

# Dairy Green Ltd

Practical Engineering Solutions  
Consents, Effluent, Stockwater  
Design through to Installation

26 MAY 2014

Extra information for  
Wainui Stevens Ltd  
application



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## **WAINUI STEVENS Ltd.**

### **An Analysis of the Impact of Irrigation on Farming Practice, the Consequential Effects on Nitrate Leaching, and Some Opportunities for Nutrient Management**

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### Report History

Version	Date	Author	Change Description
1.0	14/12/2011	Tony Rhodes	Initial draft to Dairy Green for comment
1.2	17/2/2012	Tony Rhodes	Minor changes following review by Dairy Green

## Introduction

Application has been made to Environment Southland by Wainui Stevens Ltd. to take up to 65 litres per second to a maximum of 520,000 m<sup>3</sup> of groundwater between July 1 and the following 30 June for the purpose of irrigation of up to 332 ha of pasture and crops for the grazing and milking of dairy cows.

Environment Southland has sought additional information to support the application<sup>1</sup>, specifically:

- A nutrient budget of the current farming operations (status quo); and
- A nutrient budget of farming operations under the proposed irrigation, and
- A nutrient management plan

Environment Southland has identified an area of elevated groundwater nitrate concentrations (Balfour nitrate hotspot) and is seeking detail on how the applicant intends to manage the effects of the proposed activity in a manner consistent with Environment Southlands resource management standards.

Dairy Green Ltd. has prepared further information in support of the application<sup>2</sup>, and has requested that an analysis of N-loss from the current and potential farm systems be undertaken.

## Current Farming System

The current farm system, policies and practice is described in the Dairy Green report<sup>2</sup>.

The notable difference between the Dairy Green report and this analysis is in the farmed area.

For the purpose of my analysis and assessment of nitrate leaching the area of land farmed is 424 ha, Table 1.

**Table 1. Land Area Farmed**

Block Name	Use/activity	Effective block area (ha)
Non-effluent area – Kaweku	Milking platform	107
Non-effluent area – Makarewa	Milking platform	72
Effluent area	Milking platform	65
Dry stock	Dry stock, supplements	90
Dry stock – summer crop	Forage, dry stock, supplement	40
Dry stock winter crop	Forage, dry stock, supplement	10
Lease	Dry stock, supplements	10
<b>Total grazed area</b>		<b>394</b>
Non-productive area		30
<b>Total farm area</b>		<b>424</b>

<sup>1</sup> W258-003, 3 August 2010, Jason Domigan, Environment Southland

<sup>2</sup> Wainui Stevens, Further Information re Nitrogen Hotspot, 19/10/2011

The non-productive area includes 8ha of wetland which is classified unfenced and accessible by cattle; with water flow most of the year, apart from drought; colonised by sedges and rushes; with a contributing catchment area of approximately 12 ha.

Livestock grazing are based on spring-calving 750 cows, Table 2.

**Table 2. Livestock Numbers and Class**

	Replacement Heifer calves	R2 Heifers	MA Milkers	Bull Calves	Carry-over cows
July			750		40
August			750		40
September			750		40
October	225		740	100	40
November	225		740	100	40
December	225		740		40
January	225		740		40
February	225		690		40
March	225		690		40
April	225		640		40
May		195	555		40
June		195	555		40

## Assumptions

The total land and farmed area are important input values for Overseer analysis. A further check on the accuracy of data assumptions would be provided by the legal title area.

In the analysis I have undertaken, I have included the total land area and all livestock farmed across this. Accordingly, dry stock replacement cattle, bull calves reared for sale in December at 100 kg live weight, and carry-over cows are included.

Equally, supplements imported onto the farm are detailed in the analysis, Table 3.

**Table 3. Status Quo - Supplement Imported onto the Farm**

Product	Usage	Quantity	Placement
Wheat grain	In-shed lactating cows	250 tonnes	In-shed
Straw	Wintering of cows	75	Paddock
Straw	Wintering 1 <sup>st</sup> calvers	25	Paddock
Straw	Lactating cows -Spring	30	Paddock
Molasses	Lactating cows -Spring	30	Paddock
Meal	Calf rearing	18	Paddock

However, supplements made on the farm, irrespective of the block they are harvested from, and where they are fed, are not separately detailed, as they represent no net importation of nutrients into the system. This includes 600 tonnes of silage fed to cows

through winter; 42 tonnes of balage fed to 1<sup>st</sup> calvers through winter; 250 tonnes of silage fed to lactating cows August-October; 150 tonnes of silage fed to lactating cows November – January; and 200 tonnes of silage fed mid-March – May.

Milksolids production used in this analysis is 282,000 kg, comprising 276,500 kg estimated sold to Fonterra plus 5,500 kg estimated as being fed to rear both heifer and bull calves.

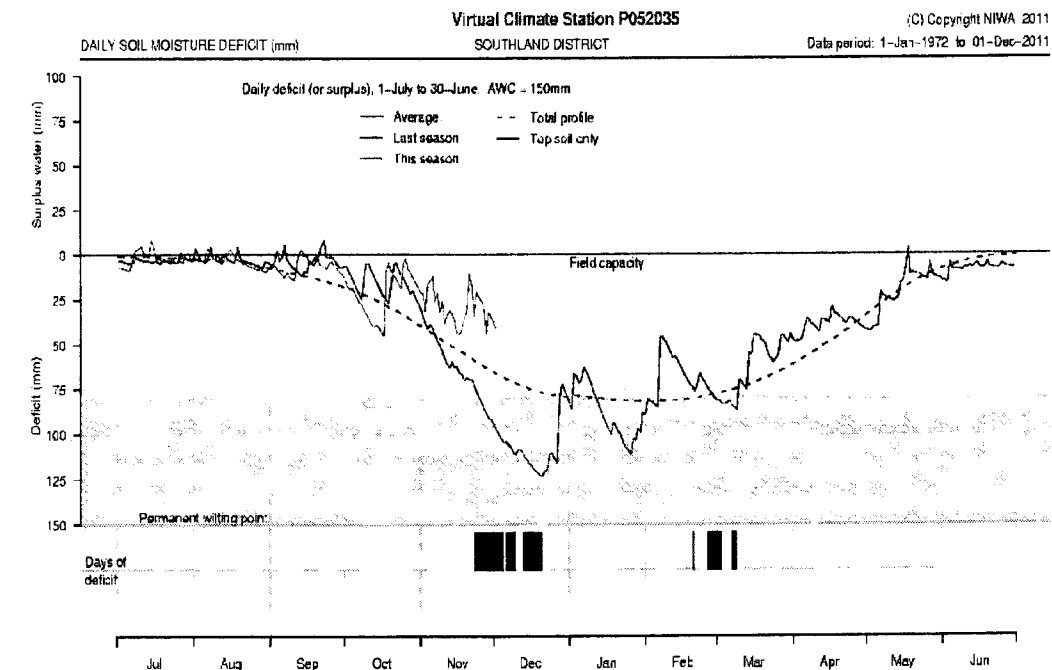
Forage cropping is typically undertaken on both the milking platform and the dry-stock or lease land and comprises 10 ha of summer turnips plus 10 ha of winter forage. In 2011/12 this was planted in Fodder Beet.

## Irrigation

The nature and scope, and the rationale of how irrigation is expected to benefit the business are detailed in the Dairy Green report<sup>2</sup>.

Data from the NIWA Virtual Climate data set provides an indication of the extent and level of soil moisture deficit for the farm, albeit in an average season<sup>3</sup>, Figure 1.

**Figure 1. Soil Moisture Deficit Estimates**



<sup>3</sup> NIWA – Agent no. 10619; Station P052035; <http://wrenz.niwa.co.nz/webmodel/>. Virtual site is approximately 500m East of Panini-Balfour Rd and 500m North of Cowrie Rd.

On average, there is low expectation of soil moisture deficit negatively impacting on pasture production, through January and February. So overall, the average total production benefit resulting from irrigation is not expected to be large, compared to irrigating in a routinely high soil moisture deficit environment.

However, “averaging” misses the strategic benefit that irrigation may be able to provide. This is illustrated by the 2001/11 soil moisture deficit profile; soil moisture deficit was significant through mid-November to late December; late January; and again for a short time late February – early March.

The benefit of irrigation that has been applied in this analysis includes:

- No overall increase in milksolids production from the farm
- Improvement in consistency of summer crop yield from a low of 7 tonnes/ha to 12 tonnes/ha of summer turnip through improved crop production from establishment
- Improvement in consistency of winter fodder beet crop yield from a low of 17 tonnes/ha to 30 tonnes/ha through improved crop production from establishment and through the summer
- Less feed imported (energy and nutrients) to make up the shortfall which occurs when crop yield and late summer-autumn pasture growth is reduced due to moisture deficit

An additional benefit, but one which cannot be quantified with Overseer, is the impact irrigation is expected to provide in reducing the loss of Nitrate from grazed pasture in the autumn when rainfall resulting in drainage follows a period of dry conditions. Irrigation will avoid an extended period of soil moisture deficit, so that pasture growth is able to utilise deposited urine and dung and minimise any build-up of soil nitrate, which would otherwise be at risk of leaching at the start of autumn.

However, there are also potentially negative risks with irrigation. Irrigation timing and application rate will need to be carefully monitored and managed to avoid creating situations when field capacity moisture levels are approached when irrigation and rainfall are combined. This will have implications for soil compaction, infiltration and drainage, and management of effluent, both application and storage.

Secondly, maintaining soils in a more consistently moist state risks disturbing the normal cyclical wetting/drying phase which contributes to soil development and soil structure. It is unclear how this, combined with high relative stocking rate, will affect soil compaction and soil infiltration rate on each of the soils comprising the farm over time. However, first principles indicate likely negative impact on soil compaction, infiltration rate and soil structure as well as pasture damage.

## Nitrate Leaching

Several scenarios that represent alternative strategies and practice have been considered, with emphasis in the impact on long-term average N-loss.

Overseer® (ver. 5.4.8.0) has been used to produce estimates of the long-term equilibrium nutrient profile of each of these scenarios.

Each scenario has been prepared considering the whole farm – milking platform and support areas, including the leased land.

The approach detailed across the following scenarios has been to establish the best estimate for the current (status quo non-irrigated) farming system and feeding practice.

Against this, various alternatives have been considered, initially with production limited to 282,000 kg milk solids; then impacts when production is increased to 310,000 kg milk solids; and finally if a production capacity of 325,000 kg milk solids was achieved.

Within each block of analysis, several incremental scenarios are detailed, simply to enable the reader to appreciate to consequence and nature of the impact of the production system on nitrogen inputs and leaching. Some of these scenarios will not function as a whole-farm system.

Within each scenario description, an indication of the nitrogen input into the system from the combination of applied nitrogen fertiliser plus imported feed is detailed. Obviously, nitrogen fixed by rhizobia and clover will be additional to this.

In addition to the tables describing each scenario, estimated nitrate leaching levels are illustrated in Figure 2.



### Impacts Under Current Production – 282,000 kg MS

Scenario	Description
1a	Status quo farm system with dryland crop yield and current levels of supplement importation
1b	Status quo farm system but with increased summer & winter forage crop yield with irrigation. Supplement importation is unchanged, consequently pasture consumption is assumed to reduce.
1c	Increased forage crop yield, and consequential reduction in quantity of imported supplements – wheat grain reduced from 250 to 110 tonnes.
1c.1	Increased forage crop yield, but with better nutritional balancing – 250 tonnes grain imported and 148 and less N-boosted silage made on farm – 148 tonnes less silage & 12.3 tonnes less nitrogen applied
1c.1B	As 1c.1, but with nitrification inhibitor applied
1c.2	Feeding winter crop and paddock winter grazing results in N-leaching hot spots. Elimination of on-paddock winter grazing of cows through provision of a wintering pad with any liquid effluent capture and storage and solids scrape and spread.  Maintain status quo N use for silage, import extra 60 tonnes straw and purchase 200 tonnes DM as whole crop silage.

Scenario	Overall farm N-leaching loss		MS Production kg	Farm average fertiliser+feed import kg N/ha
	N - kg/ha – all blocks average	N – total kg		
1a	21	8,716	282,000	127
1b	20	8,326	282,000	127
1c	20	8,576	282,000	122
1c.1	19	8,061	282,000	107
1c.1B	16	6,918	282,000	107
1c.2	16	6,894	282,000	123

Assuming that milksolids production is not increased above 282,000 kg, the impact of irrigation is that forage crop yield and new pasture establishment performance is more consistently achieved. A consequence of this is that in seasons which would otherwise result in feed stress, less feed would need to be imported onto the farm, or less nitrogen would need to be applied to achieve feed equivalence.

The opportunity to feed more balance ration to the herd, particularly through the spring, by feeding grain in conjunction with spring pasture, and the impact on mitigating nitrate leaching is illustrated in scenario 1c.1.

The possible impact of two mitigation strategies is explored in 1c.1B (nitrification inhibitor application) and 1c.2 (wintering all cows on a wintering pad). Both potentially offer

significant reduction on nitrate leaching potential, while the wintering pad offers co-benefits around more sustainable soil management, pasture damage and spring pasture production.

## Impacts Under Increased Production – 310,000 kg MS

The reality is that there will be some expectation of increased pasture production as a consequence of irrigation, albeit not in every season. Based on the NIWA data, 50% of the time the extent of summer soil moisture deficit is minimal. But the upshot will be an expectation of a higher level of farm production across most seasons, if not because of the benefit of irrigation, then at least because of summer rainfall conditions. The quantum of this increase in farm production is unclear – I am expecting some further data from AgResearch around irrigation in Southland, but as at 17<sup>th</sup> February 2012 this data is unavailable.

It is plausible to assume an increase in farm production from 282,000 kg MS to 310,000 kg MS. An increase of this level will require additional DM consumption of 336,000 kg DM/annum, which will all be additional pasture. This equates to an additional 1,377 kg DM eaten per hectare.

Additional pasture production will require additional nitrogen into the system, either through extra legume nitrogen fixation or as fertiliser. While this will be cycled within the system, there will be significant losses as a result of urination etc. which will necessitate additional nitrogen input. Secondly, there appears to be no improvement in nitrogen response efficiency as a result of irrigation in this environment. Consequently, I have estimated that an additional 15 tonnes of nitrogen per annum will be required to realise this level of additional pasture production and milk solids performance.

Scenario	Description
1c.1	Increased forage crop yield, but with better nutritional balancing – 250 tonnes grain imported and 148 and less N-boosted silage made on farm – 148 tonnes less silage & 12.3 tonnes less nitrogen applied
1c.1.1	10% extra MS production from more consistent summer soil moisture levels – no additional nitrogen input
1c.1.2	10% extra MS production from more consistent summer soil moisture levels but with an additional 15 tonnes of nitrogen input per annum to realise the additional pasture production and milk solids performance
1c.1.2B	10% extra MS production from more consistent summer soil moisture levels but with an additional 15 tonnes of nitrogen input per annum to realise the additional pasture production and milk solids performance.  Nitrification inhibitor applied.

Scenario	Overall farm N-leaching loss		MS Production kg	Farm average fertiliser+feed import kg N/ha
	N - kg/ha – all blocks average	N – total kg		
1c.1	19	8,061	282,000	107
1c.1.1	19	8,240	310,000	107
1c.1.2	22	9,210	310,000	142
1c.1.2B	19	7,925	310,000	154

With irrigation, increasing production to 310,000 kg milksolids will involve higher nitrogen application (scenario 1c.1.2). This system can be expected to result in a higher level of potential nitrate leaching (9,210 kg vs. 8,716 kg in the status quo system).

One option to mitigate this is application of nitrification inhibitor (1c.1.2B) which is estimated to reduce nitrate leaching potential to 7,925 kg.

Scenario	Description
1c.2	Feeding winter crop and paddock winter grazing results in N-leaching hot spots. Elimination of on-paddock winter grazing of cows through provision of a wintering pad with any liquid effluent capture and storage and solids scrape and spread.  Maintain status quo N use for silage, import extra 60 tonnes straw and purchase 200 tonnes DM as whole crop silage.
1c.2.1	10% extra MS production from more consistent summer soil moisture levels – no additional nitrogen input
1c.2.2	10% extra MS production from more consistent summer soil moisture levels but with an additional 15 tonnes of nitrogen input per annum to realise the additional pasture production and milk solids performance
1c.2.2B	10% extra MS production from more consistent summer soil moisture levels but with an additional 15 tonnes of nitrogen input per annum to realise the additional pasture production and milk solids performance.  Nitrification inhibitor applied.

Scenario	Overall farm N-leaching loss		MS Production kg	Farm average fertiliser+feed import kg N/ha
	N - kg/ha – all blocks average	N – total kg		
1c.2	16	6,894	282,000	123
1c.2.1	17	7,067	310,000	123
1c.2.2	19	8,130	310,000	160
1c.2.2B	16	6,714	310,000	171

Installing a wintering pad with production of 310,000 kg milksolids production is expected to result in less nitrate leaching potential than is likely occurring under the current system. When the additional nitrogen use under irrigation is factored in (1c.2.2), nitrate leaching is expected to be 7% lower than the status quo (8,130 vs. 8,716).

Utilizing nitrification inhibitor in conjunction with a winter feeding can be expected to further mitigate the risk of nitrate leaching (1c.2.2B), however the magnitude of this additional benefit is unlikely to be as large as indicated in this analysis.

## Impact of Higher Farm Production – 325,000 kg MS

Environment Southland's concerns around the Balfour nitrate hotspot are obviously influenced by the potential impact of further intensification of production.

To expand understanding around the sensitivity of nitrate leaching loss to even higher production levels, likely system outputs of nitrate at a production level of 325,000 kg MS has been explored.

Achieving this level of production is premised on the assumptions around the benefits of irrigation, input of the additional 15 tonnes of nitrogen per annum as noted in scenarios 1c.1.2 and 1c.2.2, plus an additional import of 180 tonnes DM of whole crop silage.

Importation of feed onto the farm is expected to be necessary to meet the feeding requirements for this level of production. While additional nitrogen input could be employed, this is not a realistic option as in scenario 1c.2.2 the proposed farm-average application rate of 160 kg N/ha would need to be significantly lifted.

A practical option, and one which will assist in mitigating, the level of farm nitrate loss is to import a lower protein-higher carbohydrate supplement such as maize or whole crop silage. In contrast, importing an equivalent quantity of pasture silage would result in unnecessarily high protein intake and excessive loss of nitrate through urine excretion.

Scenario	Description
1c.1	Increased forage crop yield, but with better nutritional balancing – 250 tonnes grain imported and 148 and less N-boosted silage made on farm – 148 tonnes less silage & 12.3 tonnes less nitrogen applied
1c.1.3	15% extra MS production (325,000 kg MS) from more consistent summer soil moisture levels, plus an additional 15 tonnes of nitrogen input per annum to realise the additional pasture production, plus an additional 180 tonnes of whole crop silage for feeding to the milking herd
1c.1.3A	As above, but imported feed is pasture silage rather than whole crop
1c.2	Feeding winter crop and paddock winter grazing results in N-leaching hot spots. Elimination of on-paddock winter grazing of cows through provision of a wintering pad with any liquid effluent capture and storage and solids scrape and spread.  Maintain status quo N use for silage, import extra 60 tonnes straw and purchase 200 tonnes DM as whole crop silage.
1c.2.3	15% extra MS production (325,000 kg MS) from more consistent summer soil moisture levels, plus an additional 15 tonnes of nitrogen input per annum to realise the additional pasture production, plus an additional 180 tonnes of whole crop silage for feeding to the milking herd.  Feeding winter crop and paddock winter grazing results in N-leaching hot spots. Elimination of on-paddock winter grazing of cows through provision of a wintering pad with any liquid effluent capture and storage and solids scrape and spread.

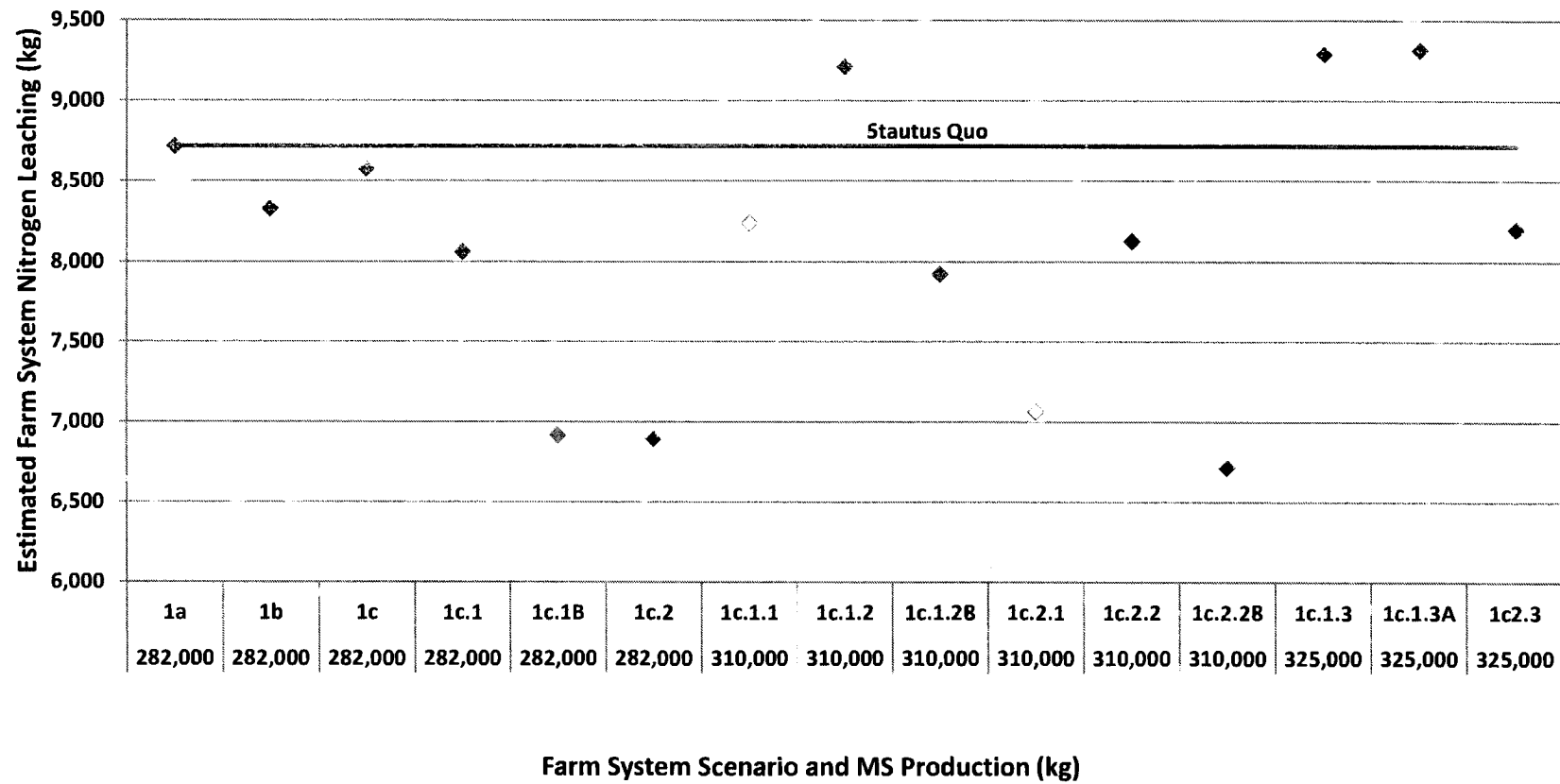
	Maintain status quo N use for silage, import extra 60 tonnes straw and purchase 200 tonnes DM as whole crop silage.
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Scenario	Overall farm N-leaching loss		MS Production kg	Farm average fertiliser+feed import kg N/ha
	N - kg/ha – all blocks average	N – total kg		
1c.1	19	8,061	282,000	159
1c.1.3	22	9,289	325,000	145
1c.1.3A	22	9,314	325,000	145
1c.2	16	6,894	282,000	187
1c.2.3	19	8,202	325,000	162

At a production level of 325,000 kg milksolids expected nitrate leaching potential will exceed the status quo level by around 7% (1c.1.3 & 1c.1.3A).

However, even at this level of production, with all cows fed on a wintering pad, nitrate leaching potential is expected to be around 9% lower than the status quo level (1c.2.3).

**Figure 2. Comparison of Whole Farm System Nitrate Leaching – Wainui Stevens (from Overseer® analysis)**



## **Concluding Comments**

The Overseer® analysis is based on the information provided and my understanding of the farm systems of the property.

Potentially there are other alternatives that could be explored and their impact assessed.

For example, one mitigation option that has not been assessed is the construction of wetlands to intercept and treat sub-surface drainage water. There is currently an 8ha wetland which is considered, in this analysis, to provide no remediation. However, it is conceivable that a level of remediation could be considered, and used to off-set other possible nitrate leaching risk. While the existing wetland is situated at a higher level of the farm, and would likely provide little remediation of sub-surface drainage water from this farm, if the catchment received sub-surface drainage water from neighbouring farms, it may be possible to gain off-set for this if the wetland were upgraded.



B & S Stevens  
 Wainui Farm  
 Pahiwi Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Irrigated crop yields &  
 140 t less grain imported

File: Stevens Whole Farm Budget ver.1c.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		740
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

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Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

## ENVIRONMENTAL FARM SYSTEM INFORMATION

This section sets out the information that Fonterra requires all farms to maintain during the course of the season. This information is used for a range of purposes within the business such as ensuring milk safety, forecasting milk production and measuring our environmental footprint.

For the purposes of completing these forms, the 'season' includes the period from 1 June 2012 through to 31 May 2013. This information needs to be provided to Fonterra prior to 30 June 2013. You can add to and save this PDF throughout the season. When all your information has been entered, please email your saved PDF to [nitrogen@fonterra.com](mailto:nitrogen@fonterra.com) or print the PDF and mail to Fonterra Co-operative Group Ltd, Environmental Farm System Information, PO Box 459, Hamilton 3204.

**When completing the forms you must ensure that all the relevant fields are completed.**

The required information is broken into five categories. Complete the table below to ascertain which information you need to collect and where you will keep these records.

### GENERAL INFORMATION

Preferred Fertiliser Supplier (tick one): ☒ Ballance/Altum ☐ Ravensdown ☐ Neither

	Section	When to complete	Where is the data recorded?	
			Dairy Diary (tick)	Other (Specify)
1	Herd Data	This section must be completed by all farms		Owners House
2	Nitrogen Inputs	Complete this section if you apply any of the following to the farm: <ul style="list-style-type: none"> <li>Any fertiliser that contains nitrogen</li> <li>Organic matter or compost</li> <li>Effluent from external sources</li> <li>DCDs such as eco-N from Ravensdown or DCn from Ballance</li> </ul>		Owners House
3	Supplementary Feeds and Fodder Crops	Complete this section if you use: <ul style="list-style-type: none"> <li>Feed that is sourced from a third party or grown offsite</li> <li>Fodder crops on the milking platform</li> <li>Other feeds that are grown on the milking platform</li> </ul>		Owners House
4	Feed pads, Stand-offs and Housing	Complete this section if you use any kind of feed pad, stand-off pad or animal housing system		N/A
5	Effluent and Irrigation	The effluent section must be completed by all farms. The irrigation section must be completed by all farms that use clean water irrigation	✓	

NITROGEN MANAGEMENT BLOCKS

Record the details of your farm blocks below for easy reference.

Block name	Description	Area (Ha)
Main pasture block		150
Effluent block		83
Fodder crop block		17
Stock excluded block	Swamp, lanes, buildings, houses.	26
Additional block 1	Calf rearing block	10
Additional block 2		
Additional block 3		
Total Farm Area		286

NOTES

Supplier Number:

32940

NOTES

Supplier Number:

32940

## HERD DATA

Record all details of the milking herd including grazing off data and other livestock that is kept on the property.

DAIRY HERD				
	Calving date (start)	Drying-off date	Number of cows calved	Predominant breed
Milking herd 1	08/08/12	25/05/13	755	Friesian
Milking herd 2				
Milking herd 3				
Milking herd 4				
Note: Only enter more than one herd when there is a split calving				
Once-a-day milking (tick one)	<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Only at drying-off	<input type="checkbox"/> Half of season	<input type="checkbox"/> All season
Replacements (tick)	<input type="checkbox"/> Off-farm from weaning	<input checked="" type="checkbox"/> Off-farm from 9 months	<input type="checkbox"/> Always on-farm	
Replacement rate	18 %			

### NOTES

Supplier Number:

32940

GRAZING OFF			
Number of cows	Date off-farm	Date returned	Where did they go?
<i>Number of cows removed</i>	<i>When did they leave the milking platform?</i>	<i>When did they return to the milking platform?</i>	<i>Where did the cows go during this time?</i>
<i>212 example</i>	<i>20 May 2012</i>	<i>1 August 2012</i>	<i>Off-site grazer</i>
755	30 May 2012	10 August 2012	Support Block

OTHER ANIMALS					
Species	Class	Number	Date on-farm	Date off-farm	Age
<i>e.g. Pigs, sheep, cattle</i>	<i>e.g. Bulls, hoggets</i>	<i>Number of animals of this breed and class</i>	<i>The date that animals arrived on the property</i>	<i>Date that the animals left the property</i>	<i>The age of the animals at arrival on-farm (months)</i>
<i>Sheep example</i>	<i>Hoggets</i>	<i>30</i>	<i>30 June 2012</i>	<i>1 August 2012</i>	<i>8</i>
N/A					

NOTES

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## NITROGEN INPUTS

This section is to record the use of all nitrogen inputs such as nitrogen fertiliser, imported effluent and compost along with the use of DCDs.

[illegible]



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This table is to record all other external sources of nitrogen being imported into the farming system. You should only use this table if you are using special fertiliser mixes, effluent from external sources, compost or other non-traditional fertilisers.

OTHER NITROGEN INPUTS						
	Product description	Amount applied	Nitrogen content	Block(s) applied to	Month applied	Records for verification?
	What is the product being applied?	Enter amount in tonnes or m <sup>3</sup>	What is the N content (%)?	Identify the nutrient management blocks that the fertiliser is applied to	Which month is the product applied?	Are records available to verify application and where are they kept?
e.g.	Dairy Wastewater	300	15	Main	January	Records kept at shed
1	N/A					
2						
3						
4						

This table is to record the use of the nitrification inhibitor dicyandiamide (DCD). This includes the application of the branded products eco-N from Ravensdown and DCn from Ballance Agri-Nutrients where they are used in accordance with the manufacturer's instructions.

DICYANDIAMIDE (DCD) USAGE														
Block applied to		Month applied											Records for verification?	
		June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr		
Which blocks received the treatment?		Tick the months when DCD was applied											Are records available and where are they kept?	
e.g.	Whole farm		✓									✓	Receipts in farm office	
1	N/A													
2														
3														
4														
5														
6														

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## SUPPLEMENTARY FEEDS AND FODDER CROPS

Start by recording the details of all supplementary feed on-hand at the start of the season, regardless of where it is from. During the season, record all fodder crops, grass silage, baleage and hay that is grown on the farm, along with all supplementary feed that is either purchased or grown offsite and imported onto the farm. Also record any feed that is left at the end of the season.

FEED AT START OF SEASON					
Supplement type		Either		As dry weight?	Notes
		No. of bales	Amount		
What type of feed is it? e.g. grass silage, PKE, straw, etc		Size and number of bales; or	Enter the total tonnage	Click over Y or N	
e.g.	Grass Silage		30	Y / <del>N</del>	
1	Grass Silage		200	Y / <del>N</del>	
2				Y / N	
3				Y / N	
4				Y / N	
5				Y / N	
6				Y / N	
7				Y / N	
8				Y / N	
10				Y / N	

### NOTES

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This table is to record the details of fodder crops that are grown on-farm. (Note that these need to be identified as separate blocks in the block set-up.)

FODDER CROPS					
	Example	Crop 1	Crop 2	Crop 3	Crop 4
Crop name	<i>Kale</i>	Turnips			
Area (ha)	<i>23</i>	17 ha	ha	ha	ha
Yield (tonnes DM/ha)	<i>11</i>	10 t/DM/ha	t/DM/ha	t/DM/ha	t/DM/ha
Cultivation method (tick)					
• Direct drill	✓				
• Minimum tillage					
• Conventional		✓			
Month of first cultivation	<i>November</i>	october			
Effluent applied to crop? (yes/no)	<i>No</i>	No			
Irrigation water applied to crop? (yes/no)	<i>No</i>	No			
Month resown	<i>August</i>	March			
Percent of crop eaten by:					
• Dairy cows	<i>100 %</i>	100%	%	%	%
• Dairy replacements			%	%	%
• Other stock			%	%	%
Fate of the crop (tick)					
• Grazed in paddock	✓	✓			
- Hours grazing/day	<i>3</i>	3 hrs/day	hrs/day	hrs/day	hrs/day
- Month first grazed	<i>June</i>	Jan			
- Month last grazed	<i>July</i>	March			
• Cut and carry		N/A			
- Where was it fed?					
• Exported off-farm		N/A			
• Carried over to next season		N/A			

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## SUPPLEMENTARY FEEDS AND FODDER CROPS (Continued)

Enter all supplementary feed inputs that are either obtained from a third party or grown on a support block and imported onto the farm.

PURCHASED AND IMPORTED FEED						
Supplement type		Supplement source	Either		As dry weight?	Where fed?
			No. of bales	Amount		
What type of feed is it? e.g. grass silage, PKE, barley, straw, etc		Where did the feed come from?	Enter the size and number of bales; or	Enter the total tonnage of feed	Click over Y or N	Where was the feed fed to the cows? e.g. in the paddock, shed feed pad, etc
e.g.	Maize silage	Purchased - FeedsRus Ltd.		100	Y / <del>X</del>	Paddock
1	Wheat	Purchased- Collins Farmin		194.46	<del>X</del> / N	In- Bail feed system
2	Molasses	Purchased - CRT		59.86	<del>X</del> / N	In- Bail feed system
3	Straw	Purchased- Collins Farmin		41.5	Y / <del>X</del>	in the paddock
4	Barley wholecrop silage	Grown support block		350	Y / <del>X</del>	in the paddock
5	Grass Silage	Grown support block		250	Y / <del>X</del>	in the paddock
6					Y / N	
7					Y / N	
8					Y / N	
9					Y / N	
10					Y / N	
11					Y / N	
12					Y / N	
13					Y / N	
14					Y / N	

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Enter all grass silage, baleage and hay that is grown on-farm over the course of the season.

FEED GROWN ON-FARM					
Supplement type		Either		As dry weight?	Notes
		No. of bales	Amount		
What type of feed is it? e.g. grass silage, baleage, etc		Size and number of bales; or	Enter the total tonnage of feed	Click over Y or N	
1	N/A			Y / N	
2				Y / N	
3				Y / N	
4				Y / N	
5				Y / N	
6				Y / N	
7				Y / N	

FEED AT END OF SEASON					
Supplement type		Either		As dry weight?	Notes
		No. of bales	Amount		
What type of feed is it? e.g. grass silage, baleage, etc		Size and number of bales; or	Enter the total tonnage of feed	Click over Y or N	
1	Grass Silage		200	Y / <del>N</del>	
2				Y / N	
3				Y / N	
4				Y / N	
5				Y / N	
6				Y / N	
7				Y / N	

Supplier Number:

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## FEED PADS, STAND-OFFS AND HOUSING

These forms are to be completed by all farms where feed pads, stand-off pads, loafing pads or cow housing is used. Please check the description at the top of each box to ensure you complete the correct form.

Feed pads: usually a hard surface near the dairy where stock is fed with supplementary feed.

FEED PADS												
Month	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
How many hours per day is the pad used?	N/A											
What percentage of the herd uses the pad?												
How is manure removed from the feed pad? (i.e. scraped or hosed)												
Over which blocks are the solids from the feed pad applied?												
For how long are the solids stored?												
Are the solids covered while they are being stored?												
Stored?												

Stand-off and loafing pads: specially built area with a base of sawdust, bark, peelings or soft rock for stock to be held during wet conditions.

STAND-OFF AND LOAFING PADS												
Month	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
How many hours per day is the pad used?	N/A											
What percentage of the herd uses the pad?												
What is the surface of the pad made of? (tick)	<input type="checkbox"/> Lime or rock mix				<input type="checkbox"/> Sawdust, peelings, etc				<input type="checkbox"/> Other			
Is liquid effluent collected from the pad?												
Over which blocks are the solids from the pad applied?												
For how long are the solids stored?												
Are the solids covered while they are being stored?												

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Wintering barns or pads: facilities for housing or holding animals for weeks or months at a time. Feed is brought to the animals.

WINTERING BARNs OR PADs												
Month	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
What percentage of the herd uses the facility each month?	N/A											
What is the surface of the pad made of? (tick)	<input type="checkbox"/> Lime or rock mix		<input type="checkbox"/> Sawdust, peelings etc		<input type="checkbox"/> Concrete		<input type="checkbox"/> Other					
Is limited grazing used (3-6 hours per day)?												
Is the facility covered?												
Is liquid effluent captured?												
Is the surface scraped regularly?												
Over which blocks are the solids from the pad applied?												
For how long are the solids stored?												
Are the solids covered while they are being stored?												

ADDITIONAL DESCRIPTION OR NOTES

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## EFFLUENT AND IRRIGATION

Record the details of the effluent disposal system on the farm and the use of clean water irrigation on the property.

EFFLUENT			
How do you dispose of effluent? (tick)	<input checked="" type="checkbox"/> Irrigated to pasture	<input type="checkbox"/> Discharge to water	<input type="checkbox"/> Both
If you have effluent pond(s), how do you manage the solids? Tick the option that applies or describe in the space provided.	<input checked="" type="checkbox"/> Applied to effluent block	<input type="checkbox"/> Applied to whole farm	<input type="checkbox"/> Exported off-site
Answer the following questions if you apply effluent to land:			
How many days of effluent storage does the system have?	90		
How do you decide when to irrigate effluent?	Soil Moisture Tapes		
Average depth of application? (tick)	<input checked="" type="checkbox"/> <12mm	<input type="checkbox"/> 12 – 24mm	<input type="checkbox"/> >24mm

Enter the details of irrigation on the farm. You can either enter the months that irrigation occurred and the total depth, or a monthly depth if you know it. If you do not know the depth of water applied, default values will be used for your region.

IRRIGATION																
Block applied	Month applied												Annual irrigation	Area	Irrigation method	
	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul				
Which blocks received irrigation?	Either put an X in the months when irrigation occurred and enter an annual depth, or enter monthly depths in mm													Ha	e.g. pivot, border, K-line	
Example 1: Whole farm			X	X	X	X	X	X	X					530	125	Centre to Centre
Example 2: Whole farm			30	50	100	120	120	70	60					-	125	Centre to Centre
N/A																

<sup>1</sup> Low rate pods, centre pivot injection or a travelling irrigator that is set-up well and on its fastest setting can achieve depths of less than 12mm.



## ADDITIONAL NOTES

	Mob 4
Class	Calves (male)
Breed	Friesian
Numbers July	
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	282000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
---------------------------------------	---	-----

Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 4
Catchment area	ha	12
Catchment convergence		Moderate convergence
Wetland type		Type B
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	110.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200

## Block Information

Parameter name	Units	Value
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type	MAKARAKA
Soil order (default)	Gley

## Block Information

Parameter name	Units	Value
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm

## Block Information

Parameter name	Units	Value
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500

## Block Information

Parameter name	Units	Value
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9



## Block Information

Parameter name	Units	Value
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

---

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate

## Block Information

Parameter name	Units	Value
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
----------------	-------	-------

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False

**Block Information**

Parameter name	Units	Value
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

**Fertiliser**

**December**

Soluble fertiliser (kg/ha/month)							
N	P	K	S	Ca	Mg	Na	
100	40	30	0	0	0	0	

**February**

Soluble fertiliser (kg/ha/month)							
N	P	K	S	Ca	Mg	Na	
100	0	0	0	0	0	0	

B & S Stevens  
 Wainui Farm  
 Pahiwi Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Dryland crop yield

File: Stevens Whole Farm Budget ver.1a.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		740
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	590
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

Class	Mob 4
Breed	Calves (male)
Numbers July	Friesian
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
------------------------	-------

#### Advanced dairy production

Milksolid yield	kg	282000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
---------------------------------------	---	-----

Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 4
Catchment area	ha	12
Catchment convergence		Moderate convergence
Wetland type		Type B
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	250.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200



## Block Information

Parameter name	Units	Value
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		MAKARAKA
Soil order (default)		Gley

## Block Information

Parameter name	Units	Value
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm

## Block Information

Parameter name	Units	Value
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500

## Block Information

Parameter name	Units	Value
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9

## Block Information

Parameter name	Units	Value
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate

## Block Information

Parameter name	Units	Value
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
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## Block Information

Parameter name	Units	Value
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Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	7
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
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Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	17
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False

**Block Information**

Parameter name	Units	Value
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

**Fertiliser**

**December**

**Soluble fertiliser (kg/ha/month)**

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

**February**

**Soluble fertiliser (kg/ha/month)**

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated crop yields, 50  
t grain imported, less N

File: Stevens Whole Farm Budget ver.1c.1.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4
Class	Calves (male)
Breed	Friesian
Numbers July	
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	282000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

## Block Information

Parameter name	Units	Value
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True

## Block Information

Parameter name	Units	Value
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

### Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

### Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

### Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

### Block Fertiliser

#### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications

## Block Information

Parameter name	Units	Value
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21



## Block Information

Parameter name	Units	Value
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800

## Block Information

Parameter name	Units	Value
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False

Block Information

Parameter name	Units	Value
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

Fertiliser

December

Soluble fertiliser (kg/ha/month)							
N	P	K	S	Ca	Mg	Na	
100	40	30	0	0	0	0	

February

Soluble fertiliser (kg/ha/month)							
N	P	K	S	Ca	Mg	Na	
100	0	0	0	0	0	0	

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 Wainui Farm  
 Pahiwi Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Irrigated crop yields, 50  
 t grain imported, less N + DCD

File: Stevens Whole Farm Budget ver.1c.1B.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4
Class	Calves (male)
Breed	Friesian
Numbers July	
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	282000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500



## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

## Block Information

Parameter name	Units	Value
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True

## Block Information

Parameter name	Units	Value
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications

## Block Information

Parameter name	Units	Value
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21

## Block Information

Parameter name	Units	Value
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800

## Block Information

Parameter name	Units	Value
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
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## Block Information

Parameter name	Units	Value
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Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
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Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False

Block Information

Parameter name	Units	Value
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

Fertiliser

December

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

February

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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 Wainui Farm  
 Pahiwi Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Irrigated crop yields

File: Stevens Whole Farm Budget ver.1b.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		740
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		540
Numbers May		195	590
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

Class	Mob 4
Breed	Calves (male)
Numbers July	Friesian
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milk solid yield	kg	282000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used  
Dairy Winter stand off or loafing pads option not used  
Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 4
Catchment area	ha	12
Catchment convergence		Moderate convergence
Wetland type		Type B
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	250.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200

## Block Information

Parameter name	Units	Value
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type	MAKARAKA
Soil order (default)	Gley

## Block Information

Parameter name	Units	Value
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm

## Block Information

Parameter name	Units	Value
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No irrigation applied

### Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

### Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

### Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

### Block Fertiliser

#### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500

**Block Information**

Parameter name	Units	Value
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

**Block Information**

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

**Climate**

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

**Animals and Pasture**

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

**Soil information**

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9



## Block Information

Parameter name	Units	Value
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate

## Block Information

Parameter name	Units	Value
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
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## Block Information

Parameter name	Units	Value
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Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
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Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False

## Block Information

Parameter name	Units	Value
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

## Fertiliser

### December

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### February

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated crop yields,  
310,000 kg MSss N

File: Stevens Whole Farm Budget ver.1c.1.1.ovp

## Parameter report

Parameter name	Units	Value	
Region		Southland	
No Fuel, electricity and other farm inputs			
No Farm capital (structure) inputs			
Block setup summary			
Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha	394	
Total farm area	ha	424	
Non-productive area	ha	30	
Relative productivity assessment method		No difference between blocks	
Make all block stock ratios same as farm stock ratios		False	

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4		
Class	Calves (male)		
Breed	Friesian		
Numbers July			
Numbers August			
Numbers September			
Numbers October	100		
Numbers November	100		
Numbers December			
Numbers January			
Numbers February			
Numbers March			
Numbers April			
Numbers May			
Numbers June			
Maximum weight (kg)	100		
Live weight start (kg)	80		
Live weight end (kg)	100		
Carcass weight (kg)	45		
Age start (months)	2		
Calves fed milk powder		False	
<b>Advanced dairy production</b>			
Milksolid yield	kg	310000	
Lactation length	days	Unknown	
Average weight	kg/animal	Unknown	
% replacements in milking herd		28	
Median calving date		25 August	
Drying off		24 May	
Effluent disposal system		Holding pond	
<b>Ponding system</b>			
Pond treatment methods		Seepage Walls	
Pond sludge disposal method		Spread over farm	
Solids disposal method		Spread over farm	
Once a day milking		Never	
<b>Grazing off options for milking cows animals</b>			
Percentage milking cows removed	%	100	
Month leaving farm beginning of		June	
Month returned end of		July	
Grazed out most of farm prior to removal of animals		True	
<b>Feed pad</b>			
% of milking season cows use feed pad	%	100	
Dairy wintering pad/animal shelter option not used			
Dairy Winter stand off or loafing pads option not used			
Advanced pasture and supplements options for Dairy not used			
<b>Animal health supplementation used by Dairy animals</b>			
No animal supplementation has been entered			

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500



## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

## Block Information

Parameter name	Units	Value
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True

## Block Information

Parameter name	Units	Value
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications

## Block Information

Parameter name	Units	Value
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21

## Block Information

Parameter name	Units	Value
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800

## Block Information

Parameter name	Units	Value
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
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## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False

Block Information

Parameter name	Units	Value
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

Fertiliser

December

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

February

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated crop yields,  
310,000 kg MS + extra 15 tonnes N +  
nitrification inhibitor

File: Stevens Whole Farm Budget ver.1c.1.2.B.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		

Age start (months)	2	23
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	Mob 4
Class	Calves (male)
Breed	Friesian

Numbers July	
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	310000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy

User defined      Calf Meal 16% P      18.0      False      Paddocks      dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
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## Block Information

Parameter name	Units	Value
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90

## Block Information

Parameter name	Units	Value
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Block Information

Parameter name	Units	Value
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		
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## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False



## Block Information

Parameter name	Units	Value
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

## Block Information

Parameter name	Units	Value
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500

## Block Information

Parameter name	Units	Value
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy

Block Information

Parameter name	Units	Value
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

Fertiliser

December

Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

February

Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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 Wainui Farm  
 Pahui Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Irrigated crop yields,  
 325,000 kg MS + extra 15 tonnes N

File: Stevens Whole Farm Budget ver.1c.1.2.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

Class	Mob 4
Breed	Calves (male)
Numbers July	Friesian
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	310000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500



## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect

## Block Information

Parameter name	Units	Value
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Block Information

Parameter name	Units	Value
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown

## Block Information

Parameter name	Units	Value
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850

## Block Information

Parameter name	Units	Value
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False

## Block Information

Parameter name	Units	Value
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True

## Block Information

Parameter name	Units	Value
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

## Fertiliser

### December

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### February

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0



B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated crop yields,  
325,000 kg MS + extra 15 tonnes N

File: Stevens Whole Farm Budget ver.1c.1.2.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4
Class	Calves (male)
Breed	Friesian
Numbers July	
Numbers August	
Numbers September	
Numbers October	100
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	310000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		28
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
Month leaving farm beginning of		June
Month returned end of		July
Grazed out most of farm prior to removal of animals		True

#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132

No N added in May, June and July

No soluble P applied in high risk months

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

-----

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect

## Block Information

Parameter name	Units	Value
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Block Information

Parameter name	Units	Value
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown



## Block Information

Parameter name	Units	Value
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

-----

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850

## Block Information

Parameter name	Units	Value
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False

## Block Information

Parameter name	Units	Value
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True

Block Information

Parameter name	Units	Value
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

Fertiliser

December

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

February

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated crop yields,  
325,000 kg MS + extra 15 tonnes N +  
180 tonnes pasture silage

File: Stevens Whole Farm Budget ver.1c.1.3A.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	90	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Dry stock Winter crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			750
Numbers August			750
Numbers September			750
Numbers October	225		750
Numbers November	225		740
Numbers December	225		740
Numbers January	225		740
Numbers February	225		690
Numbers March	225		690
Numbers April	225		640
Numbers May		195	555
Numbers June		195	555
Maximum weight (kg)	200		500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		

Age start (months)	2	23
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Mob 4

Class	Calves (male)
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Breed	Friesian
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Numbers July

Numbers August

Numbers September

Numbers October	100
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Numbers November	100
------------------	-----

Numbers December

Numbers January

Numbers February

Numbers March

Numbers April

Numbers May

Numbers June

Maximum weight (kg)	100
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Live weight start (kg)	80
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Live weight end (kg)	100
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Carcass weight (kg)	45
---------------------	----

Age start (months)	2
--------------------	---

Calves fed milk powder	False
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#### Advanced dairy production

Milksolid yield	kg	325000
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Lactation length	days	Unknown
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Average weight	kg/animal	Unknown
----------------	-----------	---------

% replacements in milking herd	28
--------------------------------	----

Median calving date	25 August
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Drying off	24 May
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Effluent disposal system	Holding pond
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#### Ponding system

Pond treatment methods	Seepage Walls
------------------------	---------------

Pond sludge disposal method	Spread over farm
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Solids disposal method	Spread over farm
------------------------	------------------

Once a day milking	Never
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#### Grazing off options for milking cows animals

Percentage milking cows removed	%	100
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Month leaving farm beginning of	June
---------------------------------	------

Month returned end of	July
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Grazed out most of farm prior to removal of animals	True
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#### Feed pad

% of milking season cows use feed pad	%	100
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Dairy wintering pad/animal shelter option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	35
Numbers March	35
Numbers April	20
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 1
Catchment area	ha	50
Catchment convergence		Moderate convergence
Wetland type		Type A
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	200.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy

User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen
Silages	Pasture good quality silage	180.0	False	Paddocks	dairy

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

## Fertiliser Calculator



## Block Information

Parameter name	Units	Value
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		False
<b>Receives pond sludge effluent</b>		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed

## Block Information

Parameter name	Units	Value
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat

## Block Information

Parameter name	Units	Value
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

**Block Information**

Parameter name	Units	Value
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

**Block Information**

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

**Animals and Pasture**

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

**Soil information**

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary

## Block Information

Parameter name	Units	Value
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Block Information

Parameter name	Units	Value
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications	
Lime material	Lime (good quality)

## Block Information

Parameter name	Units	Value
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ

Block Information

Parameter name	Units	Value
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

Fertiliser

December

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

February

Soluble fertiliser (kg/ha/month)						
N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated summer crop  
+ zero winter crop + wintering pad +  
310,000 kg MS

File: Stevens Whole Farm Budget ver.1c.2.1.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	100	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			710
Numbers August			710
Numbers September			710
Numbers October			700
Numbers November	225		700
Numbers December	225		700
Numbers January	225		700
Numbers February	225		650
Numbers March	225		650
Numbers April			600
Numbers May		195	550
Numbers June		195	515
Maximum weight (kg)	200	490	500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4	
Class	Calves (male)	
Breed	Friesian	
Numbers July		
Numbers August		
Numbers September		
Numbers October		
Numbers November	100	
Numbers December		
Numbers January		
Numbers February		
Numbers March		
Numbers April		
Numbers May		
Numbers June		
Maximum weight (kg)	100	
Live weight start (kg)	80	
Live weight end (kg)	100	
Carcass weight (kg)	45	
Age start (months)	2	
Calves fed milk powder		True
<b>Advanced dairy production</b>		
Milksolid yield	kg	310000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		Unknown
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond
<b>Ponding system</b>		
Pond treatment methods		Seepage Walls
Pond sludge disposal method		Spread over farm
Solids disposal method		Spread over farm
Once a day milking		Never
<b>Wintering pad / animal shelter for Dairy animals</b>		
Feeding regime		Wintering pad + grazing
% cows on wintering pad		100
Month on to wintering pad, beginning of		June
Month off wintering pad end of		July
Time grazing pasture (hrs)		1
Pad construction		
UnCovered pad		
Pad surface		Carbon rich (sawdust, bark, woodchips)
Lined or subsurface drainage captured		True
Surface scraped regularly		True
Liquid effluent management		
Added to farm dairy effluent		True
Solid effluent management		
Solid disposal method		Spread over farm
Storage method		Covered (from rain)

Time in storage

months

6

Dairy winter grazing off option not used

Dairy feed pad option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

**Animal health supplementation used by Dairy animals**

No animal supplementation has been entered

**Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	40
Numbers March	40
Numbers April	40
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

**Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

**Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 4
Catchment area	ha	30
Catchment convergence		Moderate convergence
Wetland type		Type B
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	110.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen
Straws	Wheat straw	60.0	False	Wintering pad	dairy
Silages	Triticale silage	200.0	False	Wintering pad	dairy

**Block Information**

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

**Climate**

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

**Animals and Pasture**

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

**Soil information**

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21

## Block Information

Parameter name	Units	Value
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

-----

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never

## Block Information

Parameter name	Units	Value
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100

No N added in May, June and July

No soluble P applied in high risk months

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	100
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover



## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False

## Block Information

Parameter name	Units	Value
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		
-----		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

-----

B & S Stevens  
 Wainui Farm  
 Pahiwi Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Irrigated summer crop  
 + zero winter crop + wintering pad +  
 310,000 kg MS

File: Stevens Whole Farm Budget ver.1c.2.1.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	100	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			710
Numbers August			710
Numbers September			710
Numbers October			700
Numbers November	225		700
Numbers December	225		700
Numbers January	225		700
Numbers February	225		650
Numbers March	225		650
Numbers April			600
Numbers May		195	550
Numbers June		195	515
Maximum weight (kg)	200	490	500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4
Class	Calves (male)
Breed	Friesian
Numbers July	
Numbers August	
Numbers September	
Numbers October	
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	True
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#### Advanced dairy production

Milksolid yield	kg	310000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		Unknown
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Wintering pad / animal shelter for Dairy animals

Feeding regime	Wintering pad + grazing
% cows on wintering pad	100
Month on to wintering pad, beginning of	June
Month off wintering pad end of	July
Time grazing pasture (hrs)	1
Pad construction	
UnCovered pad	
Pad surface	Carbon rich (sawdust, bark, woodchips)
Lined or subsurface drainage captured	True
Surface scraped regularly	True
Liquid effluent management	
Added to farm dairy effluent	True
Solid effluent management	
Solid disposal method	Spread over farm
Storage method	Covered (from rain)

Time in storage

months

6

Dairy winter grazing off option not used

Dairy feed pad option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### **Animal health supplementation used by Dairy animals**

No animal supplementation has been entered

#### **Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

Mob 1

Class Cows (non-breeding)

Breed Friesian

Numbers July 40

Numbers August 40

Numbers September 40

Numbers October 40

Numbers November 40

Numbers December 40

Numbers January 40

Numbers February 40

Numbers March 40

Numbers April 40

Numbers May 40

Numbers June 40

Maximum weight (kg) 500

Live weight start (kg) 450

Live weight end (kg) 450

Carcass weight (kg)

Age start (months) 36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

#### **Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

#### **Wetlands**

Wetland 1

Effective wetland area ha 8

Condition Class 4

Catchment area ha 30

Catchment convergence Moderate convergence

Wetland type Type B

Aquitard depth 0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	110.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen
Straws	Wheat straw	60.0	False	Wintering pad	dairy
Silages	Triticale silage	200.0	False	Wintering pad	dairy

**Block Information**

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

**Climate**

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

**Animals and Pasture**

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

**Soil information**

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21

## Block Information

Parameter name	Units	Value
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never

## Block Information

Parameter name	Units	Value
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		



## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		
<hr/>		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	100
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Block Information

Parameter name	Units	Value
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Block Information

Parameter name	Units	Value
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	90
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary

## Block Information

Parameter name	Units	Value
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Block Information

Parameter name	Units	Value
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	140
Muriate of potash	Ballance other	75
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications	
Lime material	Lime (good quality)

## Block Information

Parameter name	Units	Value
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

## Block Information

Parameter name	Units	Value
Block name		Dry stock Winter crop
Area	ha	10
Fodder crop		Swedes
Crop yield	T/ha dry weight	30
Fate of crop		Grazed in situ

## Block Information

Parameter name	Units	Value
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		June
Month last removed		August
Month resown in pasture		September

### Fertiliser

#### December

##### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

#### February

##### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

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B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated summer crop  
+ zero winter crop + wintering pad +  
310,000 kg MS + extra 15 tonnes N

File: Stevens Whole Farm Budget ver.1c.2.2.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		
<b>Block setup summary</b>		
<b>Block name</b>	<b>Block type</b>	<b>Effective area (ha)</b>
Non-effluent area- Kaweku	Pastoral	107
Non-effluent area-Makarewa	Pastoral	72
Effluent area	Pastoral	65
Dry stock	Pastoral	100
Lease	Pastoral	40
Dry stock Summer crop	Fodder Crop	10
Total farm area declared as blocks	ha	394
Total farm area	ha	424
Non-productive area	ha	30
Relative productivity assessment method		No difference between blocks
Make all block stock ratios same as farm stock ratios		False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			710
Numbers August			710
Numbers September			710
Numbers October			700
Numbers November	225		700
Numbers December	225		700
Numbers January	225		700
Numbers February	225		650
Numbers March	225		650
Numbers April			600
Numbers May		195	550
Numbers June		195	515
Maximum weight (kg)	200	490	500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4		
Class	Calves (male)		
Breed	Friesian		
Numbers July			
Numbers August			
Numbers September			
Numbers October			
Numbers November	100		
Numbers December			
Numbers January			
Numbers February			
Numbers March			
Numbers April			
Numbers May			
Numbers June			
Maximum weight (kg)	100		
Live weight start (kg)	80		
Live weight end (kg)	100		
Carcass weight (kg)	45		
Age start (months)	2		
Calves fed milk powder		True	
<b>Advanced dairy production</b>			
Milksolid yield	kg	310000	
Lactation length	days	Unknown	
Average weight	kg/animal	Unknown	
% replacements in milking herd		Unknown	
Median calving date		25 August	
Drying off		24 May	
Effluent disposal system		Holding pond	
<b>Ponding system</b>			
Pond treatment methods		Seepage Walls	
Pond sludge disposal method		Spread over farm	
Solids disposal method		Spread over farm	
Once a day milking		Never	
<b>Wintering pad / animal shelter for Dairy animals</b>			
Feeding regime		Wintering pad + grazing	
% cows on wintering pad		100	
Month on to wintering pad, beginning of		June	
Month off wintering pad end of		July	
Time grazing pasture (hrs)		1	
Pad construction			
UnCovered pad			
Pad surface		Carbon rich (sawdust, bark, woodchips)	
Lined or subsurface drainage captured		True	
Surface scraped regularly		True	
Liquid effluent management			
Added to farm dairy effluent		True	
Solid effluent management			
Solid disposal method		Spread over farm	
Storage method		Covered (from rain)	

Dairy winter grazing off option not used

Dairy feed pad option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### Animal health supplementation used by Dairy animals

No animal supplementation has been entered

#### Stock Information: Sheep, beef and deer

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	40
Numbers March	40
Numbers April	40
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

#### Animal health supplementation used by Non-dairy animals

No animal supplementation has been entered

DCD is not applied

#### Wetlands

Wetland 1

Effective wetland area	ha	8
Condition		Class 4
Catchment area	ha	30
Catchment convergence		Moderate convergence
Wetland type		Type B
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	110.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen
Straws	Wheat straw	60.0	False	Wintering pad	dairy
Silages	Triticale silage	200.0	False	Wintering pad	dairy

**Block Information**

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21

## Block Information

Parameter name	Units	Value
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132

No N added in May, June and July

No soluble P applied in high risk months

## Lime / dolomite Application

Annual lime applications

Lime material Lime (good quality)

Rate kg/ha/yr 500

Fertiliser P applied within 3 weeks of border dyke irrigation False

No supplements removed from the block

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate

## Block Information

Parameter name	Units	Value
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	100
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover



## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

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## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect

## Block Information

Parameter name	Units	Value
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

### Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

### Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

### Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

### Block Fertiliser

#### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		

## Block Information

Parameter name	Units	Value
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

B & S Stevens  
 Wainui Farm  
 Pahiwi Road  
 RD 6  
 Gore

Tony Rhodes  
 PGG Wrightson Consulting

Client Reference: Irrigated summer crop  
 + zero winter crop + wintering pad +  
 310,000 kg MS + extra 15 tonnes N

File: Stevens Whole Farm Budget ver.1c.2.2.ovp

## Parameter report

Parameter name	Units	Value
Region		Southland
No Fuel, electricity and other farm inputs		
No Farm capital (structure) inputs		

### Block setup summary

Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	100	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			710
Numbers August			710
Numbers September			710
Numbers October			700
Numbers November	225		700
Numbers December	225		700
Numbers January	225		700
Numbers February	225		650
Numbers March	225		650
Numbers April			600
Numbers May		195	550
Numbers June		195	515
Maximum weight (kg)	200	490	500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4		
Class	Calves (male)		
Breed	Friesian		
Numbers July			
Numbers August			
Numbers September			
Numbers October			
Numbers November	100		
Numbers December			
Numbers January			
Numbers February			
Numbers March			
Numbers April			
Numbers May			
Numbers June			
Maximum weight (kg)	100		
Live weight start (kg)	80		
Live weight end (kg)	100		
Carcass weight (kg)	45		
Age start (months)	2		
Calves fed milk powder		True	
<b>Advanced dairy production</b>			
Milksolid yield	kg	310000	
Lactation length	days	Unknown	
Average weight	kg/animal	Unknown	
% replacements in milking herd		Unknown	
Median calving date		25 August	
Drying off		24 May	
Effluent disposal system		Holding pond	
<b>Ponding system</b>			
Pond treatment methods		Seepage Walls	
Pond sludge disposal method		Spread over farm	
Solids disposal method		Spread over farm	
Once a day milking		Never	
<b>Wintering pad / animal shelter for Dairy animals</b>			
Feeding regime		Wintering pad + grazing	
% cows on wintering pad		100	
Month on to wintering pad, beginning of		June	
Month off wintering pad end of		July	
Time grazing pasture (hrs)		1	
Pad construction			
UnCovered pad			
Pad surface		Carbon rich (sawdust, bark, woodchips)	
Lined or subsurface drainage captured		True	
Surface scraped regularly		True	
Liquid effluent management			
Added to farm dairy effluent		True	
Solid effluent management			
Solid disposal method		Spread over farm	
Storage method		Covered (from rain)	

Time in storage

months

6

Dairy winter grazing off option not used

Dairy feed pad option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### **Animal health supplementation used by Dairy animals**

No animal supplementation has been entered

#### **Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

	Mob 1
Class	Cows (non-breeding)
Breed	Friesian
Numbers July	40
Numbers August	40
Numbers September	40
Numbers October	40
Numbers November	40
Numbers December	40
Numbers January	40
Numbers February	40
Numbers March	40
Numbers April	40
Numbers May	40
Numbers June	40
Maximum weight (kg)	500
Live weight start (kg)	450
Live weight end (kg)	450
Carcass weight (kg)	
Age start (months)	36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

#### **Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

#### **Wetlands**

Wetland 1

Effective wetland area	ha	8
Condition		Class 4
Catchment area	ha	30
Catchment convergence		Moderate convergence
Wetland type		Type B
Aquitard depth		0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	110.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen
Straws	Wheat straw	60.0	False	Wintering pad	dairy
Silages	Triticale silage	200.0	False	Wintering pad	dairy

**Block Information**

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

**Climate**

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

**Animals and Pasture**

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

**Soil information**

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21

## Block Information

Parameter name	Units	Value
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

-----

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate



## Block Information

Parameter name	Units	Value
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known
<b>Block Fertiliser</b>		
<b>Fertiliser Calculator</b>		
Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	100
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		
<b>Climate</b>		
Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40
<b>Animals and Pasture</b>		
Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect

## Block Information

Parameter name	Units	Value
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		

## Block Information

Parameter name	Units	Value
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

### Fertiliser

#### November

##### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

#### January

##### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0

B & S Stevens  
Wainui Farm  
Pahiwi Road  
RD 6  
Gore

Tony Rhodes  
PGG Wrightson Consulting

Client Reference: Irrigated summer crop  
+ zero winter crop + wintering pad +  
310,000 kg MS + extra 15 tonnes N +  
DCD

File: Stevens Whole Farm Budget ver.1c.2.2B.ovp

## Parameter report

Parameter name	Units	Value	
Region		Southland	
No Fuel, electricity and other farm inputs			
No Farm capital (structure) inputs			
Block setup summary			
Block name	Block type	Effective area (ha)	Relative productivity
Non-effluent area- Kaweku	Pastoral	107	1
Non-effluent area-Makarewa	Pastoral	72	1
Effluent area	Pastoral	65	1
Dry stock	Pastoral	100	1
Lease	Pastoral	40	1
Dry stock Summer crop	Fodder Crop	10	0
Total farm area declared as blocks	ha		394
Total farm area	ha		424
Non-productive area	ha		30
Relative productivity assessment method			No difference between blocks
Make all block stock ratios same as farm stock ratios			False

### Stock Information: Dairy animals

Monthly stock reconciliation

Dairy:

	Mob 1	Mob 2	Mob 3
Class	Calves (female)	R2 Heifers pre-calving	Milking herd 1
Breed	Friesian	Friesian	Friesian
Numbers July			710
Numbers August			710
Numbers September			710
Numbers October			700
Numbers November	225		700
Numbers December	225		700
Numbers January	225		700
Numbers February	225		650
Numbers March	225		650
Numbers April			600
Numbers May		195	550
Numbers June		195	515
Maximum weight (kg)	200	490	500
Live weight start (kg)	75	470	
Live weight end (kg)	200	490	
Carcass weight (kg)	90		
Age start (months)	2	23	

	Mob 4
Class	Calves (male)
Breed	Friesian
Numbers July	
Numbers August	
Numbers September	
Numbers October	
Numbers November	100
Numbers December	
Numbers January	
Numbers February	
Numbers March	
Numbers April	
Numbers May	
Numbers June	
Maximum weight (kg)	100
Live weight start (kg)	80
Live weight end (kg)	100
Carcass weight (kg)	45
Age start (months)	2

Calves fed milk powder	True
------------------------	------

#### Advanced dairy production

Milksolid yield	kg	310000
Lactation length	days	Unknown
Average weight	kg/animal	Unknown
% replacements in milking herd		Unknown
Median calving date		25 August
Drying off		24 May
Effluent disposal system		Holding pond

#### Ponding system

Pond treatment methods	Seepage Walls
Pond sludge disposal method	Spread over farm
Solids disposal method	Spread over farm
Once a day milking	Never

#### Wintering pad / animal shelter for Dairy animals

Feeding regime	Wintering pad + grazing
% cows on wintering pad	100
Month on to wintering pad, beginning of	June
Month off wintering pad end of	July
Time grazing pasture (hrs)	1
Pad construction	
UnCovered pad	
Pad surface	Carbon rich (sawdust, bark, woodchips)
Lined or subsurface drainage captured	True
Surface scraped regularly	True
Liquid effluent management	
Added to farm dairy effluent	True
Solid effluent management	
Solid disposal method	Spread over farm
Storage method	Covered (from rain)



Time in storage

months

6

Dairy winter grazing off option not used

Dairy feed pad option not used

Dairy Winter stand off or loafing pads option not used

Advanced pasture and supplements options for Dairy not used

#### **Animal health supplementation used by Dairy animals**

No animal supplementation has been entered

#### **Stock Information: Sheep, beef and deer**

Monthly stock reconciliation

Beef:

Mob 1

Class Cows (non-breeding)

Breed Friesian

Numbers July 40

Numbers August 40

Numbers September 40

Numbers October 40

Numbers November 40

Numbers December 40

Numbers January 40

Numbers February 40

Numbers March 40

Numbers April 40

Numbers May 40

Numbers June 40

Maximum weight (kg) 500

Live weight start (kg) 450

Live weight end (kg) 450

Carcass weight (kg)

Age start (months) 36

Grazing off options for beef animals not used

Wintering off/animal shelter options for beef animals not used

Advanced pasture supplement feeding options for beef not used

#### **Animal health supplementation used by Non-dairy animals**

No animal supplementation has been entered

DCD is not applied

#### **Wetlands**

Wetland 1

Effective wetland area ha 8

Condition Class 4

Catchment area ha 30

Catchment convergence Moderate convergence

Wetland type Type B

Aquitard depth 0 -1 m

**Supplements Added**

Category	Type	Amount (T)	Amount on a dry weight basis	Destination	Animal type or block
Grains/Pulses	Wheat grain	110.0	False	Paddocks	dairy
Straws	Wheat straw	130.0	True	Paddocks	dairy
Process byproducts	Molasses	30.0	False	Paddocks	dairy
User defined	Calf Meal 16% P	18.0	False	Paddocks	dairy replacemen
Straws	Wheat straw	60.0	False	Wintering pad	dairy
Silages	Triticale silage	200.0	False	Wintering pad	dairy

**Block Information**

Parameter name	Units	Value
Block name		Non-effluent area- Kaweku
Area	ha	107
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

**Climate**

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

**Animals and Pasture**

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

**Soil information**

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21

## Block Information

Parameter name	Units	Value
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	132

No N added in May, June and July

No soluble P applied in high risk months

## Lime / dolomite Application

Annual lime applications

Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Non-effluent area-Makarewa
Area	ha	72
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate

## Block Information

Parameter name	Units	Value
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		MAKARAKA
Soil order (default)		Gley
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		4
QT Ca		10
QT Mg		21
QT Na		6
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.9
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
N-rich Urea	Ballance other	132
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Effluent area
Area	ha	65
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Spray effluent		True
Effluent application depth		< 12 mm
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	100
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		30
QT K		5.5
QT Ca		10.5
QT Mg		15.5
QT Na		6
Organic S		31.7
QT SO4	mg/kg	28
TBK reserve K test		.8
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500

## Block Information

Parameter name	Units	Value
N-rich Urea	Ballance other	130
N-rich Ammo	Ballance other	130
No N added in May, June and July		
No soluble P applied in high risk months		

## Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock
Area	ha	100
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Block Information

Parameter name	Units	Value
<b>Soil information</b>		
Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Stony
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		18.1
QT SO4	mg/kg	16
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
N-rich Urea	Ballance other	100
No N added in May, June and July		
No soluble P applied in high risk months		

### Lime / dolomite Application

Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Lease
Area	ha	40
Block type		Pastoral
Topography		Flat
Distance from coast	km	90
Profile drainage class		Imperfect

## Block Information

Parameter name	Units	Value
Poorly drained		False
Mole/tile drained		True
Receives no liquid or solid effluents		
No irrigation applied		

## Climate

Mean annual rainfall	mm	850
Mean annual temperature	°C	11
Seasonal variation in rainfall		Low
Annual potential evapotranspiration (PET)		651-800
Seasonal variation in PET		Moderate
Hydrophobic condition		Never
Latitude South	°	46.2
Altitude	m	40

## Animals and Pasture

Dairy milking herd	%	30
Dairy replacements	%	60
Beef	%	10
Finishing		False
Dairy or beef animals have direct access to streams		False
Development status (organic nutrients)		Developed
Pasture type		Ryegrass / white clover

## Soil information

Soil type		KAWEKU
Soil order (default)		Ultic
Soil group (default)		Sedimentary
Sand parent material		False
Soil texture		Unknown
Soil profile		Deep
Olsen P		21
QT K		5
QT Ca		9
QT Mg		14
QT Na		5
Organic S		11.3
QT SO4	mg/kg	10
TBK reserve K test		.6
Anion storage capacity or PR		Not known

## Block Fertiliser

### Fertiliser Calculator

Fertiliser name	Category	Amount (kg/ha/yr)
Superten	Ballance super	500
N-rich Urea	Ballance other	200
N-rich Ammo	Ballance other	100
Muriate of potash	Ballance other	75
No N added in May, June and July		



## Block Information

Parameter name	Units	Value
No soluble P applied in high risk months		
<b>Lime / dolomite Application</b>		
Annual lime applications		
Lime material		Lime (good quality)
Rate	kg/ha/yr	500
Fertiliser P applied within 3 weeks of border dyke irrigation		False
No supplements removed from the block		

## Block Information

Parameter name	Units	Value
Block name		Dry stock Summer crop
Area	ha	10
Fodder crop		Turnips Barkant
Crop yield	T/ha dry weight	12
Fate of crop		Grazed in situ
Stock types grazing pasture prior to cultivation		Non-dairy
Crop eaten by Dairy		True
Crop eaten by Sheep		False
Crop eaten by Beef		False
Crop eaten by Deer		False
Month first cultivated		November
Cultivation method		Conventional
Cultivated pasture browntop/unimproved		False
Month first removed		January
Month last removed		February
Month resown in pasture		March

## Fertiliser

### November

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	40	30	0	0	0	0

### January

#### Soluble fertiliser (kg/ha/month)

N	P	K	S	Ca	Mg	Na
100	0	0	0	0	0	0



## **Wainui Stevens Ltd**

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## **A: Purpose**

1. The purpose of this document is to supply supporting data, information and background to assist in support of Wainui Stevens Limited (WSL) irrigation consent application, and to assist in response to the issues raised by Mr Hughes of Liquid Earth Ltd in his review of the application, on behalf of Environment Southland.
2. In discussion with several Environment Southland staff there have been a number of other details and data that were described as being relevant and we have included these in this paper.
3. Application to ES has been made to take up to 65 litres per second (5,616 m<sup>3</sup>/day) to a maximum of 520,000 m<sup>3</sup> of groundwater between July 1 and the following 30 June in any year from existing well; E44/0441, for the purpose of irrigation of up to 332 ha of pasture and crops for the grazing and milking of dairy cows.

### **a. Balfour Nitrogen Hotspot**

4. Environment Southland commissioned SKM to undertake an investigation into elevated nitrate concentrations in groundwater to the west of the WSL property. Groundwater quality monitoring between 2003 and 2007 found consistently elevated nitrate-nitrogen concentrations on bores situated on the Falcon Farm dairy units. Snapshot sampling undertaken by SKM in May 2007 indicated that the nitrate hotspot extended to at least as far as the Cowie Road/Pahiwi Balfour Road corner. WSL can confirm that groundwater sampling from the production bore found elevated nitrate-nitrogen concentrations of 12 mg/L.
5. The nitrate concentration in groundwater exceeds the New Zealand Drinking Water Quality Guideline of 11.3 mg/L. We note the purpose of the groundwater abstraction is for irrigation of pasture and crops and not for human or animal consumption.
6. The environment risks associated with irrigation of the water are linked to potential increased nutrient leaching through the soil to groundwater or via overland flow to surface water. To limit these potential effects, WSL has Aquaflex soil moisture monitoring tapes to guide the timing of irrigation and will enforce 20 metre zones from surface water bodies. These mitigation measures will ensure the irrigated water is available for plant uptake rather than lost through the soil profile.
7. The WSL directors who operate the farm are very aware of the hotspot problem and its attendant issues, and have both been members of the local Environment Southland coordinated nitrogen hotspot consultation group, since its inception about five years ago.

## **B: Farm Background**

### **a. Conversion**

8. The Wainui Stevens Limited (WSL) property was converted in 2008/2009 from a sheep, beef and deer farm to a dairy farm.
9. The farm has a centrally located 54 bail rotary cowshed, concreted cow-yards and cow handling areas and around 6.5 km of formed cow-lanes.
10. All cowshed and cow yards are installed with effluent gravity feeding to sludge beds. The filtered effluent, having passed through a weeping wall, is transported via float switch controlled submersible pump to a 90 day (3,700m<sup>3</sup>) membrane lined storage pond. In late 2013 the pond bank height was increased by 1.2m to increase the storage capacity to 5,780m<sup>3</sup>, to store effluents from the proposed wintering shed.
11. The stored effluent is pumped via a buried field main to K/Line irrigation pod sets.
12. The pumping system has the pulsed irrigation capability. This allows application rates of below 1mm per hour.
13. All waterways, ditches and streams on the dairy farm are fenced.
14. The farm is operated in two blocks
  - a. The milking platform of 244ha from which the cows are milked from, and includes the summer crops.
  - b. The 140ha support block is utilized as the young stock replacement rearing block, the raising of 50 bull calves, growing of silage for use on the milk platform, and provision of the winter grazing including the growing of the winter crops.
  - c. The use of this block will change in 2014/15 as a wintering shed will be built (it was scheduled for commissioning in May 2014 but has been postponed due to weather delays).
15. The farm occupies two terraces. The lower terrace is a flood plain created by the Waimea stream. The upper terrace is farmed on gravels covered with a layer of windblown silts. It is approximately 8-10m higher than the flood plain. The upper terrace is bisected by 1 major and 2 minor gullies that provide surface drainage channels from the upper terrace, across the Waimea flood plain, and discharging into the Waimea stream.
16. From a farming viewpoint the flood plain and upper terrace are relatively flat.

17. The current pastures are largely longer rotation rye grass and clover and appear in good heart, although a regressing plan with medium rotation grasses is currently being completed

#### b. Soils

18. The attributes of the principal soils types in terms of water holding capacity needed to be understood to not only ensure they were appropriate for irrigation but to allow the necessary calculations to be completed in terms of volumes that would need to be applied to ensure maximum benefit whilst insuring the water (and money) was not wasted in water being applied beyond the soils ability to hold it in the root zone.
19. Two soils reports have been commissioned, one by Mr Bill Risk the other by Mr John Scandrett.
20. The irrigable area by primary soils types are approximately as follows:

Type	Area - ha	% of irrigable area
Waikoikoi	158	41.8
Crookston & derivates	53	13.8
Makarewa	115	30.7
Others	52	13.7

21. The field survey revealed that the boundaries as shown on the soils maps are considerably less defined than tabulated on the soil maps, with considerable areas of intergrades, and in places little visible distinction between some listed types (especially the Crookston and Waikoikoi types).

#### Waikoikoi and Crookston Soils

##### Soils Description

22. These soils were created by the deposition of loess on tertiary sediments, i.e. gravels. Typically Waikoikoi soils have silty textures and are poorly drained and have a dense fragipan at approximately 50 cm which is sufficient to restrict drainage.
23. Crookston soils also have silt textures but may have a somewhat compact subsoil which results in slowly permeable drainage.
24. Inspection of the terrace that these soils occur on showed the soil boundaries are not distinct and that there are inter-grades between the two types. The parent material for both soil types is the same, i.e. windblown silt and the depth of the profile is also similar. It appears the nature and physical properties of the underlying gravels have had the largest influence on the soil structure development and subsequent physical soil properties.

25. For both profiles, the topsoil is typically 200-220 mm deep overlying a distinct yellow subsoil. The transition layer, which occurs in some soils, i.e. AB horizon, is largely absent. The topsoil showed some signs of compaction to a depth of 5 cm which would be a grazing effect from dairy stock. The topsoil had a strong presence of pasture roots and these continued vertically down the profile to either gravels or, in the case of Waikoikoi soil types, a fragipan. The subsoil showed varying degrees of mottling for both soil types and in localized hollows the mottling was quite severe. In fact concretions of iron and manganese had formed. The depth of both profiles varied from 400-600 mm so from an irrigation design point of view the water holding capacity to 400 mm should be the design parameter used.

#### Water Holding Capacity

26. Well-structured silt loam topsoils to a depth of 220 mm can be expected to hold 40 mm plant available water. Subsoils 200 mm in depth are likely to hold 30 mm plant available water, therefore the total plant available water holding capacity is 70 mm. Therefore irrigation responses are likely after 14-20 days of no rain and moderate to high evapotranspiration.

#### Makarewa Soils

27. Makarewa soils are formed primarily from alluvial silts. The predominant parent material is greywacke. During their development they were frequently subject to a high water table.

28. The alluvial nature of the flats on this property was evident with the layering of soil and gravels as could be seen in ditch bank profiles. The topsoil typically ranges from 200 mm to 300 mm deep and overlies subsoil that varies from 400-700 mm deep overlying gravel. Mottling and iron and manganese concretions were evident throughout the topsoil and subsoil. The subsoil had a heavier texture than the topsoil which was a silt loam to heavy silt loam (Scandrett, 2010).

Details of the minor Soils as per the Topo-climate South information is presented as follows:

29. Jacobstown – Poorly drained silt loam with top soil clay content of 15 – 30%. Poor aeration during wet periods due to poor drainage and slow subsoil permeability. Severe waterlogging vulnerability and very severe risk of structural compaction.

30. Glenure – Poorly drained silt loam to loamy silt with top soil clay content of 22 – 30%. Poor aeration during wet periods due to poor drainage and slow subsoil permeability. Severe risk of waterlogging and structural compaction.

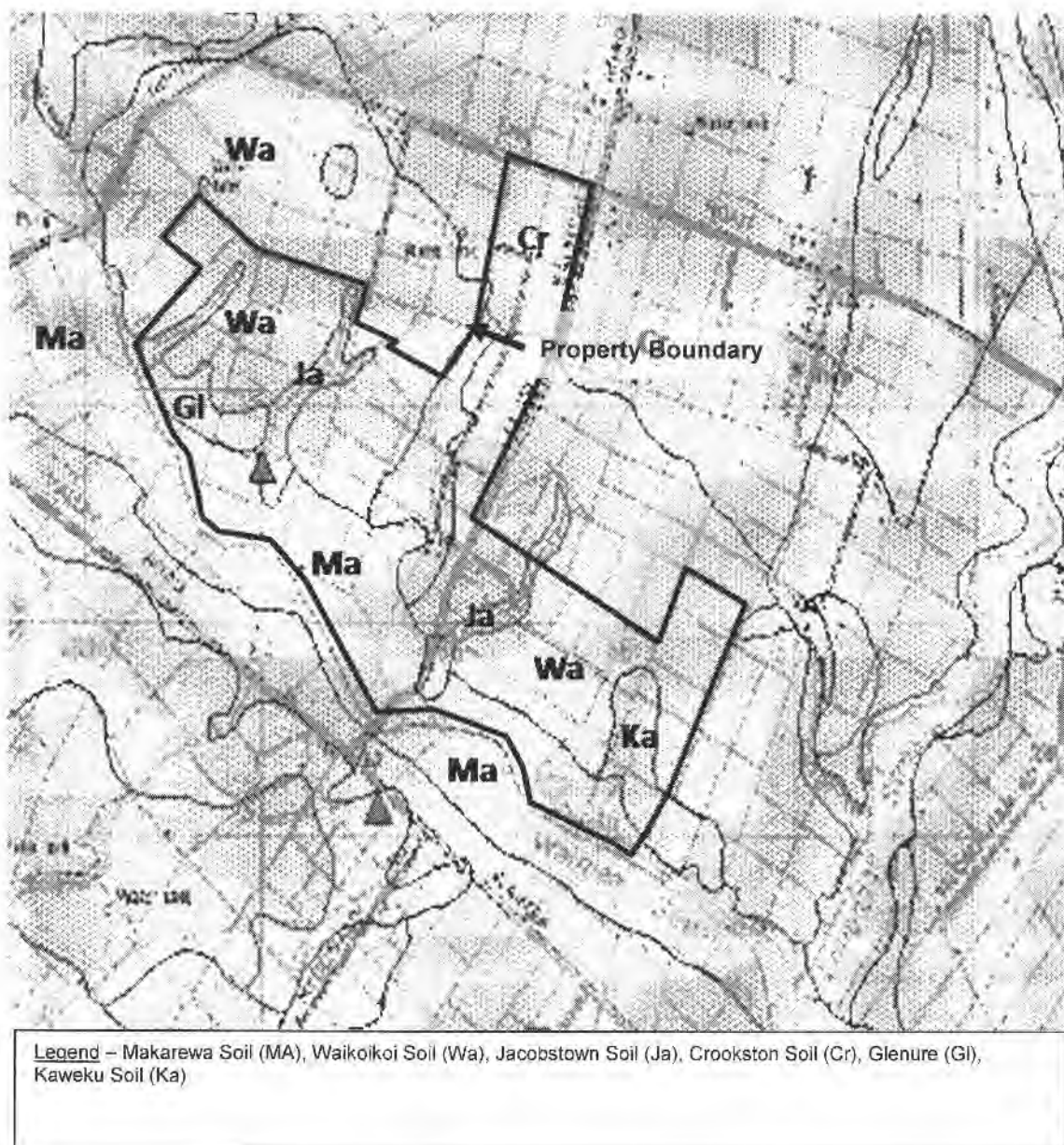
31. Kaweku – Moderately well drained shallow soils with stony subsoils. Heavy silt loams in the topsoil with clay content of 30 – 40% and silty clays and clay loams in the subsoil.



32. It should be noted that these minor soils types are in practice intergrades, that are often atypical and therefore indistinct, being dispersed around the margins (and sometimes throughout) the major types.

#### Water Holding Capacity

33. The plant available water holding capacity is similar for silt loams and heavy silt loams with a slight decrease with heavier textures. Assuming a typical profile of 250 mm of topsoil and 500 mm depth of subsoil the total plant available water holding capacity could be expected to be 110 mm.



**Figure 5: Soil Types located on WSL Property**

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### c. Wetland

34. There is a wetland area of approximately 8 hectares located in the major gully feature bisecting the upper terrace. Several seeps drain into the wetland. A legacy earthen dam structure is located approximately 200 m from the top of the wetland. The dam retains an area of approximately 4,000 m<sup>2</sup> of surface water and wetland.
35. This feature is deer fenced.

### d. Tree-lanes

36. The prevailing wind is from the west, and unlike most other dairy conversions, the existing tree-lanes have been retained to provide shelter and reduce evapotranspiration rates across the property. The planting of trees and shelter/shade belts has been an ongoing effort especially over the last 20 years.

### e. Drainage

37. The farm does have tiles in a number of paddocks – predominantly in the Waikoikoi soil type. These are moderately deep (over 0.7m) and generally only run in mid and late winter.
38. Active monitoring during effluent irrigation application (over the last five summer irrigation seasons) has shown that no drainage to tile drains has occurred as a result of the effluent applications of up to 25 mm depth (at an application rate of 4 mm/hr).
39. WSL propose to implement a drainage monitoring program to monitor to effect of field irrigation on drainage from the farm.
40. It is clear that there will be a small increase in drainage through the soils profile due to the fact that the soils will be kept moister longer over summer, and that a significant unexpected rainfall event could result in some drainage that would not occur should there have been no irrigation and the soil moisture less.
41. Whilst this is a reality, it is not believed that this will add significantly to the leaching of macro and micronutrients through the soils profile to groundwater, or to surface watercourses via overland flows, as:
- There is little point from an economic viewpoint point of buying nutrients to have them leached into drainage.
  - The cost of pumping is such that it is senseless to irrigate to the point that the usual rain events will result in substantially increased drainage.



- c. The modest amount of water sought is best utilised by spreading it widely to maximize the benefits of the natural rainfall, hence the likelihood of any one area on the property being within say 20mm of field capacity at any given time during summer is very small.
- d. The **relative** accuracy in prediction of at least significant rain events over the 5-10 day horizon by the Met service and others (all of which is available online and in near real time) allows flexibility in the planning for irrigation from an efficiency of resource use, minimization of nutrient use (ie maximization of water and nutrient root zone retention), and economics in terms of pumping costs. Active management across these factors minimizes nutrient leaching losses.

#### f. Rain fall

42. Detail of area rainfall has been requested and is summarized in the table below:

YE	Total			Oct to Mar			April to sept		
	mm Rain	Rain days	ave /day	mm Rain	Rain days	ave /day	mm Rain	Rain days	ave /day
1987	939.90	141	6.67	476.00	58	8.21	463.90	83.00	5.59
1988	997.20	149	6.69	573.50	61	9.40	423.70	88.00	4.81
1989	946.00	133	7.11	532.00	62	8.58	414.00	71.00	5.83
1990	782.50	91	8.60	488.00	54	9.04	294.50	37.00	7.96
1991	846.50	122	6.94	514.50	68	7.57	332.00	54.00	6.15
1992	895.90	139	6.45	450.50	70	6.44	445.40	69.00	6.46
1993	988.10	138	7.16	582.50	60	9.71	405.60	78.00	5.20
1994	963.50	123	7.83	620.00	63	9.84	343.50	60.00	5.73
1995	811.50	136	5.97	416.50	59	7.06	395.00	77.00	5.13
1996	1,010.50	131	7.71	559.00	62	9.02	451.50	69.00	6.54
1997	883.50	131	6.74	521.50	70	7.45	362.00	61.00	5.93
1998	979.00	199	4.92	549.36	97	5.66	429.64	102.00	4.21
1999	731.69	181	4.04	415.37	85	4.89	316.32	96.00	3.30
2000	895.31	166	5.39	564.31	90	6.27	331.00	76.00	4.36
2001	828.00	186	4.45	515.71	94	5.49	312.29	92.00	3.39
2002	727.44	208	3.50	385.93	92	4.19	341.51	116.00	2.94
2003	974.06	218	4.47	441.30	104	4.24	532.76	114.00	4.67
2004	666.35	192	3.47	300.58	89	3.38	365.77	103.00	3.55
2005	1,148.00	214	5.36	699.67	105	6.66	448.33	109.00	4.11
2006	788.72	198	3.98	365.28	108	3.38	423.44	90.00	4.70
2007	776.03	178	4.36	427.26	83	5.15	348.77	95.00	3.67
2008	704.72	147	4.79	360.39	75	4.81	344.33	72.00	4.78
2009	875.78	179	4.89	424.32	81	5.24	451.46	98.00	4.61
2010	766.00	165	4.64	505.00	92	5.49	261.00	73.00	3.58
Total	20,926.20	3865	5.41	11,688.48	1,882.00	6.21	9,237.72	1,983.00	4.66
Ave	871.93	161.0417		487.02	78.42		384.91	82.63	
Hi	1,148.00	218		699.67	108		532.76	116	
Lo	666.35	91		300.58	54		261.00	37	

#### g. Herd profiles

43.

	Cows milked	Ms/cow	M/s season	M/s ha
08/09 season	600	336 kg	202,000 kg	1,072 kg
09/10 season	685	392 kg	268,520 kg	1,114 kg
10/11 season	720	392 kg	284,000 kg	1,178 kg

11/12 season	710	402 kg	286,000 kg	1,186 kg
12/13 season	710	387 kg	275,000 kg	1,141 kg
13/14 season	685	430 kg	295,000 kg	1,224 kg

#### h. Feed supplements

44. The following supplementary feed was brought onto the property and used over the last three milking seasons.

	Summer Turnips		Other Supplements	
	ha	T/ha	Silage -T	Grain -T
08/09	20	3.5	100	30
09/10	27	7.0	110	75
10/11	26	7.5	150	50
11/12	15	8.5	300	200
12/13	17	8.0	410	200

45. The summer turnips are grown on the milking platform, and are usually grazed from mid December on.
46. The silage is grown on the support block, and has this season been stored both in the existing bunkers and on the new 900 ton concrete pad, adjacent the new wintering shed site.
47. The grain was purchased off farm and transported in.
48. The extra dry matter per ha in the turnips growth, between the two initial years gives some idea of the value of moisture during the turnips late spring early summer growing season. In the first season the rainfall was 103.77mm and in the second 223.67 mm- despite the fact the ET rate over both years was approximately the same (270/296mm).
49. The drier 08/09 season forced a move to once a day milking on 1 Feb 09 whereas 09/10 season milking was twice a day whole of season. The net ET loss in 08/09 for the period 1 October to 31 Jan was 209 mm in the 08/09 years but was 352 in the 09/10 seasons.

#### i. Winter feed

50. The following winter feed is grown on the support block:

	Brassicas/swedes		Oats/green feed		Fodder Beet	
	ha	T/ha	ha	T/ha	ha	T/ha
08/09						
09/10	10	12				
10/11	10	12				

11/12	10	12	10	5	10	20
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#### j. Nutrient Usage

51. Clearly if more grass/feedstuffs are to be grown then there will need to be an increase in the amount of nutrients brought onto the property.
52. With the intent to keep the irrigated water, and therefore nutrients, in the root zone the effects on nutrient leakage should be minimal.
53. It is improbable that there will be any net increase in the total nutrients brought onto the property as the foliage grown/feed will be a replacement for the feedstuffs, (such as grain, silage, palm kernel etc), that are currently transported on to feed the livestock. The nutrients from these imported feeds are currently being deposited back onto the land.
54. A positive benefit of irrigation is that by keeping the soil moist dry season cracks are prevented and issues with effluents being deposited in deep cracks washing through the profile in subsequent rain can be avoided.
55. As per the attached report "An analysis of the Impact of Irrigation on Farming Practice, the Consequential Effects of nitrate leaching, etc" only three of the 15 scenarios modeled using Overseer show an increase in the nitrate leaching. (See summary p14).
56. The following practices are recognised as being most desirable and are followed as much as is practical.
- I. The spreaders used to apply fertilizer are 'spread mark' accredited and ideally have tracmap or a similar recording system to show proof of placement.
  - II. Buffer distances are maintained such that there is no direct contamination of waterways from the application of fertilizer.
  - III. Best practice is to have a 20m buffer between fertilizer placement and waterways. Fertilizer is not applied to saturated soils.
  - IV. Nitrogen containing fertilizers are only applied to actively growing pastures.
  - V. Fertilizer is not applied when air drift can occur beyond the farm boundaries.
  - VI. The need for large fertilizer dressings should be achieved through split dressings rather than a single application.
  - VII. Less soluble phosphate fertilizers, i.e. reverted super phosphate fertilizers are less likely to leach or run off particularly if heavy rain occurs after application.

#### k. Irrigation of Bore water.

57. The drawing of the high N water and irrigation of this water within the policy of keeping the water within the root-zone will lessen the content of the nitrogen in the groundwater in any case.

### I. Moisture monitoring

58. Aquaflex Tapes have been installed in two sites on the farm, the first on the Waikoikoi type on the upper downs and second on the Makarewa type on the Waimea stream river flat. This data is currently being collected and after the initial settling period will provide some baseline data on the water holding and water loss capacity of these two principal soil types.

59. This allows the discretion to use the water to best effect across the variations of the seasons.

### m. Autumn, Winter and Spring grazing

#### I Wintering barn

60. It was originally intended to have the wintering barn in place for the 2014 winter, and while the new concrete silage bunkers have been completed, the actual construction of the wintering shed was delayed due to wet weather, and the construction of the shed and soft floor structures has been postponed until the 2104/5 summer construction season.

61. By housing the milking herd over the winter, the risks with feeding 700 cows on crop (the balance have been grazed off,) on the wintering block will be greatly mitigated, as the winter period, when the ground is saturated, accelerates the leaching of nutrients to ground water and waterways, both thought overland flows and down through the soil profiles.

62. Furthermore, the soft floor wintering shed's floor drainage system will allow nutrients - especially those in cow urine which is rich in nitrates – to be captured and stored, for irrigation to the land when soil conditions are less moist, and the herbage is actively growing.

63. The wintering facility will also be available for use during the milking season, should weather and/or ground moisture levels require.

64. As per the report "An analysis of the Impact of Irrigation on Farming Practice, the Consequential Effects of nitrate leaching, etc," the nitrogen losses due to the use of a winter shed could be reduced by between 7% and 9% over the status quo, even given an increase in production of 5% to 10% over last year's record production. (p11,12).

### II Outdoor Wintering

The following are employed during autumn, winter and spring grazing.

65. Paddock selection. Judicious paddock selection based on the soil moisture content is the key tool. This is important not only to avoid overland flow, pugging, etc but to ensure that the pasture and soils are not damaged to any extent that would inhibit spring pasture growth.

- 
66. The farm contour gives the flexibility of being able to move away from waterways to better draining soils during wet weather.
  67. The eating off of the excess feed does not (for spring growth reasons) result in the paddocks being eaten down hard, or pugged.
  68. If break fencing is to be used, the breaks, once eaten off, are back fenced.
  69. Breaks are sequenced to insure that grazing is away from the watercourse as opposed to towards them.
  70. Where breaks do not encompass a trough, a portable trough is used to avoid pug lanes between the water troughs and the feed breaks.
  71. There are the fenced buffer zones along the water ways, but higher risk areas over tiles or drainage depressions will be temporarily fenced off and not grazed.
  72. In wet weather, where there is risk of pasture and soil damage, care is taken to avoid grazing, supplement feeding and pugging within 10 meters of a waterway or drain. Temporary fencing is used as and when necessary.
  73. Vehicle/machinery movement. Consideration is given to pasture damage due to the use of heavy feed wagons and tractors. On soft pasture the high axel weights can result in pugging, or churning up of the ground, creating sediments that can move in the overland drainage water.

**C: Existing consents****a. Discharge**

74. The initial dairy discharge consent (o 204955 required) 3,600m<sup>3</sup> of storage. However the decision was taken to install a pond of 3,900m<sup>3</sup> to allow more flexibility in management. The above consent was renewed in 2013, and as part of that renewal, the storage was increased to accommodate effluents from the proposed wintering shed.

75. The discharge consent requires an effluent irrigation area of 64ha (8ha per 100 cows), however effluent mains have been installed to allow the irrigation of over 80ha.

**b. Water**

76. The existing water permit only consents the dairy shed and stock drinking water of 96,000 litres per day. It is drawn from a small bore to the north of the shed.

## **D: Resource usage**

### **a. Coverage area**

77. The request is to be permitted to irrigate any part of the farm to ensure the best use of the limited available water.
78. The priority for the use of the limited water is:
- Summer crops on the milking platform
  - Establishing of young grass on the milking platform
  - Establishment of winter crops on the support block
  - Establishing young grass on the support block
  - Field irrigation on the milking platform.
79. For example should the embedded tapes indicate that the plant available water is falling across the root zones and application of say 15 mm could be made over the whole farm on a 7 day rotation (ie  $5616 \text{ m}^3$  daily allocation divided  $150 \text{ m}^3/\text{ha} = 37.4 \text{ ha}$  per day rounds up to 9 days for 332 ha.). By making this light application over the whole property the soils can be kept sufficiently moist to ensure the grasses are not unduly stressed, (or worse wilting) and can capitalize on any rain – be that light or substantial -when it arrives.
80. However should the dry period continue and/or trans-evaporation rates rise then the requested allocation of  $5,616 \text{ m}^3$  a day is insufficient to keep all the property's soils above the plant stressing or wilt zone. The focus will then shift to complete support of a smaller area, with little or no support for some areas. If the loss were say 5 mm a day the support would need to be for 35 mm depth a week. This would restrict the irrigable area to around 112 ha per week or 46% of the farm's land area. Even this reduced area would be of huge benefit and in extreme circumstances would, along with supplements brought in, lessen the number of cows would have to be dried off and/or avoid reducing the herd to 16 hour (or even once a day) milking.
81. The quality of the feed will be assessed on a daily basis as are pasture growth rates and the necessary management systems (as well as herbage management systems) will be enhanced with experience.
82. The data provided above were based on trans-evaporation rates in Gore, which are easily believed to be somewhat lower than that at Balfour especially as Balfour has considerably longer periods of westerly winds throughout summer. We believe the trans-evaporation from November through to the end of March maybe in excess of 20% of the above figures.

### **b. DM increases**

83. The increased production due to the availability of the extra water has a direct impact on the amount of fertilizer that will need to be applied. The fertilizer will not only provide nutrient for the increased growth but will be decremented by the nutrient value of the amount of supplementary feeds – in this case grain and silage- that will need to be imported onto the farm.
84. Experience has shown that the amount of extra dry matter (DM) that can be grown per hectare per day due to irrigation over a 90 day season can be between 30kg and 60kg.
85. The variability of these figures is due to not only the rainfall profiles of any given season but also the management of the other factors such as application rates, et rates, pasture wilt management etc. If the ryegrass (especially) can be kept above wilt point it does not have to self repair before increasing growth when rain comes.
86. Hence spreading water wide with low applications will allow the grass to make more benefit of the natural rain when it arrives.
87. If the water is used over the 260 ha easily irrigable area then the following extra DM will be available (subject to nutrient supply)

	T pa DM	T Ha DM
30kg/ha/day	702	2.7
40kg/ha/day	936	3.6
50kg/ha/day	1,170	4.5
60kg/ha/day	1,404	5.4

Above is over 90 growing days only.

88. Pasture Irrigation is not economical if viewed only as a drought insurance tool. The economics lie in proactive management and being able to grow more grass every year, as almost every year there are periods when the property- or parts of it -will benefit from support.
89. That being the case, it is still required that the project be able to show a return on both capital and operational cost over the life of the plant sufficient to justify the funding costs and risks and operational effort.
90. It is believed in this case that there is a sound business case for the investment in irrigation but it is conditional on the judicious use of the resource, careful consideration of the rates, depth, timing of and application, to reduce pumping costs, and other input costs, minimize losses through drainage etc.



### c. Irrigation Method

91. The most efficient and effective method of irrigation, both from a water use prospective and an operational input viewpoint, is the use of center pivot irrigators. However the footprint and typography along with the fact that the established shelter belts need to be retained to reduce water loss to the atmosphere, means that the irrigation method will probably be via medium or large traveling roto-rainers, the possible use of big-gun systems and/or the use of K-line or other low rate pod type systems.
92. Furthermore, the required flexibility to be able to move water to wherever the crops are located required that portable system such as roto-rainers or pod sets be used.

### d. Bore Yields and continuance

93. Yield. The obvious procedure would be to begin pumping at a low rate, check for any adverse effects over a specified period and then increase the rate to a new extraction rate, etc. However this has some practical problems in that submersible pumps are relatively inflexible in terms of being able to vary delivery volumes. ie such a stepping up regime could require different pumps at different volumes.
94. Furthermore irrigators have design limitations, which may not allow them to run outside certain stated volumes. If only supplied with sub optimal volumes of water they can malfunction and dump large quantities of water in small areas due to not having sufficient volumes to rotate, or their distribution profiles become distorted, etc.
95. Again the obvious solution of pulse pumping has some problems in that a high capacity submersible pump is not designed for pulse pumping.
96. The proposal is therefore to begin initial pumping in hourly pumps at half rate, ie hour on hour off.

### e. Irrigation Efficiency

97. This water demand is consistent with other irrigation applications and is reasonable for the size of the farm. Soil moisture deficit monitoring using in-ground probes will ensure that water is only applied if it is needed, and only applied at a rate sufficient to maintain the desirable soil moisture level for optimal vegetation growth. To provide flexibility from November through to March/April, the applicant is seeking the ability to irrigate for up to 5 months during any season, that is, a 150 day (cumulative) water provision.
98. Over a 150 day season only about 55% of the peak demand is needed. The water demand modeling is based upon the last 20 years of climate data. Due to climate change we cannot be certain that this data adequately reflects the conditions that might occur over the next 10-20 years.

We consider the actual water use will be between 55-65% over 150 days. For this reason an average value of 60% of the maximum irrigation volume has been used in undertaking the assessment of environment effects (except where excluded by the Environment Southland Proposed Regional Water Plan).

### **E: Possible Adverse Effects Mitigation.**

99. In section 3.0.32 of the AEE (p 16) a potential adverse effect on bore W44/0079 is identified. The transmissibility model suggests that the use of the irrigation bore could increase the draw down in this shallow dairy shed bore by over double the guide line limits.
100. The dairy shed bore depth is shown as 9m, however it is believed that it is deeper with some initial measurements suggesting that it is closer to 13m deep.
101. Nevertheless the possibility of a unintended adverse effect on this vital s dairy shed and stock water bore needs to be addressed.
102. In discussions with the bore owner Mr. Kelvin Reed is has been agreed that:
  - a. A piezo will be installed in the bore, a soon as practical, to monitor and baseline drawdown in the current operational environment.
  - b. Should during the use of this new irrigation bore, the drawdown exceed 0.50m over the base lined dairy bore drawdown, or there be any water availability issues at the dairy shed due to low water levels in the bore, field irrigation will stop, and a series of pumping tests employed to understand the ramifications of the range of irrigation pumping serious on water yield levels in the dairy shed bore.

### **F: Summary**

- I. The applicants are very aware of the nitrogen hotspot issues and have been active in the Environment Southland sponsored consultation group.
- II. Production and stocking rates are not excessive, and nitrogen use is within current guidelines. Other industry best practices are already in place to minimize N losses to groundwater.
- III. The Overseer modeling of the use of the ground water for irrigation water suggests that losses to the groundwater will not increase because of the irrigation.
- IV. The decision to install a wintering shed will further lessen losses but keeping stock of pasture in the high risk.
- V. The requirement for water is modest in relation to the proposed irrigation area, and care has been taken to ensure best use of the limited resource.

**Version Control**

Ver	Date issued	Detail
1.0	18/01/11	To Aqualinc for their comment/addition
2.0		Incorporation of the Stevens inputs and JS inputs
3.0	17/02/12	Update following T Rhodes paper. Includes met charts updates
3.1		Update following discussion with Kelvin Reed
4.0	1/06/2013	Update re Wintering Shed



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File No: \_\_\_\_\_  
Officer in Charge: \_\_\_\_\_

To: The General Manager  
Environment Southland  
Private Bag 90116  
Invercargill

## WRITTEN APPROVAL OF A POTENTIALLY AFFECTED PARTY

Approval by Person(s) Potentially Affected by an Application for a  
Resource Consent

To be completed by the person requesting approval

Applicant: Waiwai Stevens

Type of Resource Consent: Water Permit

Proposed Activity: Field Irrigation

Location: \_\_\_\_\_

To be completed by the person giving his or her approval:

Name: K. Read

and/or Organisation: Falcon Farms

Street/Road Address: \_\_\_\_\_

I/we have sighted all the attached plans and supporting information for the above activity.

I/we hereby give approval for the proposal to be considered by Environment Southland without public notification.

I/we understand that, if I give my approval, Environment Southland shall not take into account any effects that the proposed activity may have on me, when considering the application (Section 104(3)(b) of the Resource Management Act 1991).

K. Read  
(Signature)

3 / 11 / 12  
(Date)

**NOTE: IF YOU DO NOT UNDERSTAND WHAT THIS FORM IS, OR DETAILS ABOUT THE  
APPLICATION ASSOCIATED WITH THIS FORM, DO NOT SIGN IT.**

Notice of written approval.doc

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of the Southland Regional Council