax_4a.1, Waka_3a.1, Waka_1a.1, and Temp_1a.1). The North Pivot 1 also has variable rate irrigation. The modelling of soil moisture triggers and targets aligns with information provided by the client. Irrigation modelling is based on average application rates per irrigation type obtained from bucket tests, as recorded in the clients Farm Environmental Plan (FEP).

An Overseer®FM estimated annual volume supplied of approximately **720,046 m^3** has been modelled for the 2022-23 year end system.

[1]*Prior to 2015 the client also held CRC916834, however this was transferred to another property owned by the client, referred to as the Ashley Dene Research Development Station and is now incorporated into consent CRC153973.*

The irrigation rate, return period and annual application rates are given in the table on the following page:

Table 9 - Irrigation

Irrigation type		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Overseer Estimated annual Volume applied (mm/yr)
North pivot	Min Depth mm/pass	5	5	5	5	5	5	5	5	450
	Min Return (days)	1	1	1	1	1	1	1	1	
	Trigger (mm deficit)	25	25	25	25	25	25	25	25	
Pivot 2 & 3	Depth mm/pass	5	5	5	5	5	5	5	5	445
	Return (days)	1	1	1	1	1	1	1	1	
	Trigger (mm deficit)	30	30	30	30	30	30	30	30	
South pivot	Depth mm/pass	6	6	6	6	6	6	6	6	450-456
	Return (days)	1	1	1	1	1	1	1	1	
	Trigger (mm deficit)	25	25	25	25	25	25	25	25	
Fixed grid	Depth mm/pass	6	6	6	6	6	6	6	6	402-408
	Return (days)	3	3	3	3	3	3	3	3	
	Trigger (mm deficit)	20	20	20	20	20	20	20	20	
Spray lines & K - Line	Depth mm/pass	35	35	35	35	35	35	35	-	455
	Return (days)	8	8	8	8	8	8	8	-	
	Trigger (mm deficit)	40	40	40	40	40	40	40	-	

Effluent

The farm holds CRC143396 to discharge effluent to land, please refer to ECan website for further information related to this consent.

During the reporting period the effluent system was undergoing an upgrade, including the installation of a solid separator and a 1-million-litre holding pond. However, this upgrade, along with the ClearTech® system, was not operational during the modelled 2022-23 season. Effluent management for the 2022-23 season in Overseer®FM has been modelled with a 'holding pond' without solid separation. The liquid effluent has been modelled as 'spray regularly' throughout the year at an application depth of less than 12mm. The application of liquid effluent was carried out through an underslung system under North Pivot (32.8 ha) and via a gun across 65.5 ha, resulting in a total effluent application area of 98.3 ha. Solids from the pond were emptied during the year, and this has been modelled as exported as they were applied to run-off blocks not included in the LUDF area. For more information on liquid effluent areas, please refer to the 'Effluent Map' in the appendices.

Supplements

321 t DM of purchased baleage was fed during the 2022-23 season, no supplement was harvested during the season.

Existing Resource Consent Information

Table 10 - Resource Consents

Consent #	Activity	Commencement Date	Expiry Date
CRC143396	to discharge contaminants to land and air	03 Apr 2009	31 Mar 2044
CRC010786	to take and use groundwater.	04 Dec 2000	31 Jan 2035

Summary of Nutrient Loss Indicators

Table 11 - Nutrient Loss Indicators

	Year End 2022-23
System Type	Dairy
Area (ha)	168.2
Nitrogen leaching loss to water (total kg N)	4,378
Nitrogen leaching loss to water (kg N/ha)	26
Phosphorus runoff to water (total kg P)	168
Phosphorus runoff to water (kg P/ha)	1.0

Discussion on Nutrient Loss Indicators

The key influences on Nitrogen loss are discussed below:

Soil type, drainage and Profile Available Water (PAW)

The soil type has a large impact on N leached. The Profile Available Water (PAW) values for the property ranged from 96 through to 107 at 0-60 cm (Waka_1a.1 and Temp_2a.1, respectively). The Profile Available Water is described as "the amount of water potentially available to plant growth that can be stored in the soil to specific soil depths". It therefore makes sense that the soils with the lowest PAW will have higher N leaching as there will be more drainage from these soils. Soils with lower PAW are less able to buffer against changes in nitrogen losses to the bottom of the root zone (from stocking rates, crop yields, irrigation volumes) as the soils typically have larger pores and are flushed frequently as compared to a soil with a higher PAW. There is a range of soils and drainage on farm from poorly drained to well drained.

Irrigation method and management

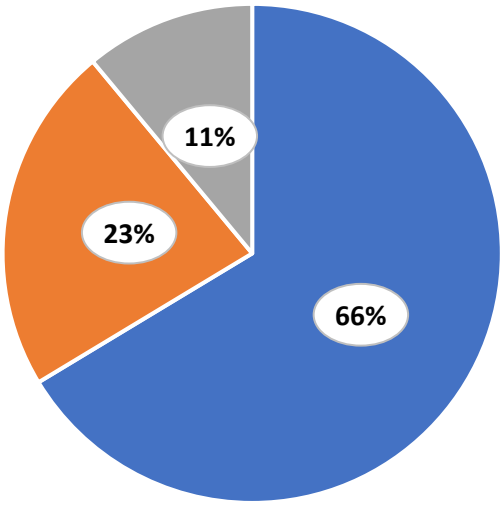
The irrigation method and volume applied can have an impact on N leaching, particularly when coupled with the soil type and PAW information for a block. Lowering the application depth per pass of irrigation types can reduce the risk of drainage events occurring and depending on the soil moisture deficit at irrigation events, provide more flexibility of the soil to store rainfall that may occur after irrigating. A reduction in drainage typically transfers to a reduction in modelled N loss assuming all other factors remain the same because water in drainage acts as a vector to move nitrogen down through the soil profile. The farm utilises several soil moisture monitoring probes on different soils, which increases the efficiency of water usage.

Fertiliser N

Year End 2022-23 whole farm N use was 170 kgN/ha/yr. If nitrogen application rates lead to a surplus in the soil, there is a greater risk of leaching. N surplus for the property is 249 kg/ha.

Whole Farm Greenhouse Gas (GHG) Emissions Profile

2022-23



2022-23 Total
2,311.30
Equivalent CO_2/tonnes/yr

Emission by source	Kg CO_2 equivalent (eCO_2) ha/yr	Total Farm Emissions equivalent (eCO_2) tonnes/yr
Methane (CH_4)	9,130	1,533.8
Nitrous Oxide (N_2O)	3,110	522.5
Carbon Dioxide (CO_2)	1,518	255.0
Total Farm Emissions	**13,758 per hectare**	**2,311.30 Tonnes**

Enterprise	Kg eCO_2				
Dairy	4,396 per cow				

Methane

The main source of methane comes from rumen digestion and is therefore directly related to the type and number of animals on farm. A small amount of methane is also created from the storage, treatment and application of effluent, as well as created by direct animal manure deposition onto land.

Nitrous Oxide

Nitrous oxide is created when nitrogen is added to the land, predominantly from fertiliser, urine and dung. Nitrous oxide is created by microbes in the soil converting nitrogen into nitrous oxide. Nitrogen intake affects the nitrogen deposited onto the soil through excreta. Indirect emissions can also be caused by volatilisation, nitrogen leaching, wetlands, and run-off. A small amount of nitrous oxide is also produced when storing and treating effluent.

Carbon Dioxide

Carbon dioxide is produced in the use of fossil fuels. Examples of sources on farm include; any electricity use, fuel use for machinery and tractors, N fertiliser and lime manufacture, dissolution and spreading, making and feeding supplements, animal transport, refrigeration, chemical usage.

Appendix List

Maps

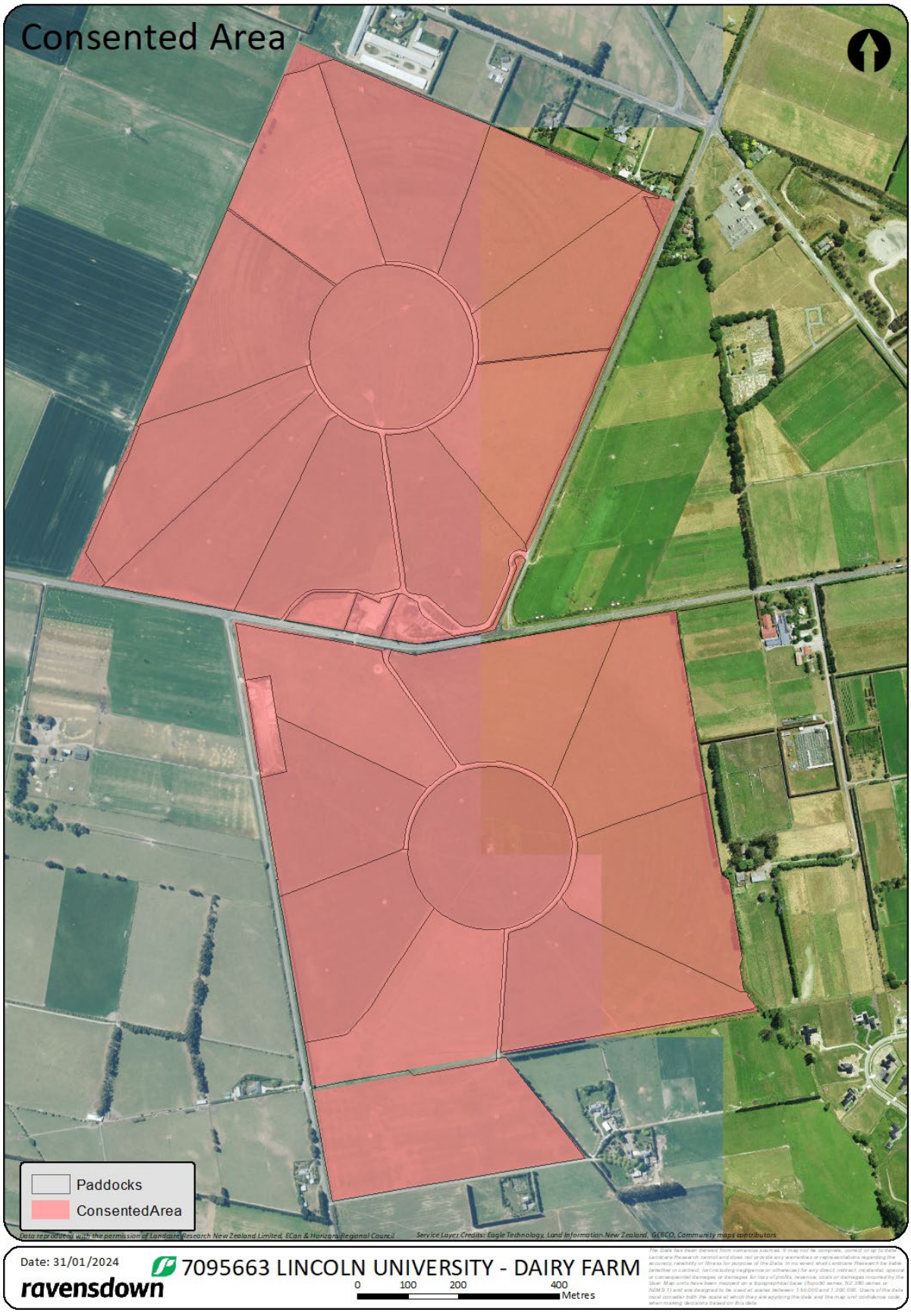
- Title
- Consented Area
- Soil
- Effluent
- Irrigation

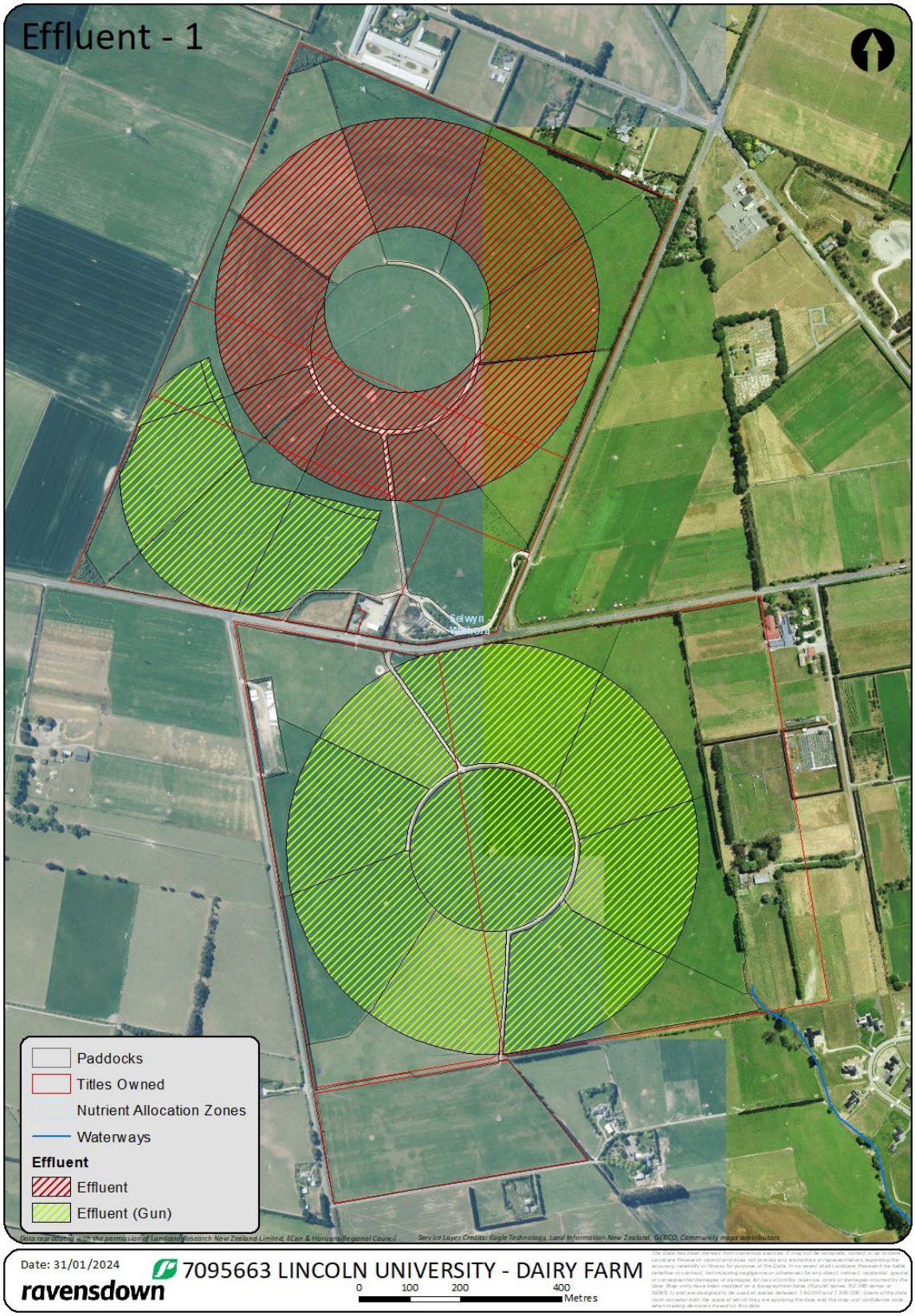
Overseer®FM Output

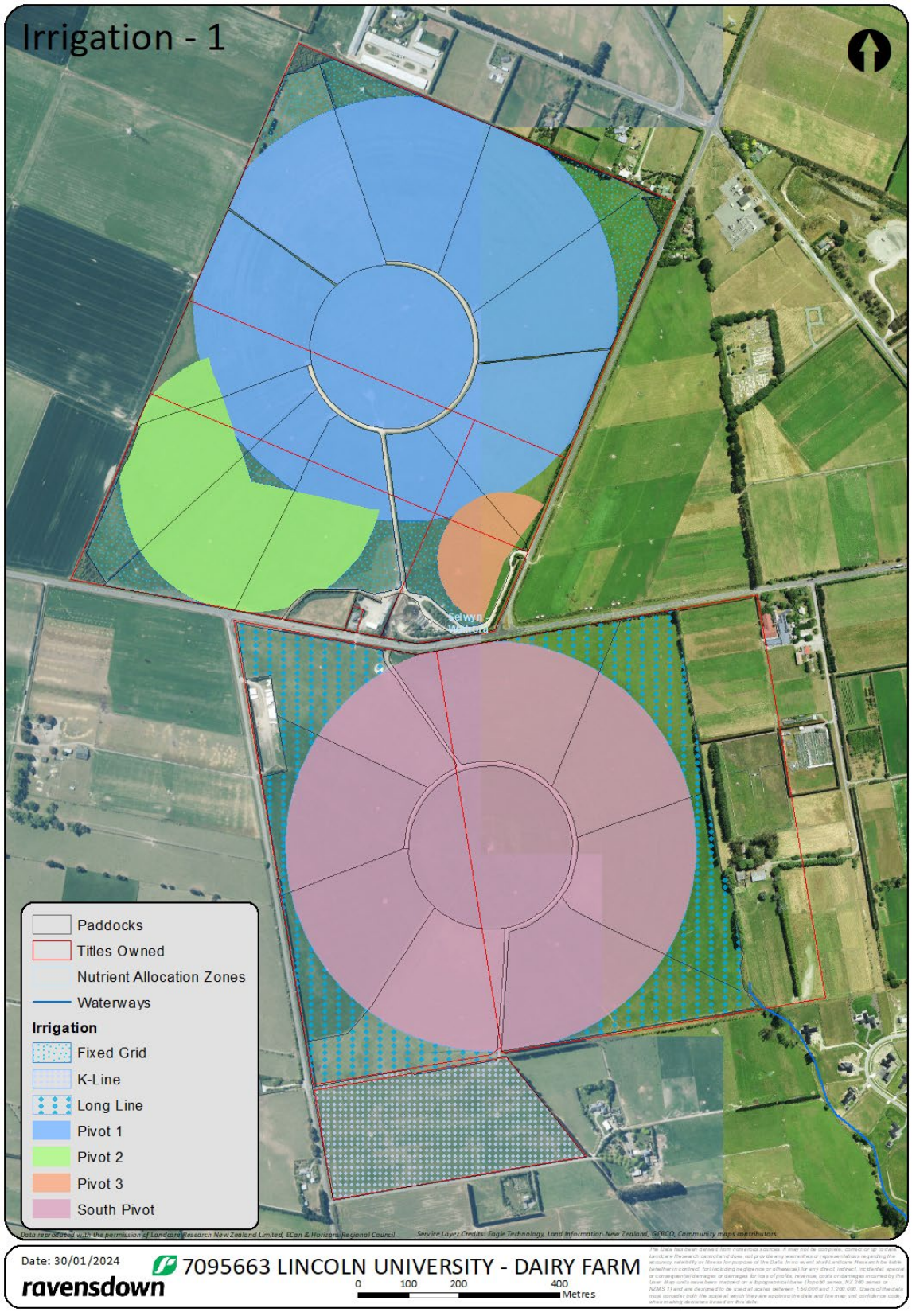
- Farm Details
- Farm Results
- Analysis Comments
- Blocks
- Farm Soils
- Enterprises
- Supplements
- Crops
- Fertiliser
- Irrigators
- Structures/Effluent System
- Nutrient Budgets
- Effluent Report

Maps


Titles
CB364/224
1/1, Rural Section 4426, Rural Section 4565 and Rural Section 6028, 445,154 m2
44.68 ha
CB4D/1068
1/1, Part Rural Section 3631, 121,406 m2
12.21 ha
CBA1/403
1/1, Part Rural Section 2803 and Part Rural Section 3031, 197,181 m2
20.21 ha
CB480/125
4.58 ha
CB480/126
1/1, Rural Section 2718, Rural Section 2775 and Part Rural Section 6377, 615,325 m2
62.01 ha
CB364/232
1/1, Part Rural Section 2719, 323,597 m2
33.02 ha
CB480/126
1/1, Rural Section 2718, Rural Section 2775 and Part Rural Section 6377, 615,325 m2
62.01 ha
Titles Owned
Paddocks
Date: 18/01/2024
ravensdown
7095663 LINCOLN UNIVERSITY - DAIRY FARM
0 100 200 400
Metres


Consented Area
Paddocks
ConsentedArea
Data reproduced with the permission of Landcare Research New Zealand Limited, ECan & Horizons Regional Council
Service Layer Credits: Eagle Technology, Land Information New Zealand, GEBCO, Community maps contributors
Date: 31/01/2024
ravensdown
7095663 LINCOLN UNIVERSITY - DAIRY FARM
0 100 200 400
Metres


Effluent - 1
Paddocks
Titles Owned
Nutrient Allocation Zones
Waterways
Effluent
Effluent
Effluent (Gun)
Date: 31/01/2024
ravensdown
7095663 LINCOLN UNIVERSITY - DAIRY FARM
0 100 200 400
Metres


Irrigation - 1
Paddocks
Titles Owned
Nutrient Allocation Zones
Waterways
Irrigation
Fixed Grid
K-Line
Long Line
Pivot 1
Pivot 2
Pivot 3
South Pivot
Date: 30/01/2024
ravensdown
7095663 LINCOLN UNIVERSITY - DAIRY FARM
0 100 200 400
Metres

LINCOLN UNIVERSITY - DAIRY FARM

1505 Shands Rd, Lincoln 7674, New Zealand

OverseerFM

Year ending 2023

Analysis type	Year end
Is publication	No
Application version	5.11.0
Printed date	2 Feb 2024, 6:31PM
Model version	6.5.4

Farm details

N 26 kg/ha | 4,378 kg P 1 kg/ha | 168 kg GHG 13,758 kg/ha | 2,311.3 tonnes NCE: 29 v6.5.4

Total area	168.2 ha
Productive block area	160.40 ha
Nitrogen conversion efficiency (NCE)	29%
N Surplus	249 kg/ha
Region	Canterbury

Total liveweight brought (kg/ha grazed)	448	Milk solids (kg/ha grazed)	1542
Total liveweight reared (kg/ha grazed)	91	Milking herd size (peak cows/ha grazed)	3.4
Total liveweight sold (kg/ha grazed)	509	Dairy stock rate (RSU)	5070
Milk production per cow (kg milk solids / cow)	458.8	Dairy replacements stock rate (RSU)	0

Blocks

NAME	TYPE	AREA (HA)	N LOSS	N LOSS/HA	N IN DRAINAGE (PPM)	N SURPLUS/HA	P LOSS	P LOSS/HA	BLOCKED AREA %	N FARM LOSS %
Effluent block pivot (Barr_5a.1)`	Pasture	6.6	206	31	17	239	3	0.5	4	
Effluent block pivot (Temp_1a.1)	Pasture	13.4	400	30	16	238	7	0.5	8	
Effluent block pivot (Temp_2a.1)	Pasture	2.6	75	29	16	238	1	0.5	2	
Effluent block pivot (Temp_4a.1)	Pasture	2.1	61	29	16	238	1	0.5	1	
Effluent block pivot (Waka_3a.1)	Pasture	8.1	242	30	16	238	6	0.7	5	
K-line block (Flax_4a.1)	Pasture	9.9	225	23	12	208	5	0.5	6	
North Pivot 2 - Eff (Waka_1a.1)	Pasture	5.9	173	29	17	238	4	0.7	4	
North Pivot 2 - Eff (Waka_3a.1)	Pasture	6.9	203	29	17	237	5	0.7	4	
North Pivot 2 - Eff (Temp_1a.1)	Pasture	1.2	35	29	17	238	1	0.5	1	
North Pivot 3 (Waka_3a.1)	Pasture	0.7	19	27	16	202	0	0.6	0	
North Pivot 3 - Eff (temp_1a.1)	Pasture	2.7	79	29	17	238	1	0.5	2	
North block Fixed grid (Temp_1a.1)	Pasture	2	63	31	16	205	1	0.4	1	
North block Fixed grid (Temp_2a.1)	Pasture	2.4	74	31	16	204	1	0.4	1	
North block Fixed grid (Temp_4a.1)	Pasture	2.7	83	31	16	205	1	0.4	2	
North block Fixed grid (Waka_1a.1)	Pasture	1	32	32	16	205	1	0.5	1	
North block Fixed grid (Waka_3a.1)	Pasture	0.3	9	31	16	204	0	0.5	0	
North pivot - non eff (Barr_5a.1)	Pasture	3.4	99	29	16	204	1	0.4	2	
North pivot - non eff	Pasture	7.3	202	28	15	203	3	0.5	4	

NAME	TYPE	AREA (HA)	N LOSS	N LOSS/HA	N IN DRAINAGE (PPM)	N SURPLUS/HA	P LOSS	P LOSS/HA	BLOCKED AREA %	N FARM LOSS %
(Temp_1a.1)										
North pivot - non eff (Temp_2a.1)	Pasture	4.6	123	27	15	203	2	0.4	3	
North pivot - non eff (Temp_4a.1)	Pasture	4.4	118	27	15	203	2	0.4	3	
North pivot - non eff (Waka_3a.1)	Pasture	1.3	36	28	15	203	1	0.6	1	
South block sprinklers (Flax_4a.1)	Pasture	9.9	225	23	12	208	5	0.5	6	
South block sprinklers (Temp_2a.1)	Pasture	1.8	45	25	14	204	1	0.4	1	
South block sprinklers (Waka_1a.1)	Pasture	3.8	98	26	14	205	2	0.6	2	
South block sprinklers (Waka_3a.1)	Pasture	6.6	172	26	14	203	4	0.6	4	
South pivot - Eff (Flax_4a.1)	Pasture	17	452	27	15	240	9	0.6	10	1
South pivot - Eff (Waka_1a.1)	Pasture	14.7	446	30	16	239	10	0.7	9	1
South pivot - Eff (Waka_3a.1)	Pasture	8.9	266	30	16	238	6	0.7	5	
South pivot - Eff (Waka_1a.1) PL	Pasture	6	57	10	8	191	0	0	4	
South pivot - Eff (Flax_4a.1) PL	Pasture	2.2	17	8	7	189	0	0	1	
Dairy	House	3.1	16	5	0	0	2	0.5	2	
Plantings	Trees and scrub	1.3	4	3	0	0	0	0.1	1	
Other sources	Other	-	23	-	-	-	80	-	-	

Farm soils

S-MAP REF/NAME	GROUP/ORDER	DRAINAGE CLASS	MODIFIED	TOTAL AREA (HA)	% OF PROD. BLOCKS	BLOCKS
Barr_5a.1	Recent/YGE/BGE/Pallic	Well	No	10	6.2	2
Flax_4a.1	Sedimentary/Gley	Poor	No	39	24.3	4
Temp_1a.1	Recent/YGE/BGE/Pallic	Moderately well	No	26.6	16.6	5
Temp_2a.1	Recent/YGE/BGE/Pallic	Moderately well	No	11.4	7.1	4
Temp_4a.1	Recent/YGE/BGE/Pallic	Moderately well	No	9.2	5.7	3
Waka_1a.1	Recent/YGE/BGE/Pallic	Imperfect	No	31.4	19.6	5
Waka_3a.1	Recent/YGE/BGE/Pallic	Imperfect	No	32.8	20.4	7

Enterprises

STOCK NUMBERS

NAME	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Dairy	95	430	527	539	539	539	537	534	530	525	-	-
Milking herd Class: Milking herd | Breed: Friesian Jersey Cross Median calving date: 8 August Drying off date: 28 May	95	430	527	539	539	539	537	534	530	525	-	-

RSU

NAME	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Dairy	20	302	516	589	570	628	591	504	524	468	357	0

Irrigators

NAME	AREA COVERED	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
SOLID SET Fixed grid	8.4 ha												
SPRAYLINES K LINE	9.9 ha												
LINEAR AND CENTRE PIVOT North pivot	53.8 ha												
LINEAR AND CENTRE PIVOT Pivot 2 + 3	17.4 ha												
LINEAR AND CENTRE PIVOT South Pivot	40.6 ha												
SPRAYLINES Spraylines 2	22.1 ha												

Structures

NAME	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Dairy Effluent System - Holding Pond | Solids: None | Pond: Other (Exported) | Liquid: Spray Regularly												

Supplements

CATEGORY	FEED	SOURCE	DRY WEIGHT?	AMOUNT	DESTINATION
Silage	Pasture good quality silage	Purchased (321)	Yes	321 tonnes	Dairy (321)

Crops

CROP/PASTURE	AREA (HA)	YIELD	GROWN (T/DM/YR)	INTAKE (T/DM/YR)	SUPPLEMENTS (T/DM/YR)
Ryegrass/white clover	152.2	-	2883	2450	-
Plantain	8.2	-	155	132	-

Fertiliser

MANUFACTURER/MATERIAL	NAME	TOTAL APPLIED (KG)	N	P	K	S	CA	MG	NA
Ravensdown	Ammo 31	12,351	3,755	-	-	1,704	-	-	-
Custom soluble fertiliser	Super/SS15	-	-	-	-	-	-	-	-
Ravensdown	Urea	38,817	17,856	-	-	-	-	-	-
Ravensdown	N-Protect	11,709	5,375	-	-	-	-	-	-
Ravensdown	Sulphur Super 15	32,401	-	2,786	-	4,795	6,221	-	-
Ravensdown	Superphosphate	33,203	-	2,988	-	3,652	6,641	-	-
Custom soluble fertiliser	Flowfert N	33,203	1,604	-	-	-	-	-	-
TOTAL		**161,683**	**28,589**	**5,775**	**-**	**10,152**	**12,862**	**-**	**-**

GHG - Total farm emissions

METHANE GHG EMISSIONS	N2O GHG EMISSIONS	CO2 GHG EMISSIONS	TOTAL GHG EMISSIONS
1533.8 CO2-e tonnes/yr	522.5 CO2-e tonnes/yr	255 CO2-e tonnes/yr	2311.3 CO2-e tonnes/yr

Farm nutrient budget

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	4,378	26
Phosphorus	168	1

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Foliar sprays	0	0	0	0	0	0	0
Fertiliser, lime and other	170	34	0	60	76	0	0
Irrigation	11	0	7	11	40	9	40
Supplements	49	4	42	4	8	3	2
Rain/clover fixation	121	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	26	1	23	77	63	2	11
As product	100	17	24	5	22	2	7
As prunings	0	0	0	0	0	0	0
Transfer	0	0	0	0	0	0	0
Effluent exported	2	1	1	0	2	1	0
To atmosphere	97	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	126	16	5	-4	1	0	0
Standing plant material	0	0	0	0	0	0	0
Inorganic mineral	0	2	-22	0	-1	-2	-2
Crop framework	0	0	0	0	0	0	0
Inorganic soil pool	0	3	19	0	40	13	42
Change in supplement storage	0	0	0	0	0	0	0
Root and stover residuals	0	0	0	0	0	0	0

Effluent report

The report shows rates and target areas for farm liquid effluent only, assuming it is all applied to pastoral blocks. It excludes any farm solid effluent or imported effluent that may be added to effluent blocks. If this occurs, then target areas may need to be increased.

CURRENT AREA RECEIVING LIQUID EFFLUENT	
Total area including crops	90 ha
Pastoral area receiving liquid	90 ha
% of farm pastoral area	56%
Average liquid effluent	53 kg N/ha/yr
Average fertiliser	178 kg N/ha/yr
Average other	12 kg N/ha/yr
AREA OF FARM TO APPLY ALL EFFLUENT TO ACHIEVE RATES OF	
150 kg N/ha/yr - Liquid	32 ha - based on the amount of effluent generated on the the farm and sprayed from sump.
150 kg N/ha/yr - Solid	0 ha
150 kg N/ha/yr - Total	32 ha
Maintenance K	167 ha
100 kg K/ha/yr	57 ha
SOURCE OF N IN EFFLUENT BLOCK(S)	
Effluent from farm dairy	95%
Effluent from Feed pad	0%
Effluent from Standoff pad	0%
Effluent from wintering pad(s)	0%
Solids	0%
Exported	5%

Blocks

Effluent block pivot (Barr_5a.1)

Pasture - Flat, 6.6 ha

N	31 kg/ha | 206 kg	P	0.5 kg/ha | 3 kg

BLOCK DETAILS

Area	6.6 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% BARR_5A.1
6.6 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Barr_5a.1	North pivot	6.6 ha (100%)	206 kg	31 kg/ha	17.2 ppm	239 kg/ha	231 kg/ha	3 kg	0.5 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Barr_5a.1	North pivot	6.6 ha (100%)	190 mm	0 mm	891 mm	162 mm	63 mm	279 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	206	31
Phosphorus	3	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	119	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	31	0.5	29	81	73	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	5	17	0	38	14	42

Effluent block pivot (Temp_1a.1)

Pasture - Flat, 13.4 ha

N	30 kg/ha | 400 kg	P	0.5 kg/ha | 7 kg

BLOCK DETAILS

Area	13.4 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_1A.1
13.4 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_1a.1	North pivot	13.4 ha (100%)	400 kg	30 kg/ha	16.4 ppm	238 kg/ha	231 kg/ha	7 kg	0.5 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_1a.1	North pivot	13.4 ha (100%)	190 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	400	30
Phosphorus	7	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	118	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	30	0.5	29	81	72	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	88	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	5	17	0	39	14	42

Effluent block pivot (Temp_2a.1)

Pasture - Flat, 2.6 ha

N	29 kg/ha | 75 kg	P	0.5 kg/ha | 1 kg

BLOCK DETAILS

Area	2.6 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_2A.1
2.6 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_2a.1	North pivot	2.6 ha (100%)	75 kg	29 kg/ha	15.9 ppm	238 kg/ha	231 kg/ha	1 kg	0.5 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_2a.1	North pivot	2.6 ha (100%)	190 mm	0 mm	891 mm	198 mm	93 mm	261 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 200 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	75	29
Phosphorus	1	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.5	29	81	71	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	88	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	5	17	0	39	14	42

Effluent block pivot (Temp_4a.1)

Pasture - Flat, 2.1 ha

N	29 kg/ha | 61 kg	P	0.5 kg/ha | 1 kg

BLOCK DETAILS

Area	2.1 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_4A.1
2.1 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_4a.1	North pivot	2.1 ha (100%)	61 kg	29 kg/ha	16 ppm	238 kg/ha	231 kg/ha	1 kg	0.5 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_4a.1	North pivot	2.1 ha (100%)	190 mm	0 mm	891 mm	192 mm	87 mm	258 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 200 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	61	29
Phosphorus	1	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	118	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.5	29	81	71	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	88	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	5	17	0	39	14	42

Effluent block pivot (Waka_3a.1)

Pasture - Flat, 8.1 ha

N	30 kg/ha | 242 kg	P	0.7 kg/ha | 6 kg

BLOCK DETAILS

Area	8.1 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
8.1 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	North pivot	8.1 ha (100%)	242 kg	30 kg/ha	16.4 ppm	238 kg/ha	231 kg/ha	6 kg	0.7 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	North pivot	8.1 ha (100%)	190 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	242	30
Phosphorus	6	0.7

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	30	0.7	29	81	72	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	4	17	0	39	14	42

K-line block (Flax_4a.1)

Pasture - Flat, 9.9 ha

N	23 kg/ha | 225 kg	P	0.5 kg/ha | 5 kg

BLOCK DETAILS

Area	9.9 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% FLAX_4A.1
9.9 ha Gley

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	-	70	70	105	105	70	35	-	-	-
K LINE (SPRAYLINES): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	-	74	74	110	110	74	37	-	-	-
Applied (mm)	-	-	-	70	70	105	105	70	35	-	-	-
Depth (mm)	-	-	35	35	35	35	35	35	35	-	-	-
Return (days)	-	-	8	8	8	8	8	8	8	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Flax_4a.1	K LINE	9.9 ha (100%)	225 kg	23 kg/ha	12.2 ppm	208 kg/ha	178 kg/ha	5 kg	0.5 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Flax_4a.1	K LINE	9.9 ha (100%)	199 mm	0 mm	887 mm	249 mm	144 mm	300 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 240 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	225	23
Phosphorus	5	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	11	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	140	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	23	0.5	15	79	56	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	102	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	83	12	0	-6	0	0	0
Inorganic mineral	0	4	-35	0	-1	-2	-2
Inorganic soil pool	0	1	-9	0	47	12	52

North block Fixed grid (Temp_1a.1)

Pasture - Flat, 2 ha

N	31 kg/ha | 63 kg	P	0.4 kg/ha | 1 kg

BLOCK DETAILS

Area	2 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_1A.1
2 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	24	48	60	60	60	60	60	30	-	-
FIXED GRID (SOLID SET): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	25	50	63	63	63	63	63	32	-	-
Applied (mm)	-	-	24	48	60	60	60	60	60	30	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	3	3	3	3	3	3	3	3	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_1a.1	Fixed grid	2 ha (100%)	63 kg	31 kg/ha	16.2 ppm	205 kg/ha	178 kg/ha	1 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_1a.1	Fixed grid	2 ha (100%)	206 mm	0 mm	825 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 270 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	63	31
Phosphorus	1	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	11	0	7	11	39	9	40
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	138	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	31	0.4	15	78	63	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	86	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-2	0	35	10	46

North block Fixed grid (Temp_2a.1)

Pasture - Flat, 2.4 ha

N	31 kg/ha | 74 kg	P	0.4 kg/ha | 1 kg

BLOCK DETAILS

Area	2.4 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_2A.1
2.4 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	24	48	60	60	60	60	60	36	-	-
FIXED GRID (SOLID SET): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	25	50	63	63	63	63	63	38	-	-
Applied (mm)	-	-	24	48	60	60	60	60	60	36	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	3	3	3	3	3	3	3	3	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_2a.1	Fixed grid	2.4 ha (100%)	74 kg	31 kg/ha	15.7 ppm	204 kg/ha	178 kg/ha	1 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_2a.1	Fixed grid	2.4 ha (100%)	208 mm	0 mm	829 mm	198 mm	93 mm	261 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 270 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	74	31
Phosphorus	1	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	11	0	7	11	40	9	41
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	137	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	31	0.4	15	78	62	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	86	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-2	0	36	11	47

North block Fixed grid (Temp_4a.1)

Pasture - Flat, 2.7 ha

N	31 kg/ha | 83 kg	P	0.4 kg/ha | 1 kg

BLOCK DETAILS

Area	2.7 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_4A.1
2.7 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	24	48	60	60	60	60	60	36	-	-
FIXED GRID (SOLID SET): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	25	50	63	63	63	63	63	38	-	-
Applied (mm)	-	-	24	48	60	60	60	60	60	36	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	3	3	3	3	3	3	3	3	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_4a.1	Fixed grid	2.7 ha (100%)	83 kg	31 kg/ha	15.7 ppm	205 kg/ha	178 kg/ha	1 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_4a.1	Fixed grid	2.7 ha (100%)	208 mm	0 mm	829 mm	192 mm	87 mm	258 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 270 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	83	31
Phosphorus	1	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	11	0	7	11	40	9	41
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	138	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	31	0.4	15	78	62	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	88	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	86	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-2	0	36	11	47

North block Fixed grid (Waka_1a.1)

Pasture - Flat, 1 ha

N	32 kg/ha | 32 kg	P	0.5 kg/ha | 1 kg

BLOCK DETAILS

Area	1 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_1A.1
1 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	24	48	60	60	60	60	60	30	-	-
FIXED GRID (SOLID SET): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	25	50	63	63	63	63	63	32	-	-
Applied (mm)	-	-	24	48	60	60	60	60	60	30	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	3	3	3	3	3	3	3	3	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_1a.1	Fixed grid	1 ha (100%)	32 kg	32 kg/ha	16.2 ppm	205 kg/ha	178 kg/ha	1 kg	0.5 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_1a.1	Fixed grid	1 ha (100%)	207 mm	0 mm	823 mm	207 mm	111 mm	264 mm	96 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 270 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	32	32
Phosphorus	1	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	11	0	7	11	39	9	40
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	138	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	32	0.5	15	78	63	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	89	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	85	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-2	0	35	10	46

North block Fixed grid (Waka_3a.1)

Pasture - Flat, 0.3 ha

N	31 kg/ha | 9 kg	P	0.5 kg/ha | 0 kg

BLOCK DETAILS

Area	0.3 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
0.3 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	24	48	60	60	60	60	60	30	-	-
FIXED GRID (SOLID SET): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	25	50	63	63	63	63	63	32	-	-
Applied (mm)	-	-	24	48	60	60	60	60	60	30	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	3	3	3	3	3	3	3	3	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	Fixed grid	0.3 ha (100%)	9 kg	31 kg/ha	16.2 ppm	204 kg/ha	178 kg/ha	0 kg	0.5 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	Fixed grid	0.3 ha (100%)	206 mm	0 mm	825 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 270 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	9	31
Phosphorus	0	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	11	0	7	11	39	9	40
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	137	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	31	0.6	15	78	63	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	86	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-2	0	35	10	46

North pivot - non eff (Barr_5a.1)

Pasture - Flat, 3.4 ha

N	29 kg/ha | 99 kg	P	0.4 kg/ha | 1 kg

BLOCK DETAILS

Area	3.4 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% BARR_5A.1
3.4 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Barr_5a.1	North pivot	3.4 ha (100%)	99 kg	29 kg/ha	16.1 ppm	204 kg/ha	178 kg/ha	1 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Barr_5a.1	North pivot	3.4 ha (100%)	190 mm	0 mm	891 mm	162 mm	63 mm	279 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 260 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	99	29
Phosphorus	1	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	136	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.4	15	79	61	1	4
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	89	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	42	12	52

North pivot - non eff (Temp_1a.1)

Pasture - Flat, 7.3 ha

N	28 kg/ha | 202 kg	P	0.5 kg/ha | 3 kg

BLOCK DETAILS

Area	7.3 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_1A.1
7.3 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_1a.1	North pivot	7.3 ha (100%)	202 kg	28 kg/ha	15.3 ppm	203 kg/ha	178 kg/ha	3 kg	0.5 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_1a.1	North pivot	7.3 ha (100%)	190 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 260 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	202	28
Phosphorus	3	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	135	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	28	0.5	15	79	59	1	4
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	88	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	43	12	52

North pivot - non eff (Temp_2a.1)

Pasture - Flat, 4.6 ha

N	27 kg/ha | 123 kg	P	0.4 kg/ha | 2 kg

BLOCK DETAILS

Area	4.6 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_2A.1
4.6 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_2a.1	North pivot	4.6 ha (100%)	123 kg	27 kg/ha	14.8 ppm	203 kg/ha	178 kg/ha	2 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_2a.1	North pivot	4.6 ha (100%)	190 mm	0 mm	891 mm	198 mm	93 mm	261 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 250 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	123	27
Phosphorus	2	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	135	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	27	0.4	15	79	59	1	4
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	89	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	44	12	52

North pivot - non eff (Temp_4a.1)

Pasture - Flat, 4.4 ha

N	27 kg/ha | 118 kg	P	0.4 kg/ha | 2 kg

BLOCK DETAILS

Area	4.4 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_4A.1
4.4 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_4a.1	North pivot	4.4 ha (100%)	118 kg	27 kg/ha	14.9 ppm	203 kg/ha	178 kg/ha	2 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_4a.1	North pivot	4.4 ha (100%)	190 mm	0 mm	891 mm	192 mm	87 mm	258 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 250 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	118	27
Phosphorus	2	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	135	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	27	0.4	15	79	59	1	4
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	88	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	88	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	43	12	52

North pivot - non eff (Waka_3a.1)

Pasture - Flat, 1.3 ha

N	28 kg/ha | 36 kg	P	0.6 kg/ha | 1 kg

BLOCK DETAILS

Area	1.3 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
1.3 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
NORTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	21	42	79	84	105	79	42	21	-	-
Applied (mm)	-	-	20	40	75	80	100	75	40	20	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	North pivot	1.3 ha (100%)	36 kg	28 kg/ha	15.3 ppm	203 kg/ha	178 kg/ha	1 kg	0.6 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	North pivot	1.3 ha (100%)	190 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

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The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 260 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	36	28
Phosphorus	1	0.6

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	135	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	28	0.6	15	79	59	1	4
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	88	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	43	12	52

North Pivot 2 - Eff (Temp_1a.1)

Pasture - Flat, 1.2 ha

N	29 kg/ha | 35 kg	P	0.5 kg/ha | 1 kg

BLOCK DETAILS

Area	1.2 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.644372	Longitude	172.443329
Distance from coast	30 km										

SOILS

100% TEMP_1A.1
1.2 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Rare**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	15	40	75	80	100	75	35	25	-	-
PIVOT 2 + 3 (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	16	42	79	84	105	79	37	26	-	-
Applied (mm)	-	-	15	40	75	80	100	75	35	25	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_1a.1	Pivot 2 + 3	1.2 ha (100%)	35 kg	29 kg/ha	16.6 ppm	238 kg/ha	231 kg/ha	1 kg	0.5 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_1a.1	Pivot 2 + 3	1.2 ha (100%)	185 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	35	29
Phosphorus	1	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	7	12	43	10	44
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.5	29	81	72	2	15
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	122	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	5	17	0	39	14	42

North Pivot 2 - Eff (Waka_1a.1)

Pasture - Flat, 5.9 ha

N	29 kg/ha | 173 kg	P	0.7 kg/ha | 4 kg

BLOCK DETAILS

Area	5.9 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.644372	Longitude	172.443329
Distance from coast	30 km										

SOILS

100% WAKA_1A.1
5.9 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Rare
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	15	40	75	80	100	75	35	25	-	-
PIVOT 2 + 3 (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	16	42	79	84	105	79	37	26	-	-
Applied (mm)	-	-	15	40	75	80	100	75	35	25	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_1a.1	Pivot 2 + 3	5.9 ha (100%)	173 kg	29 kg/ha	16.6 ppm	238 kg/ha	231 kg/ha	4 kg	0.7 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_1a.1	Pivot 2 + 3	5.9 ha (100%)	185 mm	0 mm	891 mm	207 mm	111 mm	264 mm	96 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	173	29
Phosphorus	4	0.7

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	7	12	43	10	44
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.7	29	81	72	2	15
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	4	17	0	39	14	42

North Pivot 2 - Eff (Waka_3a.1)

Pasture - Flat, 6.9 ha

N	29 kg/ha | 203 kg	P	0.7 kg/ha | 5 kg

BLOCK DETAILS

Area	6.9 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.644372	Longitude	172.443329
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
6.9 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Rare
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	15	40	70	85	100	75	35	25	-	-
PIVOT 2 + 3 (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	16	42	74	89	105	79	37	26	-	-
Applied (mm)	-	-	15	40	70	85	100	75	35	25	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	Pivot 2 + 3	6.9 ha (100%)	203 kg	29 kg/ha	16.6 ppm	237 kg/ha	231 kg/ha	5 kg	0.7 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	Pivot 2 + 3	6.9 ha (100%)	185 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	203	29
Phosphorus	5	0.7

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	7	12	43	10	44
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.7	29	81	72	2	15
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	86	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	122	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	4	17	0	39	14	42

North Pivot 3 (Waka_3a.1)

Pasture - Flat, 0.7 ha

N	27 kg/ha | 19 kg	P	0.6 kg/ha | 0 kg

BLOCK DETAILS

Area	0.7 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.644372	Longitude	172.443329
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
0.7 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Rare
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	15	40	70	85	100	75	35	25	-	-
PIVOT 2 + 3 (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	16	42	74	89	105	79	37	26	-	-
Applied (mm)	-	-	15	40	70	85	100	75	35	25	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	Pivot 2 + 3	0.7 ha (100%)	19 kg	27 kg/ha	15.5 ppm	202 kg/ha	178 kg/ha	0 kg	0.6 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	Pivot 2 + 3	0.7 ha (100%)	185 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 250 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	19	27
Phosphorus	0	0.6

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	7	12	43	10	44
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	134	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	27	0.6	15	79	59	1	4
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	86	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	89	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	43	12	52

North Pivot 3 - Eff (temp_1a.1)

Pasture - Flat, 2.7 ha

N	29 kg/ha | 79 kg	P	0.5 kg/ha | 1 kg

BLOCK DETAILS

Area	2.7 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.644372	Longitude	172.443329
Distance from coast	30 km										

SOILS

100% TEMP_1A.1
2.7 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Rare
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	15	40	75	80	100	75	35	25	-	-
PIVOT 2 + 3 (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	16	42	79	84	105	79	37	26	-	-
Applied (mm)	-	-	15	40	75	80	100	75	35	25	-	-
Depth (mm)	-	-	5	5	5	5	5	5	5	5	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_1a.1	Pivot 2 + 3	2.7 ha (100%)	79 kg	29 kg/ha	16.6 ppm	238 kg/ha	231 kg/ha	1 kg	0.5 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_1a.1	Pivot 2 + 3	2.7 ha (100%)	185 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	79	29
Phosphorus	1	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	7	12	43	10	44
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	29	0.5	29	81	72	2	15
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	122	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	5	17	0	39	14	42

South block sprinklers (Flax_4a.1)

Pasture - Flat, 9.9 ha

N	23 kg/ha | 225 kg	P	0.5 kg/ha | 5 kg

BLOCK DETAILS

Area	9.9 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% FLAX_4A.1
9.9 ha Gley

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	-	70	70	105	105	70	35	-	-	-
SPRAYLINES 2 (SPRAYLINES): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	-	74	74	110	110	74	37	-	-	-
Applied (mm)	-	-	-	70	70	105	105	70	35	-	-	-
Depth (mm)	-	-	35	35	35	35	35	35	35	-	-	-
Return (days)	-	-	8	8	8	8	8	8	8	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Flax_4a.1	Spraylines 2	9.9 ha (100%)	225 kg	23 kg/ha	12.2 ppm	208 kg/ha	178 kg/ha	5 kg	0.5 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Flax_4a.1	Spraylines 2	9.9 ha (100%)	199 mm	0 mm	887 mm	249 mm	144 mm	300 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 240 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	225	23
Phosphorus	5	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	11	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	140	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	23	0.5	15	79	56	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	102	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	83	12	0	-6	0	0	0
Inorganic mineral	0	4	-35	0	-1	-2	-2
Inorganic soil pool	0	1	-9	0	47	12	52

South block sprinklers (Temp_2a.1)

Pasture - Flat, 1.8 ha

N	25 kg/ha | 45 kg	P	0.4 kg/ha | 1 kg

BLOCK DETAILS

Area	1.8 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% TEMP_2A.1
1.8 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	35	35	70	105	105	70	35	-	-	-
SPRAYLINES 2 (SPRAYLINES): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	37	37	74	110	110	74	37	-	-	-
Applied (mm)	-	-	35	35	70	105	105	70	35	-	-	-
Depth (mm)	-	-	35	35	35	35	35	35	35	-	-	-
Return (days)	-	-	8	8	8	8	8	8	8	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Temp_2a.1	Spraylines 2	1.8 ha (100%)	45 kg	25 kg/ha	13.5 ppm	204 kg/ha	178 kg/ha	1 kg	0.4 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Temp_2a.1	Spraylines 2	1.8 ha (100%)	199 mm	0 mm	887 mm	198 mm	93 mm	261 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 250 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	45	25
Phosphorus	1	0.4

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	11	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	136	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	25	0.4	15	79	58	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	91	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	88	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	45	12	52

South block sprinklers (Waka_1a.1)

Pasture - Flat, 3.8 ha

N	26 kg/ha | 98 kg	P	0.6 kg/ha | 2 kg

BLOCK DETAILS

Area	3.8 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_1A.1
3.8 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	35	35	70	105	105	70	35	-	-	-
SPRAYLINES 2 (SPRAYLINES): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	37	37	74	110	110	74	37	-	-	-
Applied (mm)	-	-	35	35	70	105	105	70	35	-	-	-
Depth (mm)	-	-	35	35	35	35	35	35	35	-	-	-
Return (days)	-	-	8	8	8	8	8	8	8	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_1a.1	Spraylines 2	3.8 ha (100%)	98 kg	26 kg/ha	13.9 ppm	205 kg/ha	178 kg/ha	2 kg	0.6 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_1a.1	Spraylines 2	3.8 ha (100%)	199 mm	0 mm	887 mm	207 mm	111 mm	264 mm	96 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 250 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	98	26
Phosphorus	2	0.6

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	11	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	137	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	26	0.6	15	79	58	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	93	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	86	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	44	12	52

South block sprinklers (Waka_3a.1)

Pasture - Flat, 6.6 ha

N	26 kg/ha | 172 kg	P	0.6 kg/ha | 4 kg

BLOCK DETAILS

Area	6.6 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
6.6 ha Pallic

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	35	35	70	105	105	70	35	-	-	-
SPRAYLINES 2 (SPRAYLINES): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	37	37	74	110	110	74	37	-	-	-
Applied (mm)	-	-	35	35	70	105	105	70	35	-	-	-
Depth (mm)	-	-	35	35	35	35	35	35	35	-	-	-
Return (days)	-	-	8	8	8	8	8	8	8	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	Spraylines 2	6.6 ha (100%)	172 kg	26 kg/ha	14 ppm	203 kg/ha	178 kg/ha	4 kg	0.6 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	Spraylines 2	6.6 ha (100%)	199 mm	0 mm	887 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Use maintenance K analysis with caution as maintenance K levels were less than 10 kg K/ha.

Olsen P (34) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- No change in QT K test
- Increase in QT Mg test of 1 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 250 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	172	26
Phosphorus	4	0.6

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	11	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	135	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	26	0.7	15	79	59	1	5
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	90	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	88	15	0	-6	0	0	0
Inorganic mineral	0	1	-43	0	-1	-2	-2
Inorganic soil pool	0	1	-1	0	44	12	52

South pivot - Eff (Waka_1a.1)

Pasture - Flat, 14.7 ha

N	30 kg/ha | 446 kg	P	0.7 kg/ha | 10 kg

BLOCK DETAILS

Area	14.7 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_1A.1
14.7 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	18	42	72	84	102	72	42	24	-	-
SOUTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	19	44	76	88	107	76	44	25	-	-
Applied (mm)	-	-	18	42	72	84	102	72	42	24	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_1a.1	South Pivot	14.7 ha (100%)	446 kg	30 kg/ha	16.2 ppm	239 kg/ha	231 kg/ha	10 kg	0.7 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_1a.1	South Pivot	14.7 ha (100%)	196 mm	0 mm	891 mm	207 mm	111 mm	264 mm	96 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	446	30
Phosphorus	10	0.7

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	45	11	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	119	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	30	0.7	29	81	72	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	90	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	120	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	4	17	0	39	14	43

South pivot - Eff (Waka_1a.1) PL

Pasture - Flat, 6 ha

N	10 kg/ha | 57 kg	P	0 kg/ha | 0 kg

BLOCK DETAILS

Area	6 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_1A.1
6 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Plantain**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_1a.1	-	6 ha (100%)	57 kg	10 kg/ha	8 ppm	191 kg/ha	178 kg/ha	0 kg	0 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_1a.1	-	6 ha (100%)	120 mm	0 mm	488 mm	207 mm	111 mm	264 mm	96 mm	-	-	-	-

MODEL NOTES

Overview

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

The change in inorganic soil pool indicates that additional fertiliser nutrients may be required to maintain production for K

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- Decrease in QT K test of 1 units
- No change in QT Mg test

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 200 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	57	10
Phosphorus	0	0

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	0	0	0	0	0	0	0
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	135	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	10	0	29	66	55	1	11
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	70	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	112	16	0	-4	0	0	0
Inorganic mineral	0	1	-21	0	-1	-2	-2
Inorganic soil pool	0	0	-45	0	3	1	0

South pivot - Eff (Waka_3a.1)

Pasture - Flat, 8.9 ha

N	30 kg/ha | 266 kg	P	0.7 kg/ha | 6 kg

BLOCK DETAILS

Area	8.9 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% WAKA_3A.1
8.9 ha Pallic

PASTURE

Pasture growth	**18,939 kg DM/ha/yr**	Removed	**0 kg DM/ha/yr**
Utilisation	**85 %**	Dairy	**29.04 rsu/ha**
Intake	**16,098 kg DM/ha/yr**		

CROP MANAGEMENT

Block type	**Pasture**	Hydrophobic condition	**Use default**
Topography	**Flat**	Susceptibility to pugging	**Occasional**
Pasture type	**Ryegrass/white clover**	Is compacted	**No**
Cultivated in last 5 years	**No**	Naturally high water table	**No**
Animals present	**Yes**		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	18	42	72	84	102	72	36	24	-	-
SOUTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	19	44	76	88	107	76	38	25	-	-
Applied (mm)	-	-	18	42	72	84	102	72	36	24	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Waka_3a.1	South Pivot	8.9 ha (100%)	266 kg	30 kg/ha	16.4 ppm	238 kg/ha	231 kg/ha	6 kg	0.7 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Waka_3a.1	South Pivot	8.9 ha (100%)	190 mm	0 mm	891 mm	195 mm	96 mm	261 mm	99 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 210 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	266	30
Phosphorus	6	0.7

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	117	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	30	0.7	29	81	72	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	87	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	121	16	0	-4	0	0	0
Inorganic mineral	0	1	-12	0	-1	-2	-2
Inorganic soil pool	0	4	17	0	39	14	42

South pivot - Eff (Flax_4a.1)

Pasture - Flat, 17 ha

N	27 kg/ha | 452 kg	P	0.6 kg/ha | 9 kg

BLOCK DETAILS

Area	17 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% FLAX_4A.1
17 ha Gley

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Ryegrass/white clover	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-
IRRIGATION APPLIED (MM)												
Avg applied (mm)	-	-	18	42	72	84	102	72	36	24	-	-
SOUTH PIVOT (LINEAR AND CENTRE PIVOT): OVERSEER DEFAULT (FIXED) | N:2.5 P:0.1 K:1.6 S:2.5 CA:9.3 MG:2.2 NA:9.5												
Supplied (mm)	-	-	19	44	76	88	107	76	38	25	-	-
Applied (mm)	-	-	18	42	72	84	102	72	36	24	-	-
Depth (mm)	-	-	6	6	6	6	6	6	6	6	-	-
Return (days)	-	-	1	1	1	1	1	1	1	1	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Flax_4a.1	South Pivot	17 ha (100%)	452 kg	27 kg/ha	14.6 ppm	240 kg/ha	231 kg/ha	9 kg	0.6 kg/ha	Low	Low	Low

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Flax_4a.1	South Pivot	17 ha (100%)	190 mm	0 mm	891 mm	249 mm	144 mm	300 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Maintenance nutrient requirements for this block take account of nutrients added in effluent.

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

Soil P loss status is high. Consider reducing Olsen P levels.

Fertiliser P loss is greater than 10% of total P loss - this is outside the range of data available for New Zealand and P loss data should be used with caution. Potential P loss from fertiliser is high. Check fertiliser rates are not too high. If P is applied in high risk months consider alternative months of application or changing the form of P.

The change in inorganic soil pool indicates that fertiliser nutrients can be reduced for Ca

Estimated change in soil test values for samples taken to 7.5cm:

- Increase in Olsen P test of 1 units
- No change in QT K test
- Increase in QT Mg test of 2 units

N losses from the root zone from this block exceed 11.3 ppm. This could contribute to high drinking water levels. The drinking water standard is 11.3 ppm. Note that the drinking water standard is not a environmental water quality standard, which is usually lower than the drinking water standard or a regulatory standard.Consider mitigation options to reduce this loss

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 200 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	452	27
Phosphorus	9	0.6

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	53	5	63	4	8	3	2
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	12	0	8	12	44	10	45
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	120	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	27	0.6	29	81	69	2	16
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	95	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	119	13	0	-4	0	0	0
Inorganic mineral	0	4	-12	0	-1	-2	-2
Inorganic soil pool	0	5	16	0	41	14	42

South pivot - Eff (Flax_4a.1) PL

Pasture - Flat, 2.2 ha

N	8 kg/ha | 17 kg	P	0 kg/ha | 0 kg

BLOCK DETAILS

Area	2.2 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										

SOILS

100% FLAX_4A.1
2.2 ha Gley

PASTURE

Pasture growth	18,939 kg DM/ha/yr	Removed	0 kg DM/ha/yr
Utilisation	85 %	Dairy	29.04 rsu/ha
Intake	16,098 kg DM/ha/yr		

CROP MANAGEMENT

Block type	Pasture	Hydrophobic condition	Use default
Topography	Flat	Susceptibility to pugging	Occasional
Pasture type	Plantain	Is compacted	No
Cultivated in last 5 years	No	Naturally high water table	No
Animals present	Yes		

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
RSU/HA												
Dairy	0.13	1.63	2.7	3.42	3.55	3.92	3.68	2.63	2.75	2.4	2.23	-
FERTILISER APPLIED (KG/HA)												
N	-	-	40	30	24	22	22	11	18	22	-	-
P	-	-	36	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-	-
S	-	-	60	3	-	-	-	-	-	-	-	-

SOIL/IRRIGATION - RESULTS

			NITROGEN					PHOSPHORUS				
SOIL	IRRIGATOR	AREA	TOTAL LOST	LOST	DRAINAGE [1]	SURPLUS	ADDED [2]	TOTAL LOST	LOST	SOIL P LOSS RISK	FERT P LOSS RISK	EFF P LOSS RISK
Flax_4a.1	-	2.2 ha (100%)	17 kg	8 kg/ha	6.8 ppm	189 kg/ha	178 kg/ha	0 kg	0 kg/ha	Low	Low	N/A

1 - N concentration due to leaching in drainage water at the bottom of the root zone.

2 - N added as fertiliser, effluent and organic only

SOIL/IRRIGATION - OTHER VALUES

						TO 60CM				TO 150CM			
SOIL	IRRIGATOR	AREA	DRAINAGE	RUNOFF	AET	FIELD CAPACITY	WILTING POINT	SATURATION	PAW	FIELD CAPACITY	WILTING POINT	SATURATION	PAW
Flax_4a.1	-	2.2 ha (100%)	112 mm	0 mm	497 mm	249 mm	144 mm	300 mm	105 mm	-	-	-	-

MODEL NOTES

Overview

Olsen P (38) is above that required for near maximum pasture production (30). See a consultant about reducing fertiliser P inputs. Note that on high producing dairy farms, target Olsen P levels are higher.

The change in inorganic soil pool indicates that additional fertiliser nutrients may be required to maintain production for K

Estimated change in soil test values for samples taken to 7.5cm:

- No change in Olsen P test
- Decrease in QT K test of 1 units
- No change in QT Mg test

Soil is slowly acidifying and would be neutralised by a maintenance lime application of 190 kg/ha/yr pure lime. Review soil pH and lime requirement.

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	17	8
Phosphorus	0	0

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Effluent added	0	0	0	0	0	0	0
Fertiliser, lime and other	178	36	0	63	80	0	0
Irrigation	0	0	0	0	0	0	0
Supplements fed on blocks	45	4	39	3	8	3	2
Rain/clover fixation	133	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	8	0	29	66	54	1	11
As product	105	18	25	6	23	2	7
Transfer	62	5	52	3	10	3	2
Effluent exported	0	0	0	0	0	0	0
To atmosphere	70	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	111	13	0	-4	0	0	0
Inorganic mineral	0	4	-19	0	-1	-2	-2
Inorganic soil pool	0	0	-47	0	4	1	1

Plantings

Trees and scrub - 1.3 ha

N 3 kg/ha | 4 kg

P 0.1 kg/ha | 0 kg

BLOCK DETAILS

Area	1.3 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										
Bush type	Native										

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	4	3
Phosphorus	0	0.1

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Rain/clover fixation	3	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	3	0.1	2	4	2	4	16

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Inorganic mineral	0	0	0	0	0	0	0

Dairy

House - 3.1 ha

N 5 kg/ha | 16 kg

P 0.5 kg/ha | 2 kg

BLOCK DETAILS

Area	3.1 ha	Average temp	12.1 ℃	Average rainfall	609 mm/yr	Annual PET	923 mm/yr	Latitude	-43.6444	Longitude	172.4433
Distance from coast	30 km										
Number of people	2										
Sewage disposal method	Conventional septic tank										

NUTRIENT BUDGET

LOSSES FROM ROOT ZONE

	TOTAL LOSS (KG/YR)	LOSS PER HA (KG/YR)
Nitrogen	16	5
Phosphorus	2	0.5

NUTRIENTS ADDED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Sewage loading	4	1	1	1	1	0	5
Rain/clover fixation	50	0	2	4	2	4	16

NUTRIENTS REMOVED (KG/HA/YR)	N	P	K	S	CA	MG	NA
Leaching, runoff and direct losses	5	0.5	3	4	3	4	21
To atmosphere	1	0	0	0	0	0	0

CHANGE IN POOLS (KG/HA/YR)	N	P	K	S	CA	MG	NA
Organic pool	48	0	0	0	0	0	0
Inorganic mineral	0	0	0	0	0	0	0