



**Providing knowledge**  
St Peter's School/Lincoln University  
Demonstration Dairy Farm



ST PETER'S • CAMBRIDGE  
NEW ZEALAND



**Lincoln University**  
*Te Whare Wānaka o Aoraki*  
AOTEAROA • NEW ZEALAND

New Zealand's specialist land-based university

# Farm Focus Day

Wednesday, 25 May 2016

## St Peter's School / Owl Farm Hazard Notifications

Children are the responsibility of their parent or guardian

Normal hazards associated with a dairy farm

Other vehicle traffic on farm roads and races

Races may be slippery



# HAZARD SUMMARY

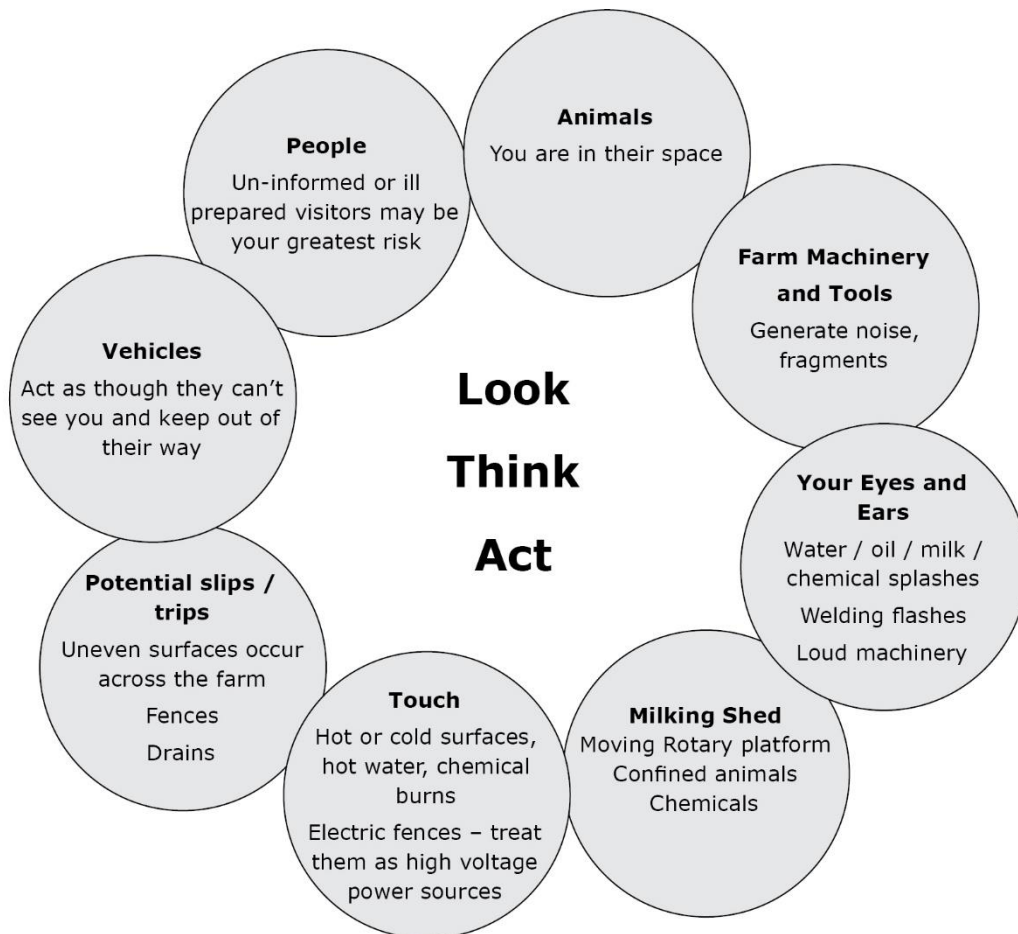
## Welcome to Owl Farm

Owl Farm is a fully operational commercial dairy farm with a number of potential hazards to both visitors and staff.

Many of these potential hazards cannot be eliminated while providing access to visitors therefore all staff and visitors MUST watch for potential hazards and act with caution.

## Hazard Summary

The following diagram provides a reminder of the types of hazards present.



**ARE YOU TRAINED FOR WHAT  
YOU ARE ABOUT TO DO?  
If not, STOP.**

**If you are uncertain how you should act or proceed stop and  
contact the farm manager, other farm staff or your host.**

In being on Owl Farm you are acknowledging your receipt of this hazard summary. By doing so you also agree to be personally responsible for monitoring any potential hazards and agree to act conscientiously to protect yourself and any others who are also on-farm.



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**Owl Farm**

**Legend**

- ☐ Paddock
- ☐ Farm and school extent
- ☐ Parcels (as at 02/04/2016)

Contains data sourced from Land Information New Zealand under CC-BY

0 100 200 m

1:2,500 @A0

Projection: NZGD 2000 New Zealand Transverse Mercator  
Project No: 3-38970.00  
Date: 28/04/2016  
Author: Renee Schicker@Opus.co.nz



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# OWL FARM - ST PETER'S SCHOOL / LINCOLN UNIVERSITY

## DAIRY FARM STRATEGY

### 1. Vision

#### a. Dairy Farm

- To apply proven research, utilising good on farm practice and scientific monitoring for the farm to become an exemplar in dairy production, financial, environmental and people performance, while maintaining the highest standards of health and safety.

#### b. Students

- To encourage more young people into the dairy industry.

### 2. Strategic Objectives

#### a. Dairy Farm

- Providing leadership to dairy farmers and the wider community by demonstrating progressive practices that can be achieved on farm.
- Optimise profit through identifying the appropriate dairy production system for Owl Farm.
- Achieving a farm sustainable environmental footprint based on industry good management practice.
- To attract, train and retain quality employees.

#### b. Students

- To provide educational opportunities and exposure to the dairy industry which demonstrates career opportunities to students.

### 3. Farm Development Stages

#### a. Stage 1 Objective (2015/16 – 2017/18)

Establish credibility by addressing current issues and performance, whilst setting up the farm for future development. During this stage, the farm will operate a pasture based system, with tactical supplementation strategies, based largely on existing infrastructure, to optimise profit while developing a resilient farm system.

#### b. Stage 2 Objective (2018/19 – onwards)

Testing and investigating in conjunction with partners, innovative strategies to lead sustainable profit. The farm system will be developed over years 1-3 and reflect demonstration requirements of industry that are relevant and appropriate at that time point.

### 4. Stage 1 Operational Objectives

#### a. Dairy Farm Performance

Owl Farms high level operational objectives relating to the farms performance throughout the duration of stage 1 (2015/16 – 2017/18) are outlined below. A full breakdown of specific key performance indicators within each of the following objectives can be found within the separate Stage 1 – Dairy Farm Performance Plan in which the farms annual performance can be measured and reviewed.

##### i. Planning, monitoring and reporting

- To ensure all farm management and commercial planning is supported by a sound business case, solid rationale and effective modelling
- Set appropriate goals that reflect the strategy, objectives and development plans for Owl Farm, with time bound action plans and key performance indicators.
- To ensure accurate and transparent reporting of success or failures of objectives is undertaken in line with agreed timeframes.
- To ensure performance is reviewed in line with objective timeframes set out within Stage 1 Plan.

##### ii. Financial

- To optimise profit returned through balanced financial management within the farms existing management system
- Invest appropriately in capital development to enable improved productivity.

##### iii. Environmental

- To implement sound science supported environmental management systems to achieve sustainable growth and profit while protecting the wider environment.
- To ensure compliance with all regulatory and industry requirements

- To engage with stakeholders to lead towards sustainable farming objectives while influencing future direction.
- To show leadership in establishment of biodiversity management practices relevant to the Waikato.

**iv. People**

- To implement best practice in people management.
- To develop and implement best practice effective health and safety systems and build a culture that ensures staff, contractors and any other visitors are protected as much as practicably possible while on farm.

**v. Herd Performance**

- To capitalise on genetic merit of herd with regard to per cow production
- To achieve or exceed industry targets for mating performance
- To meet or exceed all recognised industry standards regarding body weights and condition within a profitable system
- Use data to measure effectiveness of actions and make information readily available
- Effective health control is optimised through preventative treatments and any immediate health issues are treated as a priority
- To adopt practices in line with the animal welfare code

**vi. Soil**

- To have soil fertility levels (and fertiliser application) sufficiently high to optimise pasture and/or crop production
- To review and enhance Nutrient use efficiency over time
- To actively strive to avoid physical damage to the soil from pugging or mechanical means

**vii. Pasture, crops and feeds**

- To optimise pasture and crops grown and harvested so that cows consume as much metabolisable energy as practical from grazed pastures, home grown crops and supplements.
- To integrate strategic use of appropriate supplementary feed when there is a genuine feed deficit and where there's a clear financial return.

**viii. Community engagement**

- To establish Owl Farm so as to develop and demonstrate good practice in pasture based dairy farming systems and to transfer good practices to dairy farmers.
- To develop and implement a communications plan to engage the wider community around what we are doing and why.
- Contribute to building positive perceptions around dairying.

**b. Stage 1 – Students**

**i. Educational**

- Facilitate student farm visit's to provide genuine exposure to farm and associated activities.
- Facilitate partner presentations within the educational curriculum.
- Provide data for student analysis that may benefit their area of school learning.
- Support the re-establishment of TeenAG programme within the school.

**ii. Career opportunities**

- Demonstrate career opportunities which exist within dairying and the primary industries through providing exposure with partners and associated companies businesses.

**iii. Community engagement**

- Provide farm as a resource to other school groups (primary/secondary) to support positive exposure to the dairy industry.
- Facilitate and complete a farm open day for all secondary schools.

**5. Stage 2 – Operational Targets**

**a. Dairy Farm Performance**

Stage two will continue to evolve over the space of the next 3-6 years.

# OWL FARM SNAPSHOT

## Area

- Milking: 155 effective hectares
- Free hold land: 132 hectares
- Lease land: 23 hectares

## Stock

- 440 – 470 cows milked
- BW 162/46
- PW 189/62
- Ancestry 99%
- There is historically 6 weeks of AB followed by 4 weeks with bulls for a total mating period of 10 weeks.

## Soils

- The farm is long and narrow with 3.4km's boarding the Waikato River.

<i>Soil Type:</i>	<i>Location:</i>
Otorohanga deep clay	SH1, river and centre north
Pukehina deep sand	North of farm
Kainui deep slit clay	Behind the Kahikatea Stand
Turangi deep sand	Deer block
Rotokauri deep clay loam	School grounds
Kaipaki deep peat	Gully below the Avantidrome

## Topography

- Vary dramatically from heavy clays to light sands. The topography is flat contour over three terraces.

## Cowshed

- 36 bale rotary shed with cup removers, built in 1970 with an updated Waikato plant.
- Cows are run in two herds due to capacity of yard being only 400.

## Staff

- Farm Manager, Assistant Farm Manager and Dairy Assistant (3FTE).

## Effluent

- Direct application through sump and pump to travelling irrigator when conditions suit to 44ha.
- Effluent holding pond used when conditions don't suit application.

## Nitrogen

- 150kgN/ha is generally the maximum applied in any year
- Soil testing is undertaken in April annually to provide the fertiliser recommendations for coming season.

## Cropping / pasture

- 10% pasture renovation strategy achieved through summer cropping.
- Either turnips or chicory dependent on predicted summer conditions.
- Weekly pasture metering undertaken as well as annual pasture condition scoring, allows us to identify paddocks most in need of renovation.

## Supplement

- A mixture of grass silage, PKE and maize is used annually.



# OWL FARM REPORT – SEASON ENDING

NB: All information below can be found on our new and interactive website [www.owlfarm.nz](http://www.owlfarm.nz)

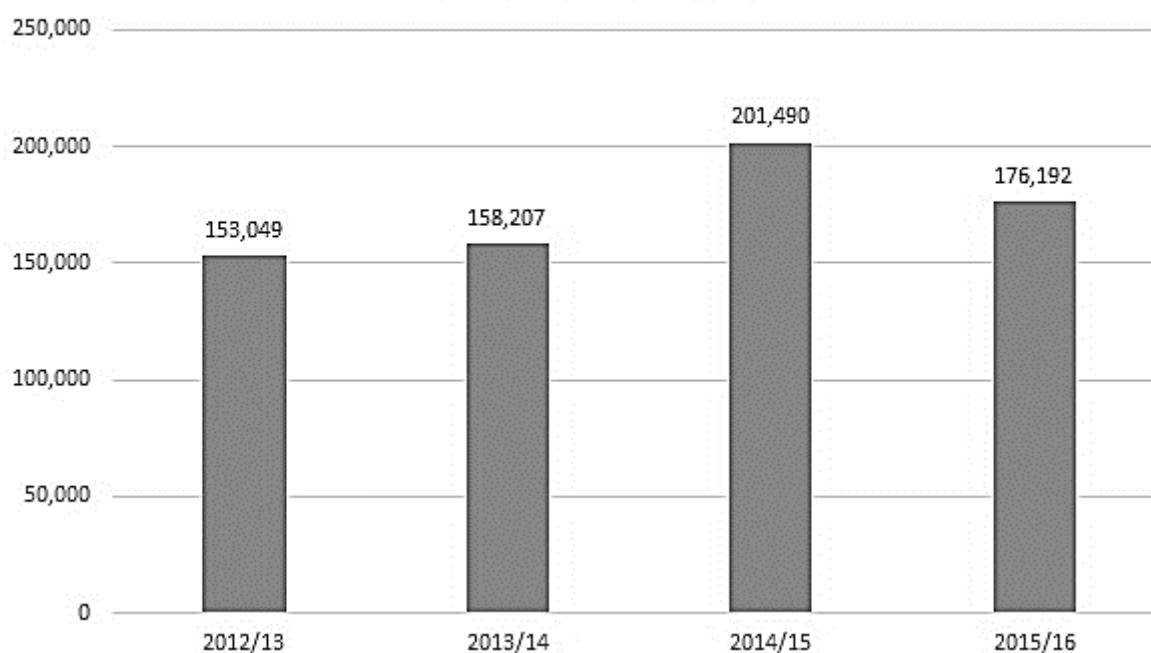
## Milk Production

- As expected we ended up significantly behind last season's production. Our final milk production was **176,192kgMS**, down **12.6%** on the previous seasons **201,490kgMS**.
- We finished the season with 8.5% less cows as 30 were culled in December due to the loss of 10ha of lease land which was milked off. Having received peak milk from peak cows we have assumed the impact on milk production post culling to be approximately 4%. Comparing apples with apples we would have likely finished the year around **8.6%** behind the previous year's production had we finished with the same effective milking platform.
- Initial production targets of **210,000kgMS** for the 15/16 season proved to be unachievable, this target was overly optimistic in what's turned out to be a hugely volatile year. Had we known what we know now a more realistic target would have been somewhere in the vicinity of **185,000-190,000kgMS**. At the start of this year 185,000kgMS was re-forecast as the production target.

Average days in milk (Mean calving date 28th July, dry off 10th May)	288
Total KgMS	176,192
KgMS/cow (445 average used)	396kgMS (~85% body liveweight)
KgMS/ha (155ha average used)	1,137kgMS/ha

- Although not close to where would like to be 176,192kgMS is still significantly better than where we have been in recent years with similar stock numbers.

Production: Last four years



NOTES



- Several significant factors contributed to this season's final result:
  - We chased production too hard at the back end of the 14/15 season. Some stock weren't dried off for adequate timeframes which will have impacted their productive capability this season.
  - Our in-coming heifers were too small having not met industry target weight ranges. Post calving these struggled due to the demands of milking. This impacted both productive and reproductive performance, all heifers along with the 3 year olds went onto once a day for a 2 week period in October.
  - Winter and spring brought unfavourable growing conditions with cold and wet days being the norm. Growth rates didn't reflect what was budgeted for and with our rapid calving pattern, feed demand exceeded feed supply, more of our PKE was used than planned. Balance day historically has been around the end of August whereas this year it didn't occur until the start of October. Calving date was also pulled forward a week to the start of July to reflect what had previously been mild winters with good growth rates.
  - We never maintained our peak milk production through Oct-Nov which meant the rate of decline occurred faster.

	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
kgMS/Cow	0	1.64	1.79	1.95	1.86	1.66	1.52	1.48	1.35	1.1	0.98	0.8

- Pasture quality over summer wasn't great. Heavy burden of summer grasses and weeds impacted pasture quality and energy and therefore milk production.
- Eczema once again proved to be our biggest contributing factor to lower than anticipated milk production. 61 cows had to be dried off at the start of April displaying traits of clinical and sub-clinical eczema, this along with what wasn't seen has probably cost us upwards of 10,000kgMS over the back end of the season.**

## Month to date (17 May)

Period	Litres	KgMS	KgMS %	Fat (Kgs)
May 2016	18,348	2,019.4	11.01	1,176.6
May 2015	62,729	6,851.8	10.92	3,954.5
% Variance	↓ 70.8%	↓ 70.5%	↑ 0.8%	↓ 70.3%

## Season to date

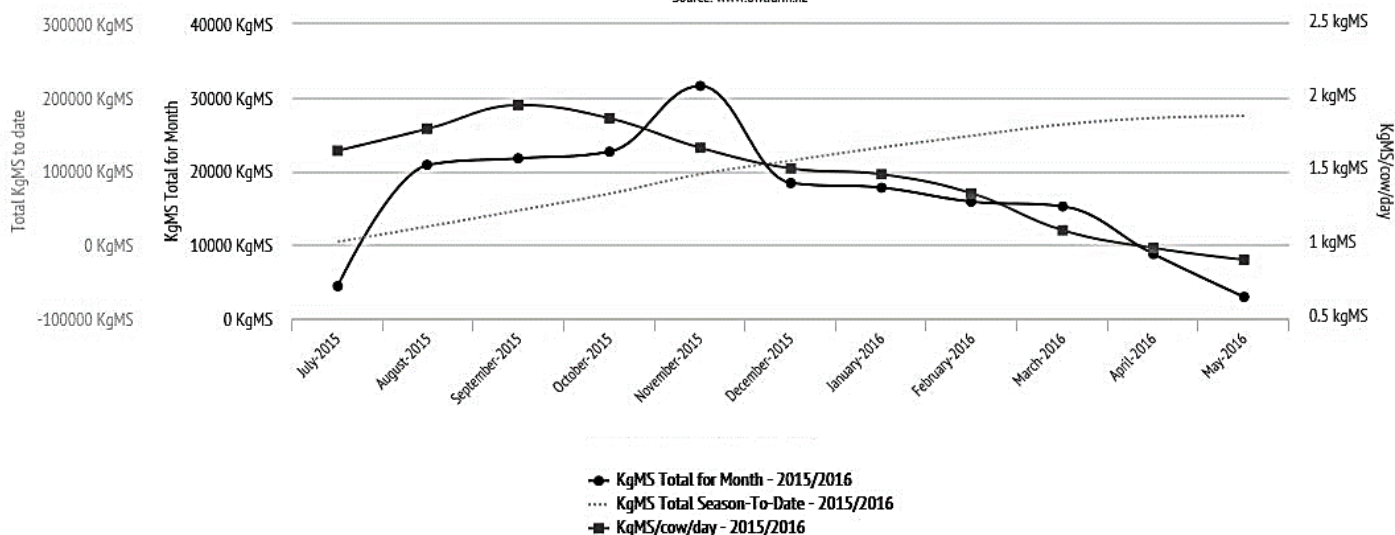
Period	Litres	KgMS	KgMS %	Fat (Kgs)
This Season	1,853,207	176,197.2	9.51	101,361.5
Last Season	2,121,410	201,490.3	9.50	117,171.3
% Variance	↓ 12.6%	↓ 12.6%	↑ 0.1%	↓ 13.5%

NOTES



## Monthly Owl Farm Milk Production

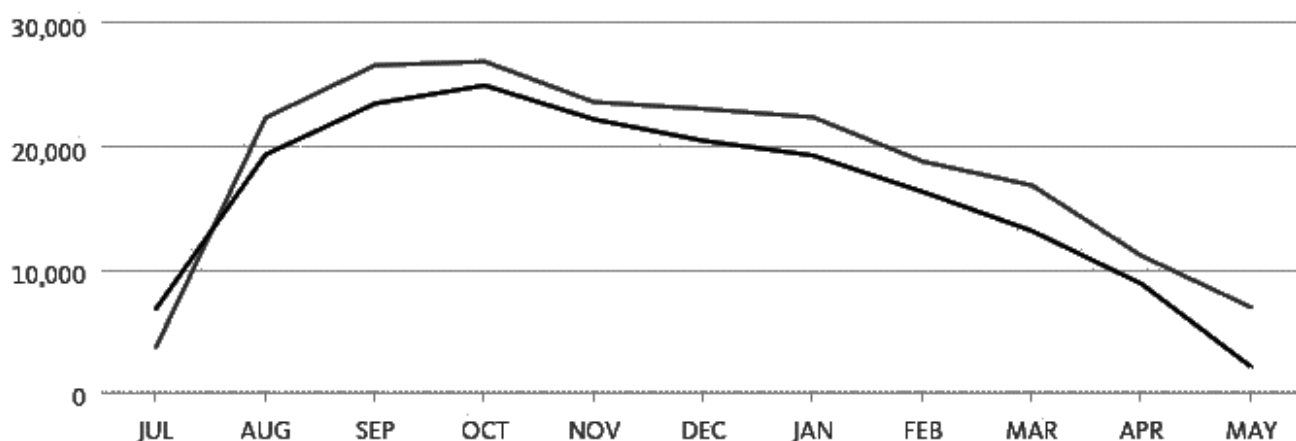
Source: www.owlfarm.nz



## Milk Production Curve 14/15 vs. 15/16

### KgMS : This Season compared to Last Season

☐ Show targets ?



## Animal Health

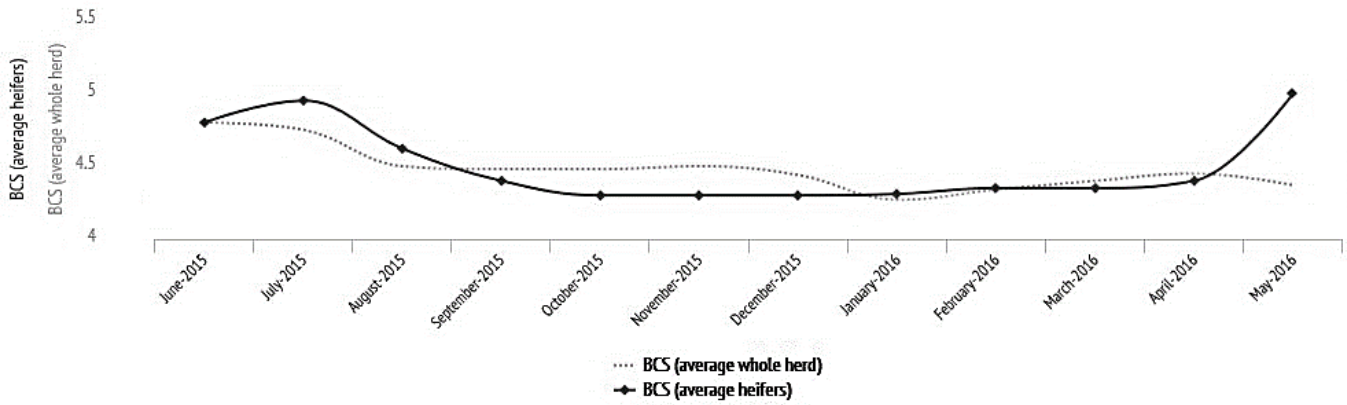
- All stock have been dried off this season according to condition and calving date with a minimum of 60 days out of milk being achieved. We could have milked some later calving cows further into May but decision was made to dry everything off in the first week of May and focus attention on following season and having the stock in prime condition.
- Cows are currently in pretty good condition (4.5BCS average) with feed intakes having remained high. We have seen a slight decrease over the last couple months with some of the older girls which may be an ongoing effect of sub-clinical eczema, this group is pulling the average down. Cows are currently drafted into heavies and skinnies with the skinnier cows getting preferential feeding as we aim to have all cows above 5BCS at calving (heifers 5.5BCS). Target intakes over winter are ideally 14kgDM for the skinner cows with slightly less for the heavier cows – intakes will be above maintenance as we want stock to be capable of higher intakes and therefore high production during next season peak.

## NOTES



## Owl Farm - BCS

Source: www.owlfarm.nz



- Heifers returned from grazer on the May 1 and are in great condition at an average of 5BCS. This group will be fed with the preferential mob as we try and get them to 5.5BCS prior to calving. This will ensure they are in prime condition for the demands of joining the milking herd. At their last weigh 38% were above target weight range, 46% were ideal but unfortunately 15% were still underweight – we are starting to think this may be more genetics than feed availability.
- Our 2015 season calves are doing exceptionally well at the off sight grazer and fully justifies the expense of sending them off farm. At their last weigh at the beginning of May 86% were above target with the remaining 14% in the ideal weight range. Nothing is underweight.

## 2015 Spring Born

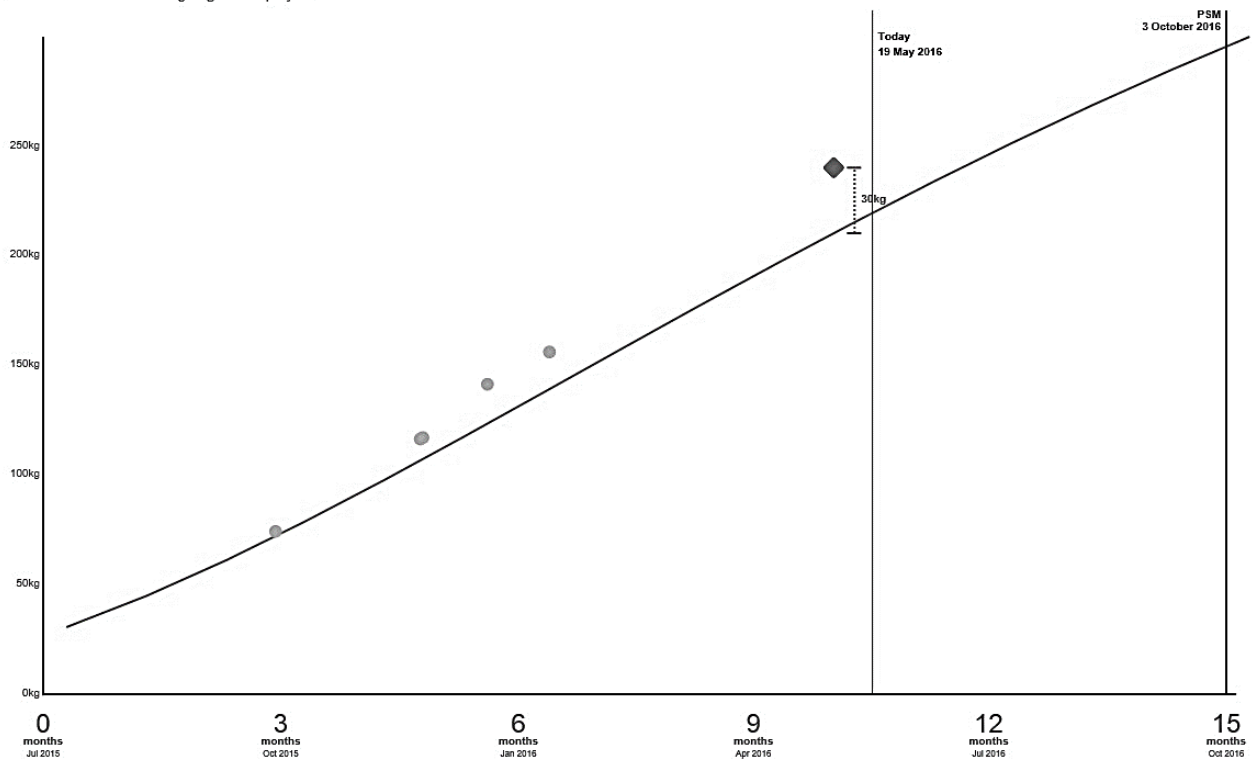
15 BORN HEIFERS MAY 16

4/05/2016

### Young stock trend

Print

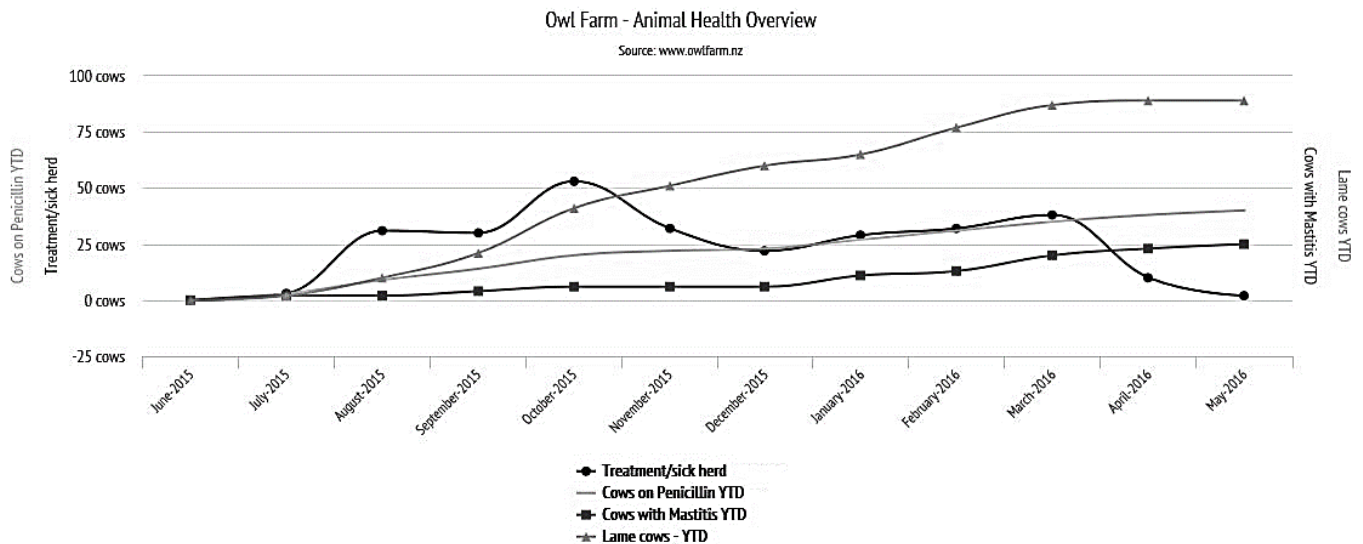
All 94 animals in this weighing are displayed



### NOTES



- We have a tight calving plan with **80% of the herd due to calf within July**. This should hopefully allow ample time prior to planned start of mating for the cows to start cycling.
- **89 cows** were drafted as lame throughout the course of the season. A number which is unacceptable. Action is underway to address this aspect next year with track work, re-aligning of exit race, cow-flow and removal of trees all factors to help improve this.
- Clinical mastitis had been low right through the year, however a few new cases identified towards the end of the year meant our total for the year ended up with **25 cases treated**.
- **40 cows** were put on penicillin during the course of the year.
- Average SSC for the year was **124** which is below our target of <150. This did start to increase at the end of the year as is usually the case with decreasing milk volumes.
- So far a total of 116 cows have been culled with a couple more likely over winter which will likely have us calf down around 450 cows.



### Pasture Production

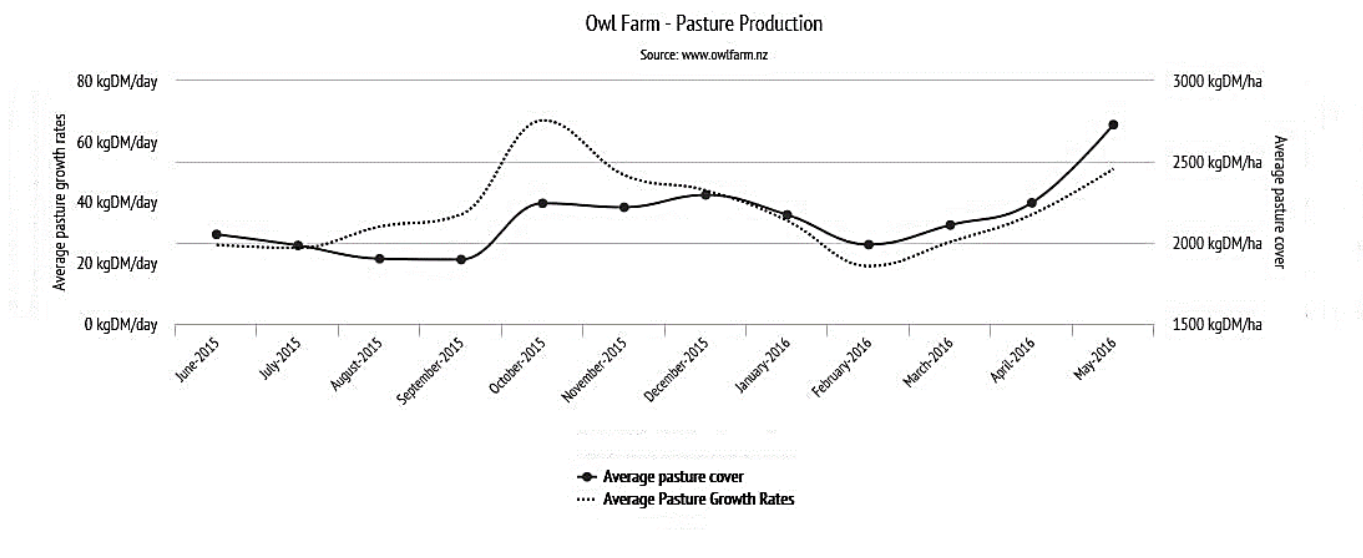
- Has been an interesting year from a pasture production perspective. Much has been discussed about pulling the calving date back to the start of July to capitalise on what historically has been good winter growth and to maximise days in milk. This unfortunately didn't come to fruition with balance day not coming until the end of September where-as historically it has been the end of August. On the flip side we were expecting lower than average summer growth rates due to the predicted El Nino. Although we got dry it never dropped as low as what we had modelled.

### Average Pasture Cover's and Growth Rates for 2015/16

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
APC	2052	1984	1902	1897	2244	2129	2296	2173	1989	2110	2447	2729
AGR	26	25	32	36	67	49	44	34	27	27	36	51

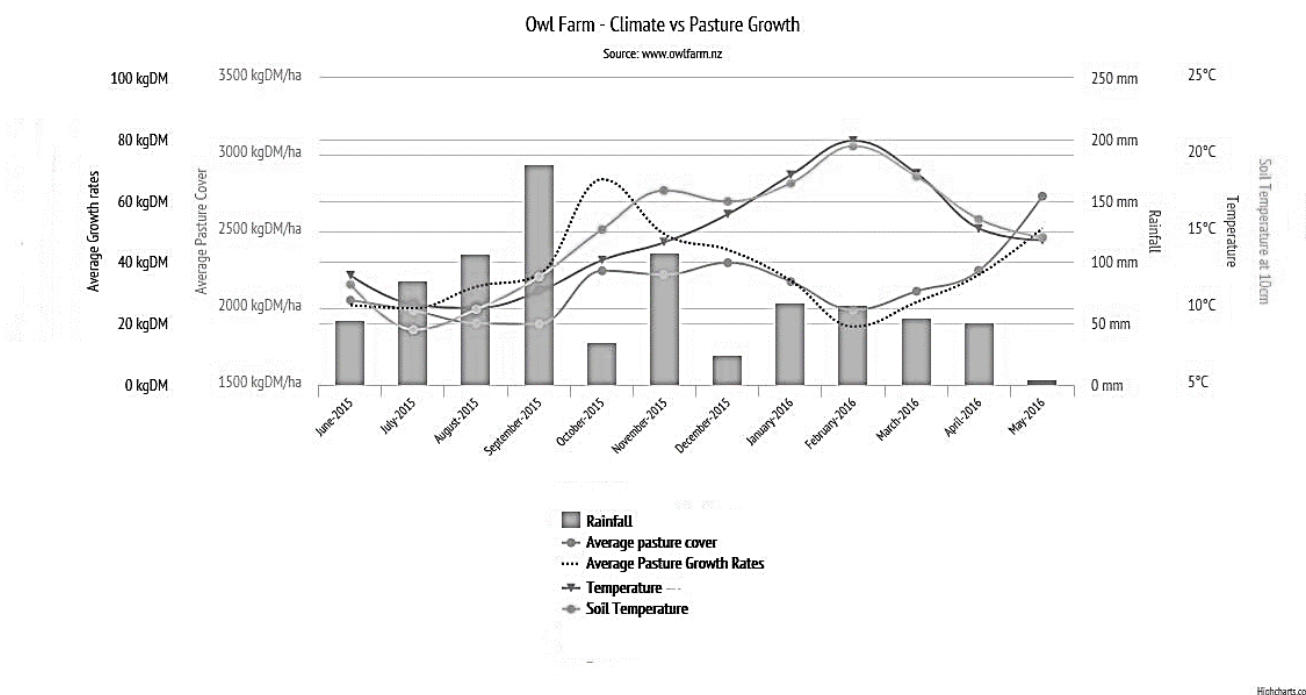
### NOTES





- El Nino modelled growth rates vs. actual. The graph below definitely shows the impact of warmer drier weather on growth rates but still didn't occur to the extent which was anticipated.

	Dec	Jan	Feb	Mar	Apr	May
Anticipated El Nino forecast growth rates -KgDM/ha	40	30	20	10	20	35
Actual Growth rates	44	34	27	27	36	51



#### NOTES





- Pasture quality over summer was a problem for us. Although we topped pre or post grazing for the majority of summer a heavy burden of summer grasses and weeds meant pasture quality was poor and didn't really reflect what we were seeing from the pasture meter which unfortunately measures height rather than density or species.
- With the assistance of DairyNZ Pasture First Workshop we have been able to back calculate pasture and crop eaten this year. At 11.5tDM/ha this is pretty poor and we think warrants our pasture renovation strategy as home grown feed needs to be the priority during low payout years. This information will also be available more accurately through RedSky modelling. This coming season we are targeting 14.5tDM/ha grown, which includes 12.7tDM/ha grass and an average of 0.7tDM/ha from annuals and 1.1tDM/ha from chicory. Based on a utilisation of 85% total eaten would be 12.5 t DM/ha – still not great but we hope to see continued improvement as a result of pasture renovation strategy.

Pasture Eaten kg DM/ha for Owl Farm 2015/16 Season		
Effective dairying area	A	A = 155ha
Milksolids to factory	B	B = 176,179
Kg MS other than colostrum that didn't go into the vat (milk fed to calves and antibiotic milk from sick cows)	C	C = 1500
Total Milksolids	B + C = D	D = 176,192kgMS
Peak cows milked	E	E = 450
Peak cows/ha	E / A = F	F = 2.9 cows/ha
MS/cow	D / E = G	G = 395kgMS/cow
Average liveweight/cow (refer table below)		475kg
T DM/cow (refer table below)	H	H = 5.1
Feed eaten cows t DM/ha	F x H = I	I = 14.8
Less - Imported feed eaten t DM/ha		J = 3.3
Pasture (crop) eaten/ha t DM/ha	I - J = L	L = 11.5

Tonne DM/cow required (eaten) at 11 MJME/kg DM (based on energy equations used in DairyBase)

Cow Lwt	Milksolids production (kg MS/cow/year)							
	250	300	350	400	450	500	550	600
	Days in Milk							
	220	235	250	260	270	285	300	300
350	3.5	3.9	4.3	4.6				
400	3.7	4.1	4.5	4.8	5.2			
450	3.9	4.3	4.7	5	5.4	5.8		
475	4	4.4	4.8	5.1	5.5	5.9	6.2	
500	4.1	4.5	4.9	5.2	5.6	6	6.3	6.7
525		4.6	5	5.3	5.7	6.1	6.4	6.8
550		4.7	5.1	5.4	5.9	6.2	6.6	6.9
600			5.3	5.6	6	6.4	6.8	7.1

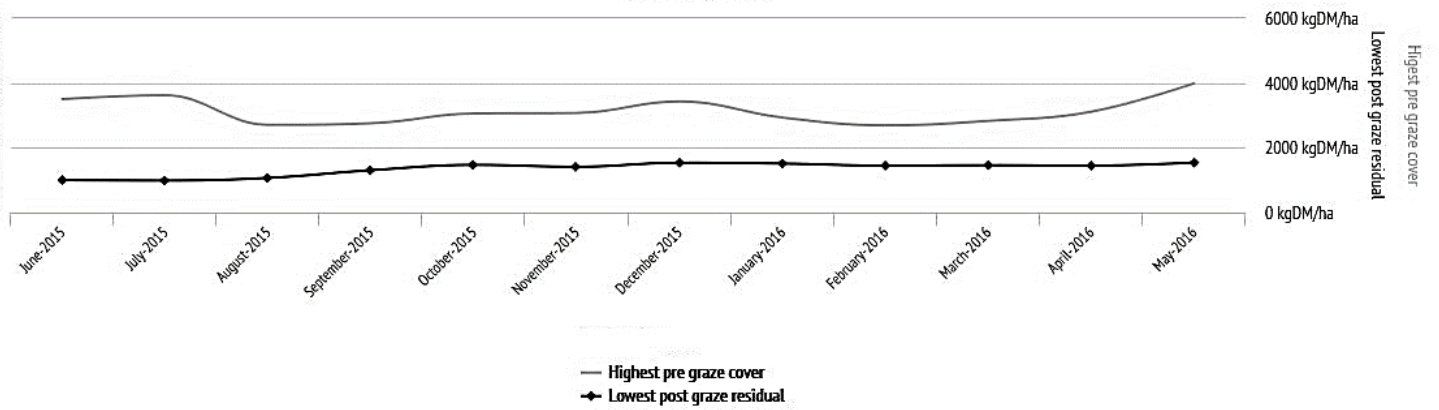
- From the weekly pasture metering we have been able to identify how frequently paddocks have been grazed. At the end of January when identifying the paddocks best placed for drilling with winter annuals to be followed by summer crop to enable our pasture renovation strategy we ranked total pasture grown top to bottom. Our best performing paddock had grown 10t DM/ha whereas our poorest performing paddock had grown only 6.5t DM/ha (**to the end of Jan**). Prior to our poorest performing paddock getting sprayed out and put into WinterStarII it had been grazed 5 times whereas our best performing paddock had been grazed 10 times.
- Further information regarding the pasture renovation strategy can be found on page 46

NOTES



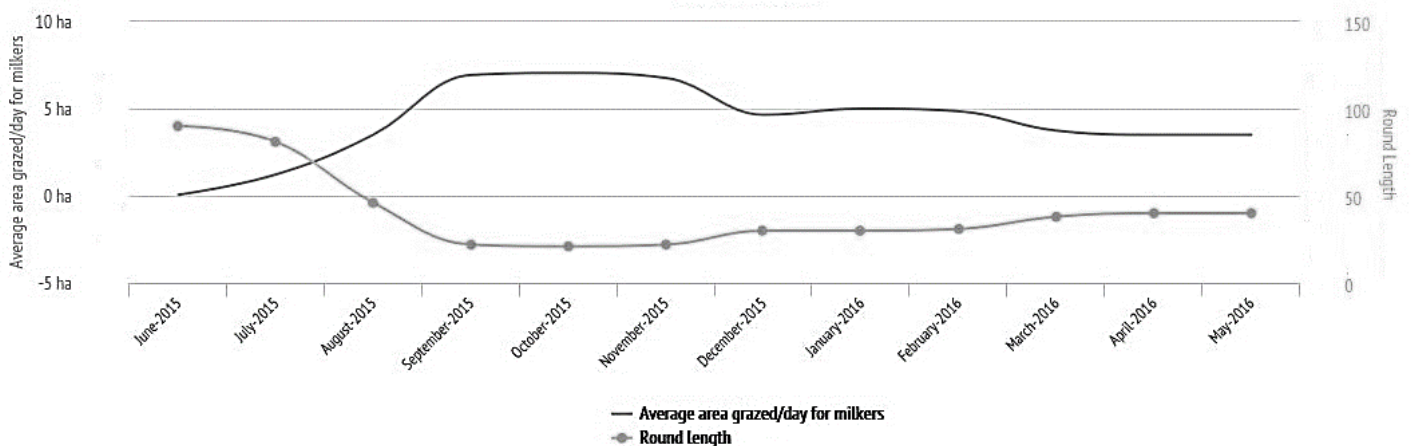
### Owl Farm - Low/High Graze

Source: www.owlfarm.nz



### Owl Farm - Pasture Production

Source: www.owlfarm.nz



### Supplementary Feed Use

- A total of 640 tonnes of feed has been used this season. This includes 385t of PKE (approx. 345t DM @ 90%DM), 225tDM of Maize and 30tDM of silage.
- Once again using the supplements tables from DairyNZ's Pasture First Workshops we have worked out tonnes of imported feed eaten total and per ha.

	Tonnes Wet	X	DM %/100	X	Utilisation	=	Tonnes DM Eaten
PKE	385	x	90	x	90	=	312
Maize	225DM	x	-	x	80	=	180
Imported Grass Silage	30DM	x	-	x	85	=	25.5
Imported supplement eaten – total tonnes DM							= 517.5
Imported supplement eater – total t DM/ha							= 3.3

- There is a definite concern about the utilisation of maize given the absence of appropriate feeding facilities and the cost of this feed. We did upgrade our centre feed wagon to a side feed wagon which will certainly improve the utilisation but regardless there will be some wastage feeding directly to the paddock.

### NOTES

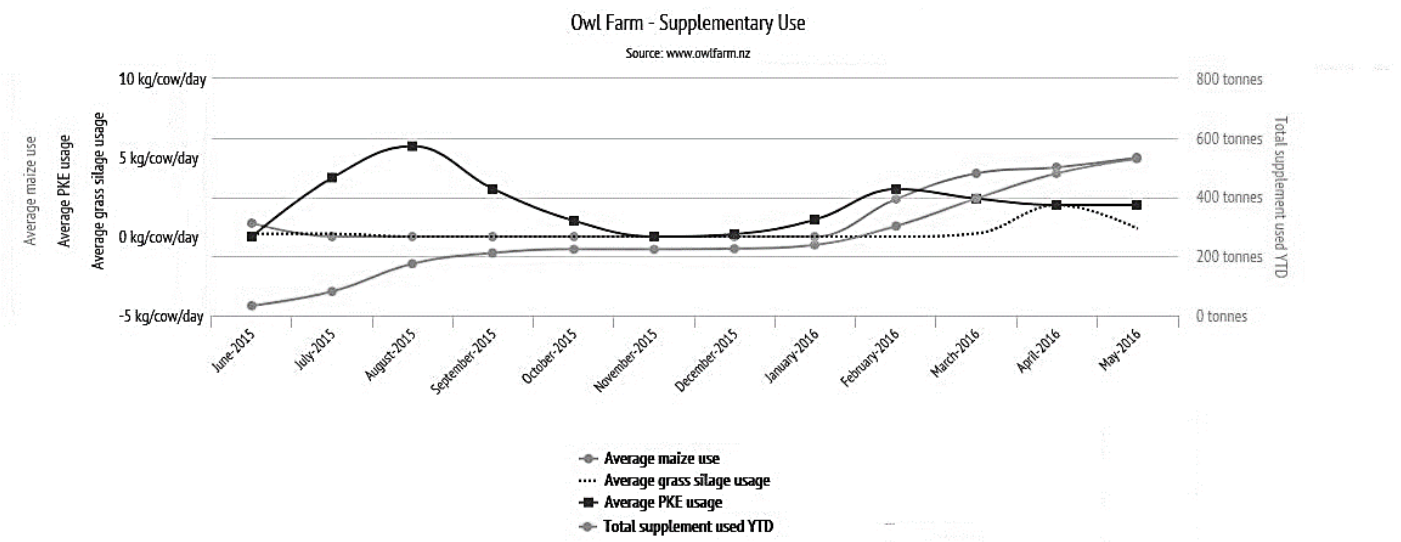




- We are fortunate that we can grow this off farm at a cheap rate but utilisation needs to be addressed long term if we are to continue with this feed. This season we grew 110t DM of maize over 5ha for a yield of 22t DM/ha, much better than last season's 17t DM/ha yield. The cost for growing this crop was \$20,999.00/110t yield is equivalent to 19c/kgDM.
- We also brought in a significant amount of maize this year due to an expected shortfall in feed over summer due to modelled effects of the El Nino, this was modelled at the milk-price at the time (\$4.60/kgMS) and was deemed to be financially viable at that point to purchase and keep more cows in milk. As it turned much of the additional maize wasn't required, so has been carried over as capital feed. The farm should have had this contingency feed on hand regardless.
- Over the past 3 months supplementary feed inputs have been high, the below table shows the average intakes (kgDM) per cow per day.

	Jan	Feb	Mar	April	May
PKE	1	3	2.4	2	1.7
Maize	0	2.4	4	4.4	4.5
Silage	0	0	0.2	2	0.3
<b>Total</b>	<b>1</b>	<b>5.4</b>	<b>6.6</b>	<b>8.4</b>	<b>6.5</b>

- Intakes were particularly high in April and May as we had 15ha of chicory out which was re-drilled into perennials, 15ha of pasture out drilled into annuals and 30ha of pasture out for minimum of 3 weeks due to undersowing.

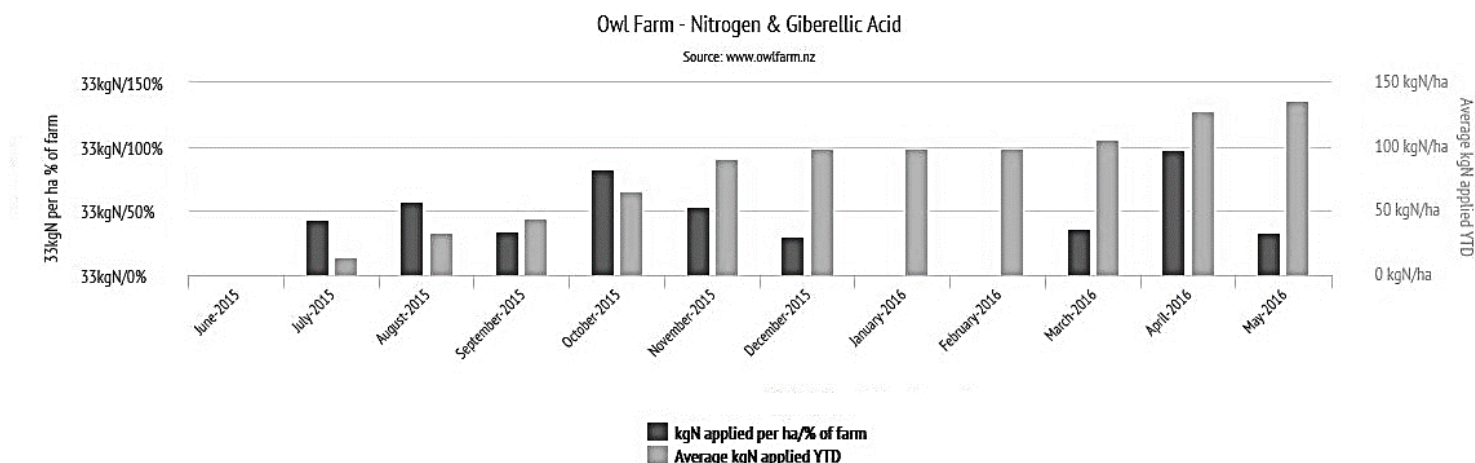


#### NOTES



## Nitrogen and Fertiliser

- Autumn fertiliser applications have now been complete with the majority of the farm requiring 2t of Lime/ha to address pH issues, another 70ha will require 2t/ha in spring to further increase pH to optimum ranges. This will improve soil fertility to optimise home grown feed.
- We have mined nutrients where possible to manage costs this season however maintenance applications for most will be required once again for the new season.
- Given phosphate levels are reasonably high we have used a bit of PhasedN this season, having just finished a round. This is made up of elemental sulphur, SustaiN and lime providing a slower releasing sulphur and application of nitrogen to boost growth.
- Nitrogen applied through the farm programme this season was approximately 136kgN/ha. However taking into account DAP/SustaiN applications with establishment of chicory, annuals, new grass and undersowing the farm average was 149kgN/ha, this was within out 15/16 target of 150 units of nitrogen. The below graph shows where the Nitrogen went on.



- Ideally we will look to apply ProGibb over winter and early spring to maintain our feed wedge out in front of us.

## Climate

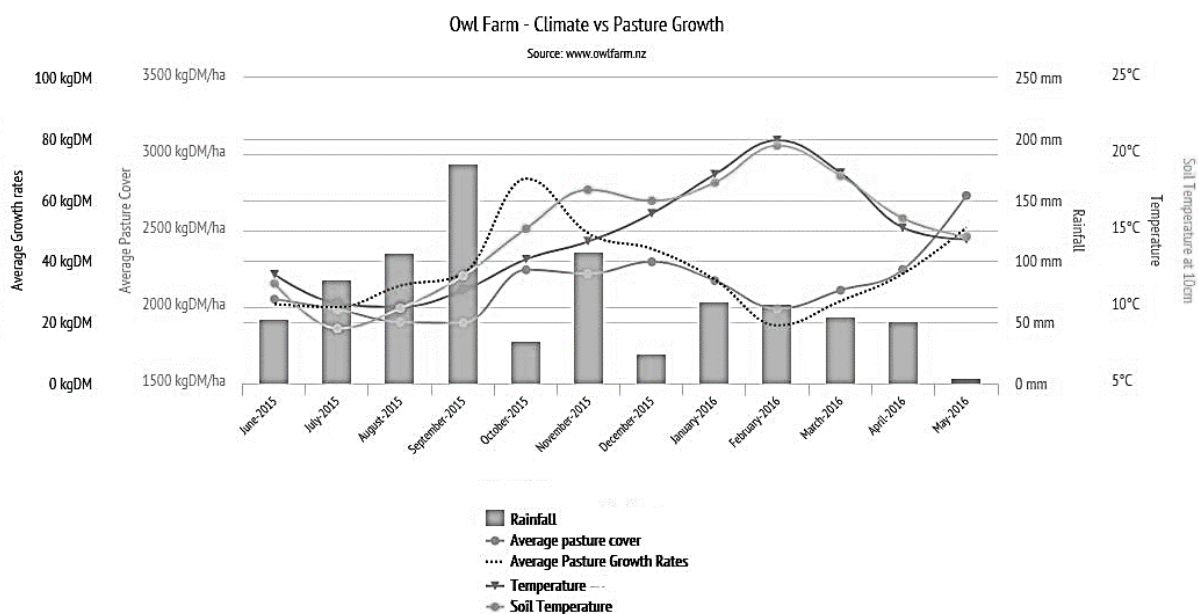
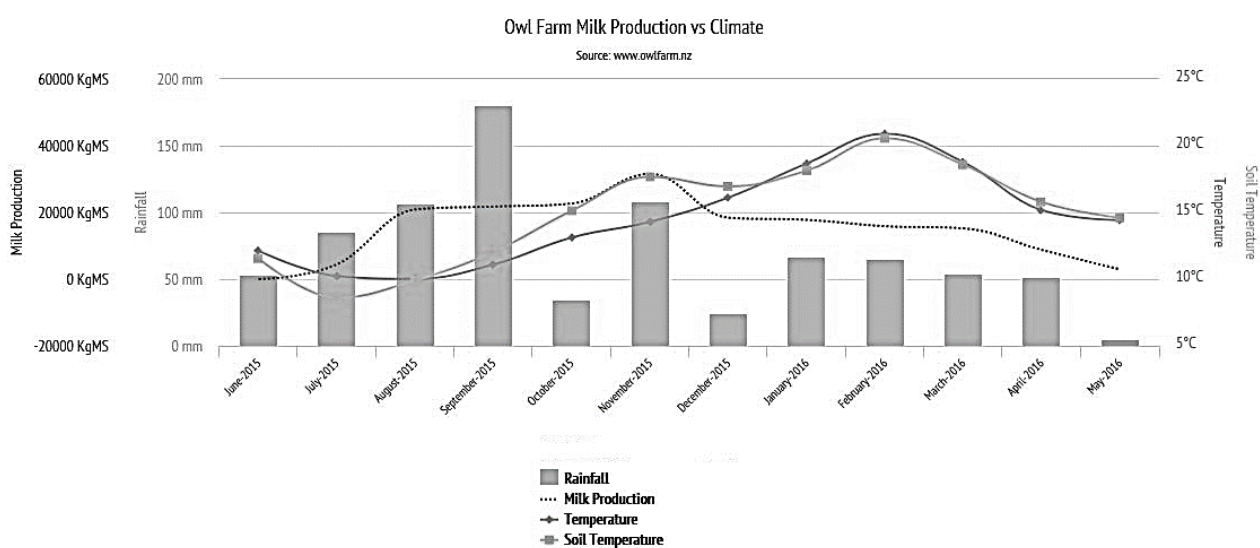
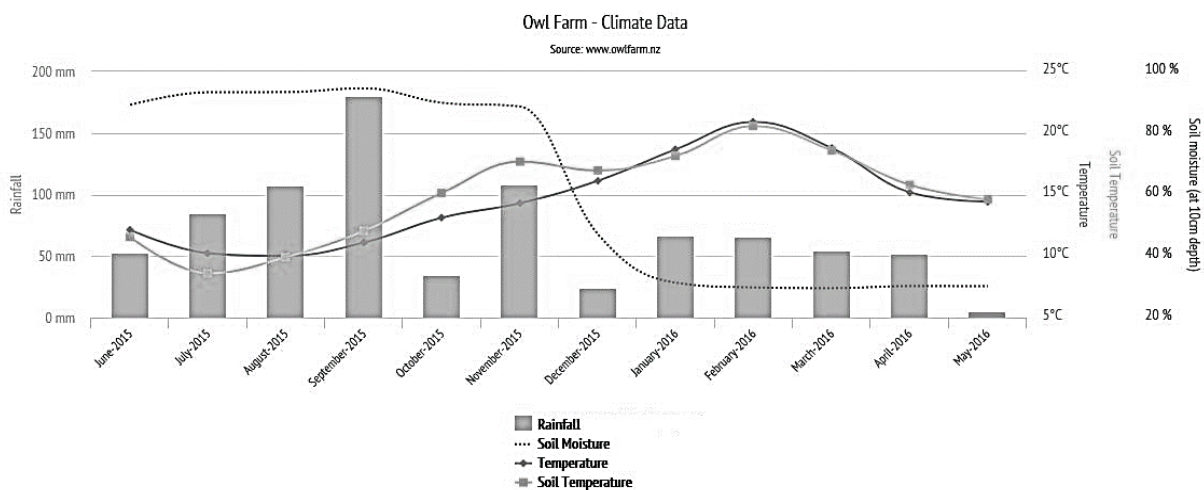
- Expecting the unexpected has been the norm in regards to what's been experienced this season. Winter and spring ended up being colder and wetter than what has been expected, this plagued the feed budget as much of our PKE had to be pulled forward to fill the void left by lower than anticipated growth rates. Summer ended up being long and hot, but fortunately we got bouts of rain at the optimal times to keep grass growth going which didn't see the expected El Nino have as much of an impact. Autumn has been phenomenal so far with growing conditions favourable right up to mid may due to warm, moist conditions.

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
<b>Ave. °C</b>	12.1	10.2	10	11.1	13.1	14.3	16.1	18.7	20.9	18.8	15.2	14.8
<b>Rainfall</b>	53	85.2	107.2	180.2	34.6	108.4	24.6	67	65.4	54.6	51.6	23.8
<b>STD rainfall</b>	53	138.2	245.4	425.6	460.2	568.6	593.2	660.2	725.6	780.2	831.8	855.6
<b>Soil Temp °C</b>	11.6	8.6	9.9	12	15.1	17.8	17	18.1	20.6	18.6	15.8	14.8

- Soil moisture hasn't been included here as the soil moisture probe was changed part way through the year which had a different reading.

NOTES





#### NOTES



# FINANCIAL PERFORMANCE

2015/16 season has been a difficult year financially with global volatility having a significant impact on the milk payout. Below is season to date figures comparing budgeted to actuals.

Year ending May 31	2015/16 budget	Actual to end of April	Budget to end of April	Variance (Act-budget to April)	Notes
Milk Production (kgMS)	210,000	173,940	200,550	- 26,610	1.
MS/ha	1355	1122	1253	- 93	2.
MS/cow	456	391*	436	- 45	3.
<b>Income</b>					
Milk solid payout	\$4.50kgMS	\$3.47kgMS	\$4.50kgMS		4.
Dividend/Share	\$0.20/Share	\$0.37	\$0.20		
Milk Solid revenue	\$945,000	\$603,572	\$902,475	- \$298,903	5.
Dividend	\$37,200	\$69,360	\$37,200	+ \$32,160	
Cattle and calf sales	\$68,375	\$86,206	\$22,475	+ \$63,731	6.
<b>Gross Farm Income</b>	<b>\$1,050,575</b>	<b>\$759,138</b>	<b>\$962,150</b>	<b>-\$203,012</b>	
<b>Expenses</b>					
<b>Staff</b> employment	\$188,168	\$198,265	\$172,487	+ \$25,778	7.
<b>Cow costs</b> Animal Health	\$38,600	\$37,446	\$35,881	+ \$1,565	8.
Breeding expenses	\$26,223	\$21,414	\$26,223	- \$4,809	9.
<b>Feed</b> PKE	\$74,100	\$96,575	\$74,100	+ \$22,475	10.
Grass Silage harvested	\$15,000	\$13,760	\$15,000	- \$1,240	
Maize	\$40,000	\$66,380	\$40,000	+ \$26,380	11.
Chicory	\$9,600	\$9,702	\$9,600	+ \$102	
Nitrogen/fertiliser/GA	\$81,840	\$64,366	\$78,120	-\$13,754	12.
Regrassing	\$7,200	\$42,406	\$7,200	+\$35,206	13.
Calf Feed	\$3,000	\$4,000	\$3,000	+\$1,000	
<b>Grazing</b> Calves and heifers	\$73,930	\$61,814	\$69,337	-\$7,523	
<b>General</b> Shed expenses	\$9,400	\$11, 836	\$9,300	+\$2,536	
Electricity	\$16,450	\$13,058	\$15,551	- \$2,493	
Fertiliser spreading	\$10,000	\$16,398	\$10,000	+\$6,398	14.
Repairs and maintenance	\$50,000	\$16,243	\$46,618	- \$30,375	
Vehicle expenses	\$36,000	\$35,486	\$33,000	+\$2,486	
Weed and pest control	\$15,000	\$1,204	\$14,000	-\$12,796	
Admin/Overheads	\$61,874	\$61,827	\$58,712	+\$3,115	15.
Other expenses	\$30,760	\$46,608	\$27,510	+\$19,098	16.
<b>Total Farm Expenses</b>	<b>\$787,145</b>	<b>\$806,952</b>	<b>\$745,639</b>	<b>+\$61,313</b>	
FWE/kgMS	\$3.75	\$4.64	\$3.70		
<b>Cash Operating Surplus/Deficit</b>	<b>\$263,430</b>	<b>- \$47,841</b>	<b>\$216,511</b>	<b>-\$264,052</b>	
<b>Cash operating surplus/Deficit p/ha (155ha av. used)</b>	<b>\$1700/ha</b>	<b>-\$308/ha</b>	<b>\$1397/ha</b>		
Depreciation est.	\$52,979	\$48,565	\$48,565	-	
<b>Dairy Operating Profit/Loss</b>	<b>\$210,451</b>	<b>- \$96,379</b>	<b>\$167,946</b>	<b>-\$264,052</b>	
<b>Dairy Operating profit/loss per ha</b>	<b>\$1358/ha</b>	<b>-\$622/ha</b>	<b>\$1084/ha</b>		

## NOTES

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1. Initial budget was in hindsight unachievable. Although we finished on 201,000kgMS last season, we had underdeveloped heifers and a cold wet winter/spring which impacted production significantly. Mid way through the season when we realised the initial target was too ambitious we revised our target to 185,000kgMS. Following this we lost 10ha forcing us to cull 30 cows and got hit badly with eczema which saw us finish on 176,197kgMS.
2. Have divided the Actual MS/ha by 155ha as we lost 10 ha at the start of December, as we had this land for half of the season this figure is derived from 155ha rather than what we finished on 150ha.
3. Initial target was calculated off 460 cow's peak, actual end for us was 430 as result of losing milking land. Given this was half way through the season I based the per cow figure on 445 cows. In reality given we culled our worst cows per cow production would have been higher but difficult to estimate.
4. The initial milk price of \$4.50kgMS has been included here. Although it is not comparing apples with apples, it does reflect the environment we thought we would be operating in at the time of building the 15/16 budget in May last year.
5. Had the payout been standardised across budget and actuals in terms of what we were actually paid this year, the deficit would have been \$92,063 which would have reflected the loss of milk production only. The additional \$206,567 reflects the drop in payout experienced this season.
6. Significant surplus thanks to selling 30 culls when losing land.
7. Turnover of key staff in middle of calving due to health reasons meant relief staff were used.
8. 25% of herd having CDIR's at start of mating over-inflated this expense, had this not been the case animal health would have been significantly under budget.
9. Only one herd test completed when initially had budgeted 4. An intentional cost saving but a one off as to maintain our top 5% BW status this won't be sustainable.
10. Used majority of 300T contract during winter/spring when cold wet conditions halted pasture growth. Additional 85T PKE modelled as required for summer under El Nino, never really came to fruition but under contract so used.
11. Additional \$73,860 of maize brought in due to anticipated El Nino, \$50,000 of that has been recorded as capital feed as will be carried over and will be amount we will always try and have on hand to mitigate drought effects. Additional maize has been used to allow us to undertake pasture renovation strategy.
12. Mined nutrients where we could. Planned on using Pro-Gibb more than we did – staffing issues restricted use during winter and spring.
13. A significant part of our strategy is optimising home grown feed. Weekly pasture metering and frequent pasture condition scoring exercises soon illustrated the gap between top and bottom performing paddocks. In order to reduce our reliance on brought in feed we need to invest in our asset which can return the greatest and ensure we optimise pasture grown and harvested.
14. Part of our justification of purchasing a second hand fertiliser spreader so we can do ourselves and reduce costs.
15. Admin/Overheads includes administration, insurance, rates, ACC levies, Minda, Farmax, Superannuation and staff development. Of these rates and ACC levies have been higher than anticipated.
16. Other expenses include water charges, freight (fertiliser), cartage (stock), effluent, water reticulation, fencing, equipment purchase, travel, consultants, shelter trees, wet weather gear. Freight and effluent ended up being significantly higher than anticipated.

#### NOTES

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### Financial performance with a standardised milk-payout

Year ending 31 May	2015/16 budget	Actual to end of April	Budget to end of April	Variance (Act-budget to April)
KgMS	210,000	173,940	200,550	- 26,610
Standardised payout \$3.47kgMS	\$728,700	\$603,572	\$695,909	- \$92,337
<b>Gross Farm income</b>	<b>\$834,275</b>	<b>\$759,138</b>	<b>\$755,584</b>	<b>\$3,827</b>
<b>Total Farm Expenses</b>	<b>\$787,145</b>	<b>\$806,952</b>	<b>\$745,639</b>	<b>+\$61,313</b>
FWE kgMS	\$3.75	\$4.64	\$3.70	
<b>Cash Operating Surplus/Deficit</b>	<b>\$47,130</b>	<b>- \$47,814</b>	<b>\$9,945</b>	<b>- \$57,486</b>
<b>Cash operating surplus/Deficit p/ha (155ha av. used)</b>	<b>\$304/ha</b>	<b>- \$308/ha</b>	<b>\$64/ha</b>	
Depreciation est.	\$52,979	\$48,565	\$48,565	-
<b>Dairy Operating Profit/Loss</b>	<b>-\$5,849</b>	<b>- \$96,379</b>	<b>- \$38,620</b>	<b>- \$57,486</b>
<b>Dairy Operating profit/loss per ha</b>	<b>-\$38/ha</b>	<b>-\$622/ha</b>	<b>-\$249</b>	

The standardised figures above show what the cost of lost production was. On this basis the drop in payout cost >\$200,000.

### Financial performance to the end of April per cow/ha/\$kgMS

	Total	\$/cow	\$/ha	\$/kgMS
<b>Total Milk</b>	\$603,572	\$1327	\$3894	\$3.47
<b>Gross farm income</b>	\$759,138	\$1668	\$4897	\$4.36
<b>Total farm expenses</b>	\$806,952	\$1774	\$5206	\$4.64
<b>Cash operating deficit</b>	-\$47,814	-\$105	-\$308	-\$0.27
<b>Depreciation est.</b>	\$48,565	\$107	\$313	\$0.28
<b>Dairy operating loss</b>	-\$96,379	-\$212	-\$622	-\$0.55

\* Cows have been average to 455

\* Ha averaged to 155

### This season's financial performance can be summed up by the following points:

- **Income**
  - Our initial production target and budget was overly optimistic, especially within the cost structure we had budgeted and given the size and condition of our incoming heifers who struggled early on.
  - Global volatility impacting milk price – has significantly impacted bottom line.
- **Expenses**
  - Staffing issues through spring lead to relief staff and still paying sick leave to old farm manager – We couldn't have done anything to avoid to blow-out
  - PKE – colder/wetter conditions in spring and winter hindered growth and meant we had to cut into our summer PKE feed allowance, this led to the further purchase. Reducing stocking rates or buying alternative feed was the only way this could have been managed differently. At the time of modelling the finances stacked up for purchasing additional feed rather than culling surplus stock.
  - Maize – similar to above – we didn't have adequate feed reserves on hand to satisfy feed demand for stocking rate. We didn't have the grass surplus we had anticipated and therefore couldn't shut up silage or push the feed wedge out in front of us. Modelling at the time supported the economics of buying additional feed.
  - Pasture renovation – this spend ended up significantly more than budgeted at the start of the season. Pasture condition scoring and weekly pasture rides illustrated the significant gap between top and bottom paddocks performance. Could be argued that some of this spend is capital as its deferred works that haven't been addressed. It has been left as an operational expense due to the ongoing nature of this work. Investing in home grown feed this season has allowed us to significantly reduce our operational budget in regards to purchased feed next season.
  - All other expense categories have been managed well all things considered.

### NOTES

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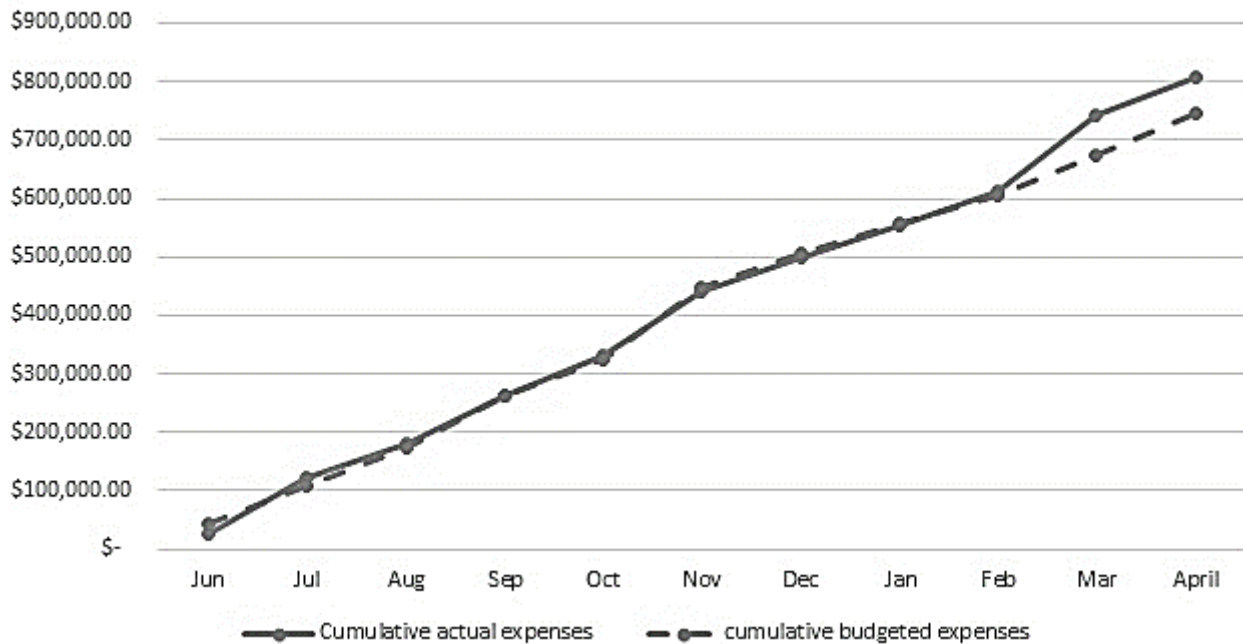
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### Cumulative actual expenses vs. budgeted expenses

	Cumulative Actual Expenses	Cumulative Budgeted Expenses
Jun	\$ 27,597.00	\$ 44,703.00
Jul	\$ 121,053.00	\$ 109,854.00
Aug	\$ 181,741.00	\$ 173,483.00
Sep	\$ 262,808.00	\$ 262,495.00
Oct	\$ 331,967.00	\$ 325,756.00
Nov	\$ 440,224.00	\$ 448,506.00
Dec	\$ 498,182.00	\$ 504,742.00
Jan	\$ 553,069.00	\$ 556,431.00
Feb	\$ 611,864.00	\$ 603,642.00
Mar	\$ 743,096.00	\$ 673,553.00
April	\$ 806,952.00	\$ 745,639.00

### Actual vs. Cumulative Spend



NOTES



## PLAN FOR THE NEXT SEASON: 5 P'S – PLANNING AND PREPARATION PREVENT POOR PERFORMANCE

- Production is vanity, profit is sanity**

It would be a fair assessment to say we didn't come into this current season with a robust plan. This wasn't a reflection of poor management per se, more a reflection of a new management committee coming together which has seen a large number of stakeholders pulled together for a common purpose, all of whom have had very little prior experience or knowledge of this farm or how it operates. This could be perceived externally as negative, however what's been happening internally has been the **forming, storming and norming** of the management committee to a point we are now confident we can start **performing** given the valuable lessons we have all learnt this year. Collectively we are all looking towards the future with a huge amount of optimism – yes this season has been hugely difficult on multiple fronts but we are now in a position to capitalise on what's gone before, we have the right people in place, the stock are in good condition, we have adequate feed reserves on hand and we are all much the wiser having experienced this current season – the season ahead and the future irrespective of the payout which is ultimately out of our control is a positive one.

Much has been written about our stocking rate and the impact that this is having on feed demand and the feed budget at pinch times within the season. The decision has been made to stick largely with a similar stocking rate but focus more on pasture grown and harvested as 2.9 isn't seen as an overly intensive stocking rate. All the figures we have done our budgets on are conservative as **we want to plan for the worst but hope for the best.**

The farm systems targets and results for current season and forecast for 2016/17 are as follows:

	2015/16 Targets	2015/16 Actuals	2016/17 Targets	% change
<b>Stocking rate</b>	2.9 cows/ha			
<b>FWE</b>	\$3.89kgMS	\$4.64kgMS	\$3.63kgMS	↓ 22%
<b>Nitrogen fertiliser input</b>	150kgN/ha	149kgN/ha	150-170kgN	-
<b>Imported supplements</b>	400t	630t	~420t	↓ 35%
<b>Pasture and crop eaten</b>		11.5 t DM/ha	~12.5 t DM/ha	↑ 8%
<b>Milk production</b>	210,000kgMS	176,192kgMS	185,500kgMS	↑ 5%
<b>Est. N leached from Overseer</b>	33kgN/ha	36kgN/ha	30-35kgN/ha	-

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## Farmax

Farmax has been used as our tool for modelling the farm system for this coming season. Farmax is a biological model with an integrated feed wedge and feed budgeting tool which will be used as monitoring tool against targets as we go through the season.

The general farm system for the season ahead is shown below:

<b>FARMAX</b> <small>YOUR ADVANTAGE</small> <b>Physical Summary for Owl Farm 2016/17 Plan</b> <i>Jun 16 - May 17</i>			
Category	Description	Value	Units
<b>Farm</b>	Effective Area	155	ha
	Stocking Rate	2.9	cows/ha
	Comparative Stocking Rate	76.2	kg Lwt/t DM offered
	Potential Pasture Growth	12.7	t DM/ha
	Nitrogen Use	152	kg N/ha
	Feed Conversion Efficiency (offered)	13.3	kg DM offered/kg MS
<b>Herd</b>	Cow Numbers (1st July)	455	cows
	Peak Cows Milked	446	cows
	Days in Milk	280	days
	Avg. BCS at calving	5.6	BCS
	Liveweight	1,208	kg/ha
<b>Production (to Factory)</b>	Milk Solids total	184,147	kg
	Milk Solids per ha	1,188	kg/ha
	Milk Solids per cow	413	kg/cow
	Peak Milk Solids production	1.95	kg/cow/day
	Milk Solids as % of live weight	98.3	%
<b>Feeding</b>	Pasture Offered per cow *	4.0	t DM/cow
	Supplements Offered per cow *	1.5	t DM/cow
	Off-farm Grazing Offered per cow *	0.0	t DM/cow
	Total Feed Offered per cow *	5.5	t DM/cow
	Pasture Offered per ha	11.6	t DM/ha
	Supplements Offered per ha	4.4	t DM/ha
	Off-farm Grazing Offered per ha	1.5	t DM/ha
	Total Feed Offered per ha	17.6	t DM/ha
	Supplements and Grazing / Feed Offered *	27.3	%
	Bought Feed / Feed Offered *	14.3	%

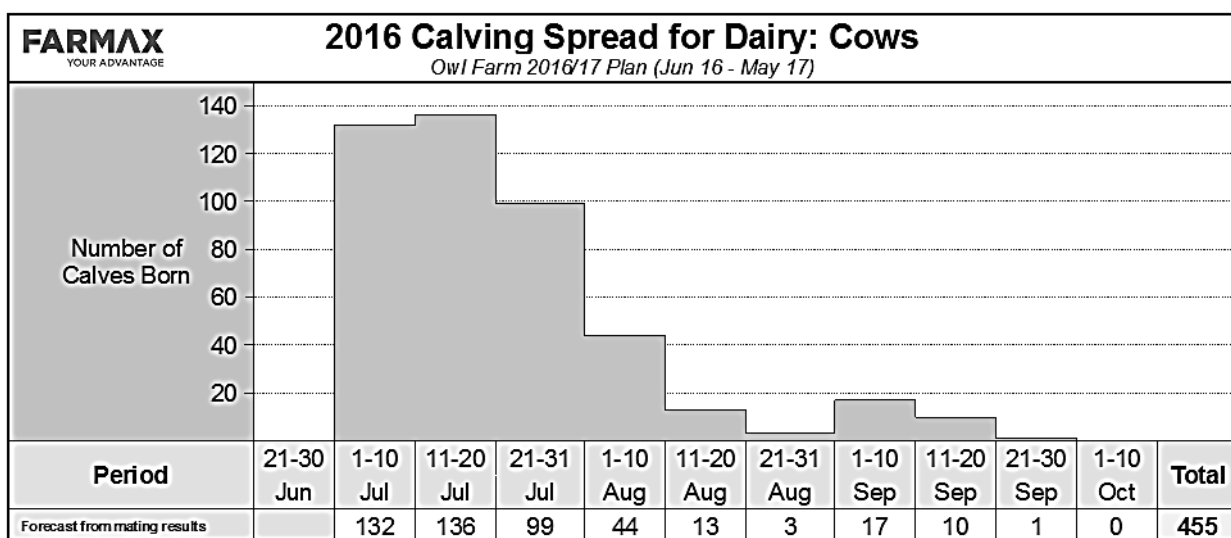
(\*) feed offered to females > 20 months old / peak cows milked

<b>FARMAX</b> <small>YOUR ADVANTAGE</small> <b>Supplements for Owl Farm 2016/17 Plan</b> <i>Jun 16 - May 17</i>							
Supplement	Units	Open	Buy	Produce	Sell	Feed	Close
Chicory	tonnes DM			165.0		160.3	4.7
Calf Meal	tonnes		3.4			3.4	
Pasture Silage	tonnes DM	40.0				35.0	5.0
Palm Kernel	tonnes		198.2			198.2	
Bought maize silage	tonnes DM		173.0			173.0	
Annual Ryegrass	tonnes DM			112.5		109.7	2.8
<b>Total Feed</b>	<b>tonnes</b>	<b>40.0</b>	<b>374.6</b>	<b>277.5</b>	<b>0.0</b>	<b>679.6</b>	<b>12.5</b>
<b>Total DM</b>	<b>tonnes DM</b>	<b>40.0</b>	<b>354.4</b>	<b>277.5</b>	<b>0.0</b>	<b>659.4</b>	<b>12.5</b>

## NOTES



FARMAX YOUR ADVANTAGE		Numbers for Dairy: Cows								
		Owl Farm 2016/17 Plan (Jun 16 - May 17)								
Month	Age (m)	Open	Calve	Dry Off	Die	Buy	Sell	Transfer		Close
								In	Out	
Jun 16	MA									
Jul 16	MA		367				6			361
Aug 16	MA	361	59							420
Sep 16	MA	420	28		2					446
Oct 16	MA	446								446
Nov 16	MA	446			2					444
Dec 16	MA	444					10			434
Jan 17	MA	434			2					432
Feb 17	MA	432					30			402
Mar 17	MA	402								402
Apr 17	MA	402					35			367
May 17	MA	367		367						
Total		0	454	367	6	0	81	0	0	0



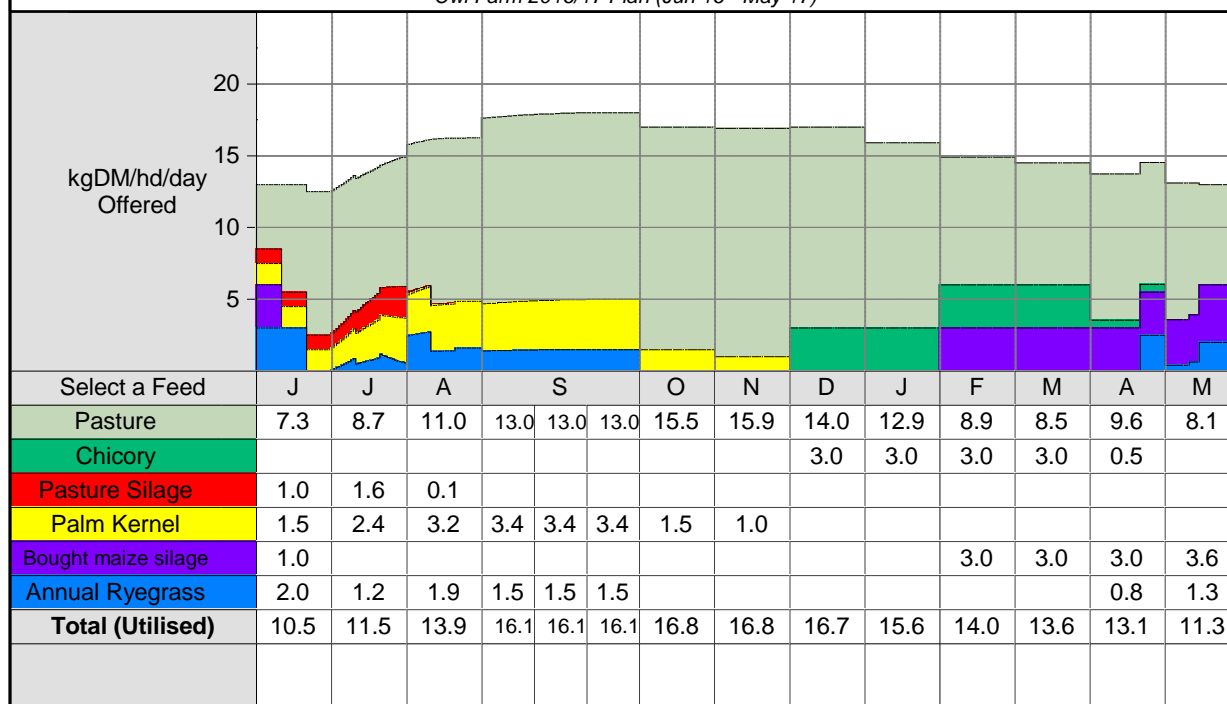
The rapid calving pattern put's pressure on feed reserves and pasture covers early into the season. Still some questions around calving date which need to be answered in the future.

NOTES



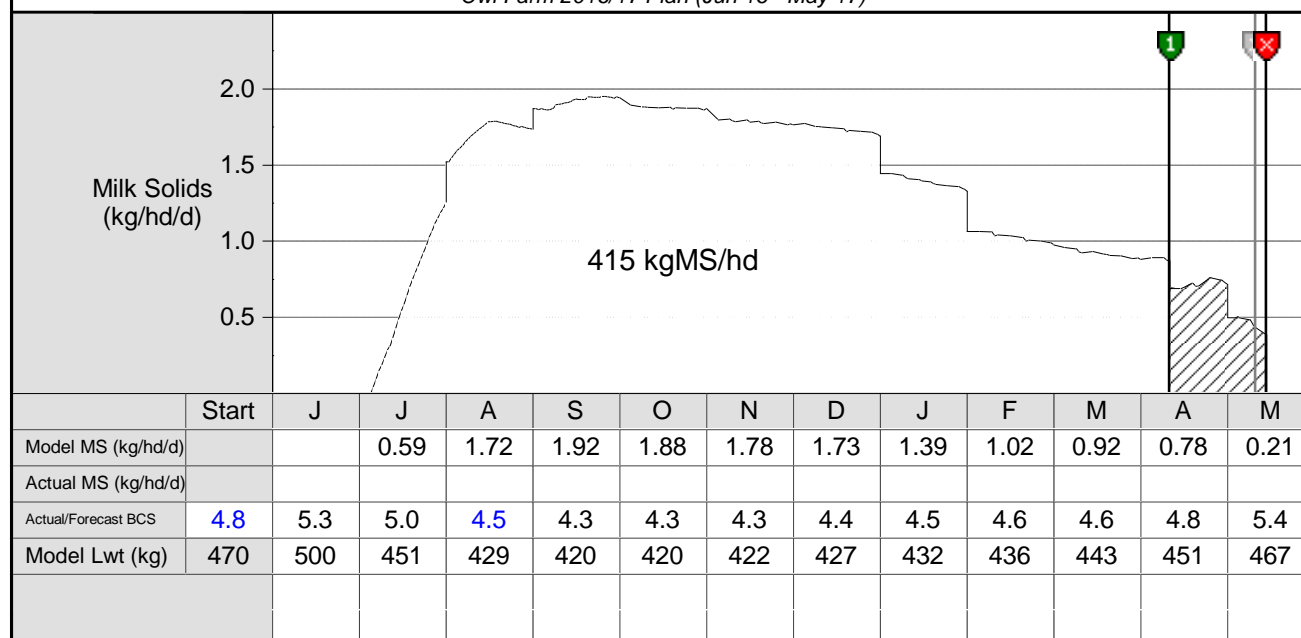
## Feed Offered for Dairy: Cows

Owl Farm 2016/17 Plan (Jun 16 - May 17)



## Production for Dairy: Cows

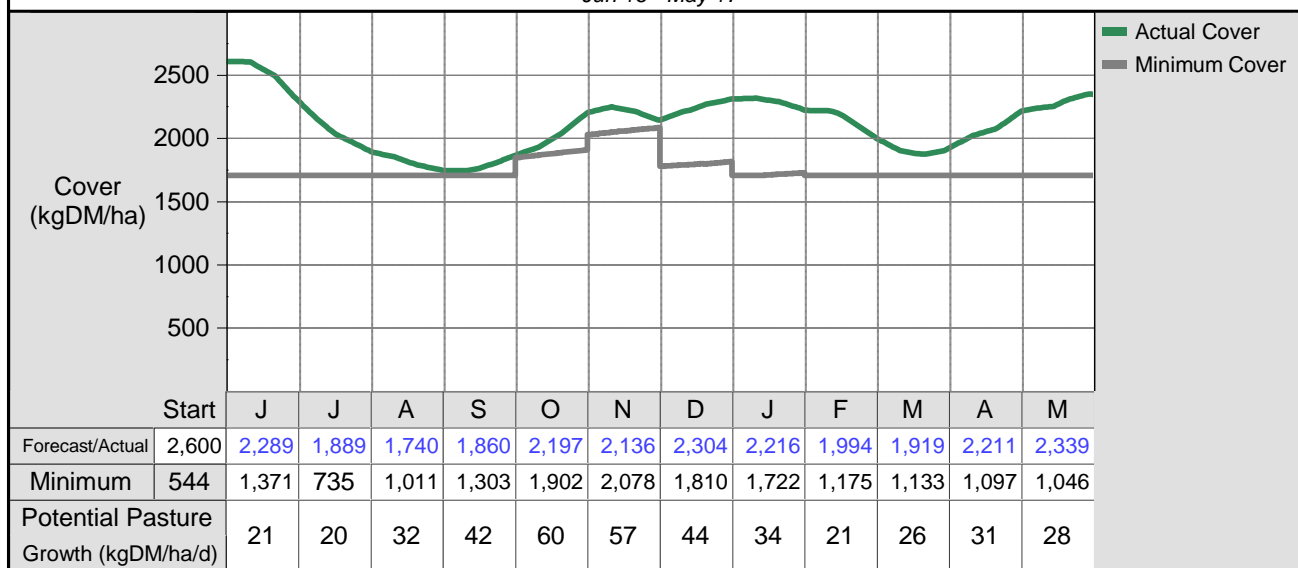
Owl Farm 2016/17 Plan (Jun 16 - May 17)



NOTES

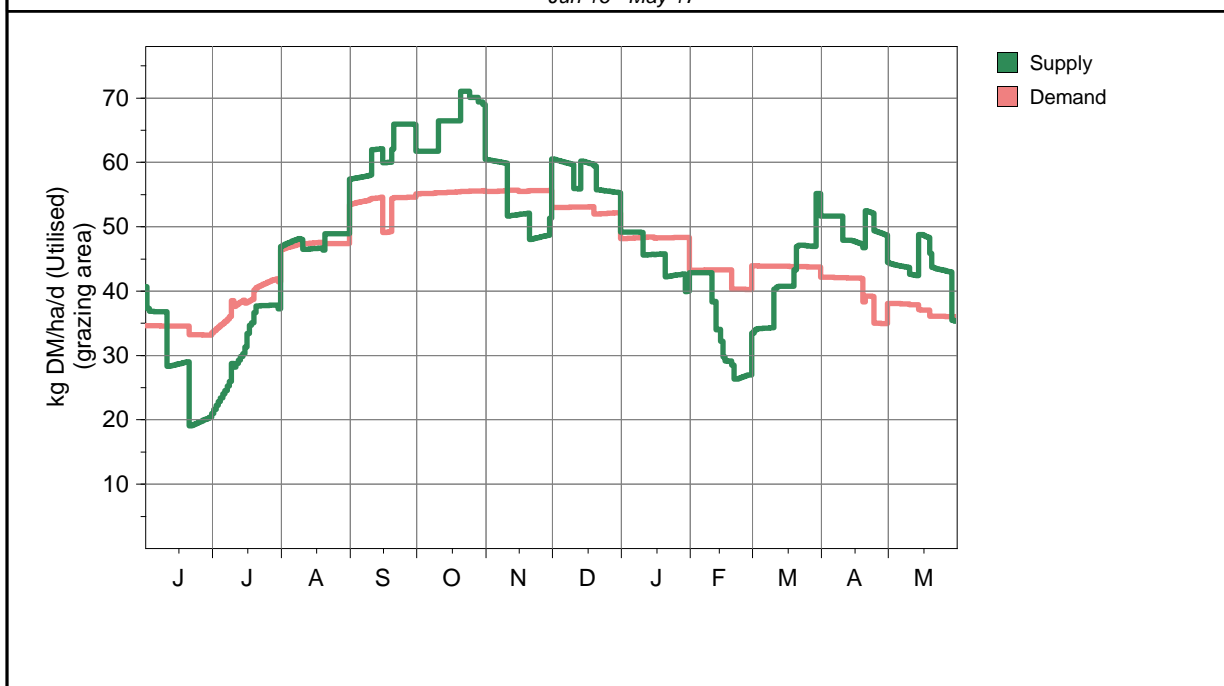
## Pasture Cover for Owl Farm 2016/17 Plan

Jun 16 - May 17



## Supply/Demand for Owl Farm 2016/17 Plan


Jun 16 - May 17



NOTES

## Financial targets and plans for 2016/17 season

Financial performance is our number one on-farm target this season, all excuses aside we must do better than we did last season. This season we are using the more condensed Westpac cost structure for reporting cash-flow and profit/loss which will be uploaded monthly to [www.owlfarm.nz](http://www.owlfarm.nz) to ensure we are hitting the targets set out at the beginning of the season.



Agribusiness

DAIRY BUDGET (GST excl.)

CLIENT: OWL Farm		FOR YEAR ENDED: May-17				Total ha 165	
STOCK	2016	2017	RECONCILIATION			Eff ha milking 155	
COWS	350	350	Opening	550	Closing	550	
R2 Heifers	100	100	N. Increase	383	Sales	433	
R1 Heifers	100	100	Purchase	0	Deaths	7	
STEERS R 1YR			Total	933	Total	990	
OTHERS			Calving%	85%	% milk chq	100%	
			Deaths	7	% of grazing acc	100%	
TOTALS	550	550	May advance	\$3.15	Finals	\$0.51	
		\$ per Cow	\$ per Kg ms	Total	STOCK SALES Price		
WAGES		344.4	0.84	155,000	93 CULL COWS	\$600 55,800	
ANIMAL HEALTH		66.7	0.16	30,000	340 CALVES	\$50 17,000	
BREEDING		55.6	0.13	25,000	433 TOTAL	72,800	
DAIRY SHED & ELECTRICITY		55.6	0.13	25,000	STOCK PURCHASES Price		
PURCHASED FEED		168.9	0.41	76,000	0	\$0 -	
LEASE LAND	Hd	0.0	0.00	-	0 TOTAL	-	
GRAZING-yearlings	100	52	9.00	104.0	NET STOCK SALES \$72,800		
GRAZING-calves	100	22	7.00	34.2	MILK INCOME		
FERTILISER		144.4	0.35	65,000	SUPPLY NO. 72847	100% share 756,146	
FERTILISER SPREADING		11.1	0.03	5,000	DIVIDEND 186,000 \$0.30 55,800		
FRIEGHT		20.0	0.05	9,000	GROSS FARM INCOME \$1966 \$884,746		
CARTAGE (STOCK)		10.0	0.02	4,500	Rental Income		
WEEDS & PESTS		11.1	0.03	5,000	TOTAL INCOME \$884,746		
CONSULTANCY		16.0	0.04	7,200			
SILAGE		33.3	0.08	15,000			
CROPPING		55.6	0.13	25,000			
REGRASSING		55.6	0.13	25,000			
R & M		55.6	0.13	25,000			
VEHICLE Exp.'s		77.8	0.19	35,000			
GENERAL		44.4	0.11	20,000			
OVERHEADS		133.3	0.32	60,000			
FARM COSTS	76%	1498	3.63	\$673,900			
INTEREST COST				200,000			
LEASE LAND				30,000			
EFFECTIVE FARM SURPLUS (EFS)	-2%	-43	-0.10	(\$19,154)			

PRODUCTION LAST YR		2016	176197 kg ms	PRODUCTION May		2016	2019	kg ms	
Month	Production	Production Curve	Advance For Month	Capacity Adjust Payment	Final Payments	Payout for last Mays Pro	Advance Payout	Final & Top up payments	Notes
JUN				\$0.51	\$0.00	\$3.15	\$7,390	\$0	May P.+ June F
JULY	1855	1%	\$2.75	\$0.00	\$0.05		\$5,101	\$8,810	July Final
AUG	12985	7%	\$2.75	\$0.00	\$0.10		\$35,709	\$17,620	Aug Final
SEP	24115	13%	\$2.90		\$0.15		\$69,934	\$26,430	From Aug Prod
OCT	26970	14%	\$2.90		\$0.21		\$78,213	\$39,227	From Sep Prod
NOV	24915	13%	\$3.20				\$79,728	\$0	From Oct Prod
DEC	20460	11%	\$3.20				\$65,472	\$19,778	From Nov Prod
JAN	18550	10%	\$3.40	\$0.00			\$63,070	\$0	From Dec Prod
FEB	16695	9%	\$3.50	\$0.00			\$58,433	\$22,260	From Jan Prod
MAR	16695	9%	\$3.60	\$0.00			\$60,102	\$12,985	From Feb Prod
APR	14840	8%	\$3.70	\$0.00			\$54,908	\$14,655	From Mar Prod
MAY	7420	4%					\$178,087	\$16,324	From Apr Prod
Total	185500	100%					\$578,059	\$178,087	
Check	185500	Analised Payout=	\$3.70	\$0.00	\$0.51			\$4.08	

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### NOTES



**Comparison of cost structure 15/16 vs. 16/17**

<b>Budget</b>	<b>15/16 April Actuals</b>	<b>16/17 budget</b>	<b>Variance</b>	<b>Notes</b>
Milk Production (kgMS)	173,940	185,500	+11,560	
Milk Payout (\$kgMS)	\$3.47	\$4.08	+\$0.66	
Dividend/share (186,000)	0.40/share	0.30/share	-\$0.10	
Milk Revenue	\$603,572	\$756,840	+\$153,268	
Dividend	\$69,360	\$55,800	-\$13,560	
Cattle and calf sales	\$86,206	\$72,800	-\$13,406	
<b>Gross Farm Income</b>	<b>\$759,138</b>	<b>\$885,440</b>	<b>+\$126,302</b>	1.
<b>Expenses</b>				
Wages	\$198,265	\$155,000	-\$43,265	2.
Animal Health	\$37,446	\$30,000	-\$7,446	3.
Breeding	\$21,414	\$25,000	+\$3,586	4.
Dairy shed and electricity	\$24,894	\$25,000	+\$106	
Purchased feed	\$166,955	\$76,000	-\$90,955	5.
Grazing (young stock)	\$61,814	\$62,200	+\$386	
Fertiliser	\$64,366	\$65,000	+\$634	
Fertiliser spreading	\$16,398	\$5,000	-\$11,398	6.
Freight	\$9,145	\$9,000	-\$145	
Cartage (stock)	\$1,788	\$4,500	+\$2,712	
Weeds and pest	\$1,204	\$5,000	+\$3,796	
Consultancy	\$7,360	\$7,200	-\$160	
Silage	\$13,760	\$15,000	+\$1,240	
Cropping	\$9,702	\$25,000	+\$15,298	7.
Regrassing	42,406	\$25,000	-\$17,406	7.
R&M	\$16,243	\$25,000	+\$8,757	
Vehicle Exp.	\$35,486	\$35,000	-\$486	
General	\$28,315	\$20,000	-\$8,315	8.
Overheads	\$61,827	\$60,000	-\$1,827	
<b>Total Farm Expenses</b>	<b>\$806,952</b>	<b>\$673,900</b>	<b>-\$133,052</b>	9.
FWE/kgMS	\$4.64	\$3.63	-\$1.01	9.
<b>Cash Operating Surplus/Deficit</b>	<b>- \$47,814</b>	<b>+\$211,540</b>	<b>+\$259,354</b>	
Depreciation est.	\$48,565	\$52,979		
<b>Dairy Operating Profit/Loss</b>	<b>-\$96,379</b>	<b>+\$158,561</b>	<b>+\$254,940</b>	10.
Interest	\$200,000	\$200,000		11.
Lease land	\$30,000	\$30,000		
<b>Effective Farm Surplus (EFS)</b>	<b>-\$326,379</b>	<b>-\$71,439</b>	<b>+\$254,940</b>	
<b>EFS/ha</b>	<b>-\$2106/ha</b>	<b>-\$461/ha</b>		

**Sensitivity analysis showing the impact production has on FEW**

	175,000kgMS	180,000kgMS	185,000kgMS	190,000kgMS
<b>FWE \$673,900</b>	\$3.85kgMS	\$3.74kgMS	\$3.64kgMS	\$3.54kgMS

NOTES



The 2016/17 cost structure is ambitious and will require constant attention throughout the season, but it is achievable and financial survival is the priority for the season ahead.

Key points below relate to the notes on the previous page's table.

1. Significantly higher gross farm income reflects a more optimistic payout for the season ahead as well as a 6% increase in milk production. Cattle sales are down as we don't envisage having to cull excess cows at any stage.
2. The farms 2IC has resigned to take up another farm manager role which has allowed us to significantly lower our wages cost structure. We have replaced this resource but with a dairy assistant. The current dairy assistant is stepping into the herd manager role. In addition to this 15% of Tom's salary is subsidised by the demonstration budget to reflect the significant time spent off farm doing tasks above and beyond a normal farm manager's position description. The wash up-cost for this season is over inflated anyway due to the use of relief staff over spring.
3. We envisage animal health will be lower this season as a result of investments undertaken to improve race surface and cow-flow, we are hoping for significantly less lameness next season. This season's animal health bill is significantly lower than the previous seasons \$52,898 but we still think we can do more.
4. This has gone up this season as we want to ensure a minimum of 3 herd tests are completed compared to the 1 herd test this season. This is crucial for us to maintain the herd in the top 5% nationally for BW.
5. Improvements in pasture quality, annuals, summer cropping and slightly less cows has allowed us significantly reduce our imported supplements. This coming season our modelled feed budget has approximately 420t of imported feed compared to 630t this season, a 35% reduction. We have also managed to lock in a better price for our PKE.
6. This is our rationale for purchasing a second hand fertiliser spreader. We have allowed \$15,000 within the capital budget which will see a 75% return on investment in year 1 with the spreader paying for itself in year 2. Now that we are beginning to get on-top of deferred maintenance we will have time and resource to undertake this job ourselves. Having the flexibility to ensure nitrogen applications are timed with grazing rotation and climatic factors will also enable better return on investment through optimising pasture growth. Some allowance still made for applying bulk lime through outside contractors.
7. The 15ha of annuals which we plan to put in prior to our summer crop have come under the cropping banner this season rather than the re-grassing category where they were recorded last season. Cropping and regrassing are critical to enabling our strategy of optimising home grown feed.
8. Effluent spreading is anticipated to be lower this season as we have a petrol pump whereby we can manage our pond volume ourselves.
9. Overall farm working expenses have been significantly reduced, all of which we think are achievable with tight financial management. We have managed to slash \$1.00/kgMS of this current seasons cost structure, although \$0.25 of that is due to increased production.
10. With an expected increase to payout, slightly higher production targets and significantly lower cost structure this budget puts us ahead of the current season by \$257,015.
11. To ensure we remain comparable and relevant we have also assumed an average debt loading across the farm.

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The below cash-flow is indicative only at this stage, a closer look at this is required in the coming weeks. A budgeted to actual cashflow will be reported on a month by month basis from Owl Farm going forward.

 <b>Agribusiness</b>		<b>DAIRY CASHFLOW (GST excl.)</b>											
<b>CLIENT:</b>		<b>OWL Farm</b>											FOR YEAR ENDED: May-17
<b>INCOME</b>	<b>TOTAL</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>
CATTLE	72,800				8,500	8,500					18,600	18,600	18,600
MILK	756,146	7,390	8,810	22,721	62,138	109,161	78,213	99,506	65,472	85,330	71,418	74,757	71,232
DIVIDEND	55,800					27,900						27,900	
REBATES	-												
OFF FARM	-												
<b>TOTAL</b>	<b>884,746</b>	<b>7,390</b>	<b>8,810</b>	<b>22,721</b>	<b>70,638</b>	<b>145,561</b>	<b>78,213</b>	<b>99,506</b>	<b>65,472</b>	<b>85,330</b>	<b>90,018</b>	<b>121,257</b>	<b>89,832</b>
<b>EXPENSES</b>	<b>TOTAL</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>
CATTLE	-												
WAGES	155,000	12,917	12,917	12,917	12,917	12,917	12,917	12,917	12,917	12,917	12,917	12,917	12,917
ANIMAL HEALTH	30,000	1,000	4,000	1,000	2,000	3,000	3,000	4,000	3,000	2,500	2,000	2,000	2,500
BREEDING	25,000	-	1,000	1,500	1,000	5,000	12,000	3,000	-	-	-	1,500	-
DAIRY SHED & ELECTRICITY	25,000	500	2,500	2,000	2,500	4,000	500	2,500	4,000	2,000	500	3,000	1,000
PURCHASED FEED	76,000	-	11,000	10,000	10,000	-	15,000	-	5,000	5,000	15,000	5,000	-
LEASE LAND	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAZING-yearlings	46,800	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900	3,900
GRAZING-calves	15,400							2,567	2,567	2,567	2,567	2,567	2,567
FERTILISER	65,000	2,500	2,500	2,500	10,000	25,000	7,500	-	-	-	-	12,500	2,500
FERTILISER SPREADING	5,000	250	250	250	750	2,000	500					750	250
FRIEGHT	9,000	-	-	1,500	1,500	-	1,500	1,500	-	-	-	1,500	1,500
CARTAGE (STOCK)	4,500	500					500	500			1,000	1,000	1,000
WEEDS & PESTS	5,000	400	400	400	400	1,000	400	400	400	300	300	300	300
CONSULTANCY	7,200	600	600	600	800	800	600	600	600	600	600	600	600
SILAGE	15,000	400	400	400	2,100	2,000	3,000	400	400	400	2,000	2,500	1,000
CROPPING	25,000				5,000	10,000	10,000						
REGRASSING	25,000										5,000	10,000	10,000
R & M	25,000	2,083	2,083	2,083	2,083	2,083	2,083	2,083	2,083	2,083	2,083	2,083	2,083
VEHICLE Exp.'s	35,000	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917
GENERAL	20,000	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667	1,667
OVERHEADS	60,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
INTEREST COST	200,000	16,667	16,667	16,667	16,667	16,667	16,667	16,667	16,667	16,667	16,667	16,667	16,667
LEASE LAND	30,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
<b>TOTAL</b>	<b>903,900</b>	<b>53,800</b>	<b>70,300</b>	<b>67,800</b>	<b>83,500</b>	<b>100,250</b>	<b>102,150</b>	<b>63,117</b>	<b>63,617</b>	<b>61,017</b>	<b>76,617</b>	<b>90,867</b>	<b>70,867</b>
<b>MONTHLY SURPLUS</b>	<b>0</b>	<b>-46,410</b>	<b>-61,490</b>	<b>-45,079</b>	<b>-12,862</b>	<b>45,311</b>	<b>-23,937</b>	<b>36,389</b>	<b>1,855</b>	<b>24,313</b>	<b>13,401</b>	<b>30,390</b>	<b>18,965</b>
<b>CLOSING BALANCE</b>	<b>-19,154</b>	<b>-46,410</b>	<b>-107,901</b>	<b>-152,980</b>	<b>-165,841</b>	<b>-120,530</b>	<b>-144,467</b>	<b>-108,079</b>	<b>-106,223</b>	<b>-81,910</b>	<b>-68,509</b>	<b>-38,119</b>	<b>-19,154</b>

The below shows a sensitivity analysis for both fluctuations in price and production. Based on this it would be great to see a slight increase in payout.

<b>PRODUCTION/PRICE SENSITIVITY</b>					
<b>PRICE VARIANCE</b>					<b>\$0.41</b>
<b>PRODUCTION VARIANCE (KG's)</b>					<b>18550</b>
	<b>\$3.26</b>	<b>\$3.67</b>	<b>\$4.08</b>	<b>\$4.48</b>	<b>\$4.89</b>
<b>148400</b>	-\$291,367	-\$230,875	-\$170,383	-\$109,892	-\$49,400
<b>166950</b>	-\$230,875	-\$162,822	-\$94,769	-\$26,715	\$41,338
<b>185500</b>	-\$170,383	-\$94,769	<b>-\$19,154</b>	\$56,461	\$132,075
<b>204050</b>	-\$109,892	-\$26,715	\$56,461	\$139,637	\$222,813
<b>222600</b>	-\$49,400	\$41,338	\$132,075	\$222,813	\$313,550

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# OWL FARM: STAGE 1 – DAIRY FARM PERFORMANCE PLAN

## SHORT TERM YEARS 1 – 3

### 1. Purpose:

The purpose of this plan is to outline the range of Owl Farm policies (minimum operational targets) and key performance indicators (KPI's) within each of the operational objectives outlined within the Owl Farm strategy document specific to the farm operation. This will assist on-farm management through enabling a consistent approach to how decisions are made, management structures are implemented and our performance is reviewed. This will guide the future direction of Owl farm and provide much needed direction to strategic discussions.

Stage 1 has been scoped as a 3 year project, the current 2015/16 dairy season is year 1 which has largely been a benchmarking year, as such KPI's will reflect (where appropriate) targets for year 2 (2016/17) and year 3 (2017/18). This document is intended as a working document which will continue to evolve as and when circumstances change, as a minimum it will be reviewed annually in May.

### 2. Farm Development Stages

#### a. Stage 1 overview objective (Year 1-3)

Establish credibility by addressing current issues and performance, whilst setting up the farm for future development. During this stage, the farm will operate a pasture based system, with tactical supplementation strategies, based largely on existing infrastructure, to optimise profit while developing a resilient farm system.

### 3. Dairy Farm Performance Plan – Stage 1

#### a. Planning, monitoring and reporting

##### i. Policies

- Farmax Dairy Pro will be used as a weekly/monthly decision support/management and planning tool, a monthly reporting tool and a scenario modelling tool.
- Redsky will be used to develop the farms annual accounts to analyse our performance and provide a benchmarking measure for continuing business improvement. Redsky will be used in the design/development of future system/business planning through scenario modelling. Redsky may also be at times during the season to road test various strategies.
- DairyBase will be used to further record and report on standardised physical and financial information for the farm to track progress against short and long term goals, identify opportunities to improve and to benchmark/compare performance against peers.
- Weekly reporting of data captured and notes will be made available on website, Facebook and Twitter every week. Further reporting will be undertaken as and when required to communicate significant changes undertaken on farm.
- An annual Farm Governance Committee report will be undertaken in May reviewing success/failures/opportunities and challenges from the season's performance plan.

##### ii. Plan

**Operational Objective:** To ensure all farm management and commercial planning is supported by an economic business case, solid rationale and effective modelling.

KPI	Target/Action	Timeframe	Measure
Business plan	Develop business plan annually	May every year	Business plan signed off by Farm Governance Committee

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<b>Operational Objective:</b> Set appropriate goals that reflect the strategy, objectives and development plans for Owl Farm, with time bound action plans and key performance indicators.			
KPI	Target/Action	Timeframe	Measure
Owl Farm Performance plan	Review and update performance plan annually	May every year	Owl Farm Performance plan signed off by Farm Governance Committee  Feedback provided on operational objectives by Farm Management Committee

<b>Operational Objective:</b> To ensure accurate and transparent reporting of success or failures of objectives is undertaken in line with agreed timeframes.			
KPI	Target/Action	Timeframe	Measure
Owl Farm Performance review	Accurate and transparent reporting of results	May every year	Owl Farm Performance review signed off by Farm Governance Committee

<b>Operational Objective:</b> To ensure performance is reviewed in line with objective timeframes set out within Stage 1 Dairy Farm Performance Plan.			
KPI	Target/Action	Timeframe	Measure
Owl Farm Performance review	Achieve policies, KPI's and ultimately operational objectives as set out within this plan within the desired timeframe	May every year	Owl Farm Performance review signed off by Farm Governance Committee

### iii. Rationale

- Credibility is best achieved through doing what we say we will. Planning, reporting and monitoring is what makes us accountable to complete what we have set out to achieve.

### b. Financial

#### i. Policies

- Farm operational budget will be completed annually in May and signed off by Farm Management Committee.
- A capital plan will be developed and presented to the Farm Governance Committee annually in January/February to reflect the financial year which the school operates within.
- Benchmarking will take place annually at the completion of the dairy season to validate several of the KPI's below. Westpac, Dairy Base and Redsky will be used as predominant benchmarking tools.

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## ii. Plan

<b>Operational Objective:</b> To optimise profit returned through balanced management within the farms existing management system			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
EFS/ha	Top 10% of Waikato	2016/17– top 20% 2017/18 - top 10%	Modelling using Farmax. Reporting budget vs, actuals.  Benchmarking against Westpac, Dairy Base and Redsky
FWE/kgMS	\$3.50	2016/17	Modelling using Farmax. Reporting budget vs actuals.  Benchmarking using Dairy Base and Redsky
Variance reporting	Within 5% of budget at any point within season for items over \$50,000, within 10% for items less than \$50,000	Completion of 2016/17 season	Against budget – monthly reporting to be undertaken and uploaded to owlfarm.nz

<b>Operational Objective:</b> Invest appropriately in capital development to enable improved productivity/profitability			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Capital improvements undertaken on farm	Develop annual capital plan approved by the Farm Governance committee to take to the board for funding (~20% ROI minimum)  Effectively follow the plan in implementing the capital improvement  Regularly review progress against capital improvement plan	Annually in May	Plan approved by board, funding made available to undertake projects.  Capital improvements implemented within timeframes outlined in plan  Capital improvements implemented within budget.

## iii. Rationale

### • Effective Farm Surplus per hectare

- Effective farm surplus is made up of the income generated less the farm working expenses.
- Not only does this include the income that is being generated from each hectare, but it also includes the cost associated with doing this. Thus including both productivity & profitability in the KPI.
- Over and above straight productivity in terms of milksolids it also includes the additional income such as livestock income.

### • Farm Working Expenses per kgMS

- In the current environment of high volatility, particularly in the commodity markets, the key to operating a profitable farming business is control of costs, and more specifically the cost associated with the production of the output associated with that business. In the case of Owl Farm that is the farm working expenses associated with producing milksolids.
- Therefore it is natural that a key performance indicator for any business looking to maximise profit is Farm Working Expenses per kgMS.
- This ratio is able to be manipulated either through increasing productivity, or by reducing the total cost of production.

### • Variance reporting

- When focusing on profitability it is important that firstly budgets are set prior to the start of the financial year.
- Budgets however are only of use when they are monitored regularly throughout & at the end of the financial year.
- This monitoring allows for budgets to be updated & the remainder of the financial year forecasted.
- Being able to set accurate budgets is an important part of the planning process for any season, and therefore being able to monitor that the actual performance is in line or better than budget is vital.
- Variance reporting also gives important information when looking to set future accurate budgets.

## NOTES



- **Benchmarking**

- It is key when doing financial KPI's that they are compared to industry so that performance for any business can be not only compared between seasons, but also compared within season & against others in the industry.
- Benchmarking will also be done against the region to acknowledge the seasonal differences that can impact or benefit some regions and not others in a given year.
- This also allows for the identification of the opportunity that exists between the top performer & the performance of the business.

**c. Environmental**

**i. Policies**

- Compliance is the minimum standard which will be achieved with all Waikato Regional council (WRC) and dairy industry rules and regulations (Sustainable Dairying: Water Accord – SDWA).
- All environmental management decisions will be supported using an evidence based approach.
- The farm will operate under an overarching Farm Environmental Plan, currently DairyNZ's Sustainable Milk Plan (SMP) template.

**ii. Plan**

<b>Operational Objective:</b> To ensure compliance with all regulatory and industry requirements			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Compliance with Effluent management rules	Effluent storage compliant – sealing/capacity Effluent application compliant	2016/17	Opus Pond Drop test completed. New pond designed and plan for construction if failed  Pond capacity within 30% of Dairy Effluent Storage Calculator.  No ponding of effluent in paddock post application.
Nutrient management	Nitrogen Management recording pages completed and submitted	Submitted annually in June	Supply Fonterra Nitrogen Report.
Water Use	Install water meters and record daily water use for both shed use and stock drinking	Monthly	Water use report (made available on <a href="http://www.owlfarm.nz">www.owlfarm.nz</a> )

<b>Operational Objective:</b> To implement sound science supported environmental management systems to achieve sustainable growth and profit while protecting the wider environment.			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Good Practice Effluent Management	Develop effluent management plan	2016/2017 review in May annually there after	Completed monthly checklist.
Good Practice Nutrient Management	Develop nutrient management plan incl. fertiliser recommendations based on annual soil testing	2016/2017 review in annually in May there after	Use Overseer Same/reduction in nitrogen leaching Nitrogen use efficiency Proof of placement fertiliser maps.
Efficient dairy shed water use	Eliminate wastage through the dairy shed through developing a water use protocol	2016/2017 review in annually in May there after	Variation 6 consent volume as benchmark with incremental improvements from there Comparison to Waikato benchmark data

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<b>Operational Objective:</b> To engage with stakeholders to lead towards sustainable farming objectives while influencing future direction.			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Increase engagement levels with WRC and WRA	Identify what WRC/WRA targets are for farmers or what they want from us with assistance in communicating these objectives to the wider Waikato dairying community  Ensure targets of the Healthy Rivers Plan for Change are well communicated.	2016/2017	Targets are known and incorporated into future plans.

<b>Operational Objective:</b> To show leadership in establishment of biodiversity management practices relevant to the Waikato.			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Design and construct a treatment wetland with water quality monitoring.	To identify an improvement in water quality leaving the farm	2016/17	Water quality data published on Owl Farm.
To increase areas of biodiversity on farm and provide habitat for the fauna that they support	Incorporate further collaborative native planting schemes on non-productive land.	2016/17 – 1ha 2017/18 – 3 ha	Eco-blitz Biodiversity inventory

### iii. Rationale

- To implement sound science supported environmental management systems to achieve sustainable growth and profit while protecting the wider environment.
  - Increasingly negatively public perceptions and deteriorating national water quality trends continues to impact the dairy industry. As one of the key strategic objectives of Owl Farm our environmental performance will be keenly observed and scrutinised by our external audience. At the highest level Owl Farm aspires to be leaders in the environmental space and wants to achieve good management practice at all levels.
- **To ensure compliance with all regulatory and industry requirements**
  - Legally and morally we must comply with rules and regulations.
- **To engage with stakeholders to lead towards sustainable farming objectives while influencing future direction.**
  - Collaboration is more frequently being used to describe how we must collectively move towards achieving the environmental outcomes we are communities are trying to achieve. We need to set an example through working with the wider community to achieve these objectives.
- **To show leadership in establishment of biodiversity management practices relevant to the Waikato**
  - The water quality problem is now well defined and understood, we now need further solutions to help manage these problems on farm. Farmers are looking to industry for solutions/options to help manage their environmental impact.

### d. People

#### i. Policies

- STP is committed to taking all reasonably practicable steps to provide a safe and healthy work environment for workers, visitors and others directly influenced or affected by any STPwork activity or workplace location
- On farm systems and practices will align with the objectives set out within the Sustainable Dairying: Workplace Action plan.

NOTES



## ii. Plan

<b>Operational Objective:</b> To implement best practice in people management			
All detail regarding targets/actions below can be found within the Sustainable Dairying: Workplace Action Plan – see appendix			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Balanced and productive work time	Employees working on a well -designed roster.	2016/17	Review hours worked in line with roster using facial recognition camera information
Fair remuneration	Competitive wage and salary rates are based on first meeting the legally required minimum standards	2016/17	Benchmark using DairyBase and Red Sky?
Wellness, Wellbeing, Health and Safety	Develop and implement effective health and safety plan	2016/17	Reported incidents Reported near misses Feedback on team culture?
Effective Team culture	Employees are valued as integral to a profitable, sustainable and enjoyable business.	2016/17	Employee feedback Weekly team meeting Staff turnover Shared goal setting
Rewarding careers	Retention of people in the dairy industry is highly valued	2016/17	Quarterly performance reviews and development plans.

<b>Operational Objective:</b> To develop and implement best practice health and safety systems and build a culture that ensures staff, contractors and any other visitors are protected as much as practicably possible while on farm.			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Health and safety plan	Completed and in place	2016/17	Operative Health and safety plan
Hazard/risk management	All Hazards identified and controls in place	2016/17	Hazard controls in place for all known hazards.
Accident and near miss reporting	All reported and controls put in place where necessary.	2016/17	Accident and near miss reporting
Injuries	No missed work as a result of on-farm accidents	2016/17	Days of work

## iii. Rationale

- **To implement best practice in people management**
  - **Balanced and productive work time**
    - Dairying has strong variations in seasonal work demands, which sometimes call for long hours and exceptional effort. However, exceptional circumstances should not be embedded as the norm.
    - Research shows people working long hours or too many days consecutively, drop off in performance and they are more likely to make mistakes and have accidents. Fatigue and poor work/life balance may mean they are more likely to leave their job.
  - **Fair remuneration**
    - Quality work environments meet legally required minimum standards and to attract and retain good people they must be paid fairly for the work they do, based on their skills, experience and responsibilities.
  - **Wellness, Wellbeing, Health and Safety**
    - Employers are responsible for ensuring their employees are working in a safe and healthy workplace and can do their work in a safe and healthy way. This needs active management. Employees have a part to play in this too but the leadership must come from employers. Our industries safety record is currently poor and the rate of burnout and suicide completely unacceptable.
  - **Effective Team culture**
    - Dairy farms require a team of people to be successful. In some cases that team is made up of a farming family, in others it's a farmer working with their accountant and vet, and on more and more farms it is an employer working with their employees.

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- Whatever the scenario, working with positive and motivated people is great for both enjoyment of a job and performance of a business. Having the right mix of people and talent is important for efficiency, effectiveness and fun.
- **Rewarding careers**
  - Dairy farming has traditionally been a job where you could start at the bottom and work towards farm ownership. This is still possible but most people in dairy farming are now employees.
  - We need to make working on farm attractive to people, and we need to retain them in our industry whether they want to climb from farm assistant to operations manager or be an outstanding farm assistant long term. There should be a place for people with all types of career aspirations on our farms.
- **To develop and implement best practice effective health and safety systems and build a culture that ensures staff, contractors and any other visitors are protected as much as practicably possible while on farm.**
  - People are the most important aspect to our farming business. Ensuring all staff and visitors are safe and healthy well on farm must be the number 1 priority.

#### e. Herd Performance

##### i. Policies

- Animal welfare code is the minimum standard in which stock are managed.
- Dry cows off according to calving date - minimum of 60 days out of milk, minimum body condition score of 4.5 with average pasture covers of 2200.
- Herd structure for small herd (~150 cows) determined as follows
  - From calving to early January – Once sufficient cows have calved first calvers and lowest condition score cows. As condition scoring occurs monthly, the lowest condition score cows could be removed as required between herds
  - From early January to beginning of March. Early calving and light condition score cows become the small herd
  - Through March (depending on seasonal conditions) The small herd make up is reversed with the well - conditioned cows, empties and culls put together into the small herd. These cows largely follow the main herd, with the main herd grazing the majority of the available feed and the small herd immediately following to take the paddocks down to desired grazing residuals (or distant paddocks)
  - As empties and culls leave/ also as lighter cows dried off – herd may become a single herd
- Cows will be condition scored monthly.

##### ii. Plan

<b>Operational Objective:</b> To capitalise on genetic merit of herd with regard to per cow production			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
TBC			

<b>Operational Objective:</b> To achieve or exceed industry targets for mating performance			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Pre mating cycling	75% (10 days out from planned start of mating)	2016/17	Minda
Submission rates	90% in first 3 weeks	2016/17	Minda
Conception rates	60%	2016/17	Minda
6-week in calf rates	78%	2016/17	Minda
Use of intervention	TBC		

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<b>Operation objectives:</b> To meet or exceed all recognised industry standards regarding body weights and condition within a profitable system			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Calf weights	Industry targets	2016/17	Minda weights
Heifer weights	Industry targets	2016/17	Minda weights
BCS @ drying off	4.5 BCS	2106/17	Monthly BCS
BCS cows @ calving	5 BCS	2016/17	Monthly BCS
BCS Heifers @ calving	5.5 BCS	2016/17	Monthly BCS
BCS throughout season	TBC		

<b>Operational objective:</b> Use data to measure effectiveness of actions and make information readily available			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Data collection	TBC		
Minda	TBC		

<b>Operational objective:</b> Effective health control is optimised through preventative treatments and any immediate health issues are treated as a priority			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
TBC			

<b>Operational objective:</b> To adopt practices in line with the animal welfare code			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
TBC			

### iii. Rationale

- To capitalise on genetic merit of herd with regard to per cow production
- To achieve or exceed industry targets for mating performance
- To meet or exceed all recognised industry standards regarding body weights and condition within a profitable system
- Use data to measure effectiveness of actions and make information readily available
- Effective health control is optimised through preventative treatments and any immediate health issues are treated as a priority
- To adopt practices in line with the animal welfare code

## f. Soils

### i. Policies

- Soil testing undertaken annually in Autumn based on Industry guidelines
- Visual Soil Assessment (VSA) completed to track physical and biological soil parameters on an annual basis in three (yet to be determined) sites across the farm

### ii. Plan

<b>Operational Objective:</b> To optimise soil fertility and protect soil physical conditions which will underpin home grown pasture and crops			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Soil fertility	At Industry guideline levels for acronutrients	2016/17 2017/18	Soil testing Overseer model
Soil health	Baselined and the tracked over time	2016/17 2017/18	Visual Soil Assessment

<b>Operational Objective:</b> To review and enhance Nutrient use efficiency over time			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Nutrient Use Efficiency	At Industry guideline levels??	2016/17 2017/18	Overseer model

<b>Operational Objective:</b> To actively strive to avoid physical damage to the soil from pugging or mechanical means			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
No visual damage			

## NOTES





### iii. Rationale

- Soil Fertility
  - Scientifically based objective assessment of the soil macro nutrient levels
- VSA Score
  - Assesses the physical and biological soils aspects which can be compared between sites on the farm and over time

## g. Pasture, crops and feeds

### i. Policies

- Weekly pasture metering will be undertaken to determine average pasture covers, average growth rates and pre/post graze residuals of all effective dairy paddocks.
- kgDM harvested per ha/yr will be analysed on an annual basis at the completion of each season as an essential physical KPI for the business, using the same calculation method for each year.
- A pasture condition scoring exercise will be undertaken annually as an objective measure of pasture condition.
- 10% of the farms effective milking area will be put through a pasture renovation strategy, this will involve the use of short term annuals and summer cropping.
- Pasture herbage tests will be undertaken annually as another way to check mineral levels required for plant growth and to assess what is being consumed by livestock.

### ii. Plan

<b>Operational Objective:</b> To optimise pasture grown and pasture harvested so that cows consume as much metabolisable energy as practical from grazed pastures and supplements					
KPI	Target/Action	Timeframe			Measure
kgDM pasture consumed per ha/yr*	11,975 kgDM 12,550 kgDM 13,700 kgDM	2015/16 2016/17 2017/18			Annual kgDM pasture harvested/ha/yr report providing individual paddock and collective farms performance (kgDM/ha)  Retrospective energy calculation through Redsky/DairyBase
* "Consumed" pasture includes pasture harvested by grazing cows (and/or young stock), and conserved as silage or baleage during periods of genuine surplus and/or as a means to control pasture quality.					
Gigajoules (GJ) consumed per ha/yr*	Measure both kgDM/ha of pasture and sample MJME/kgDM  TBC				
* amount of pasture (kgDM/consumed/ha/yr) x energy density of pasture (MJME/kgDM)					
Pasture cost per tonne of DM	TBC				
Pasture condition scoring	Proportion of score 1	16/17	17/18	18/19	Annual pasture condition report
	score 2	0	0	0	
	score 3	9	5	3	
	score 4	30	25	20	
	score 5	55	60	65	
% of pasture development and re-grassing undertaken per year	10% of pasture renewed annually	2016/17			Farm modelling in budgets

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<b>Operational objective:</b> To integrate strategic use of supplementary feed when there is a genuine feed deficit and where there's a clear financial return.			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Weekly farm drive	Calculate pasture supply vs demand  Start, stop or continue use of supplements as appropriate when pasture supply does not equal demand  Partial budget to justify cost benefit (late lactation)	Immediate and ongoing	Post grazing residual targets are reached when supplements fed Supplement wastage is within acceptable targets  Cow BCS is appropriate (feed deficits offset in timely manner)

<b>Operational objective:</b> To effectively utilise PKE within the Owl Farm businesses			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Minimise PKE wastage	Only feed during true feed deficits  Appropriate filling of trailers  Keep dry where practicable	Immediate and ongoing	Monitor post-grazing pasture residuals  Assess PKE on ground paddock & loading  Monitoring of bunk area for signs of moisture/spoilage
Minimise pasture damage around trailers	Minimise trampling damage  Placement of trailers drier area, laneways etc., move on as needed	Immediate and ongoing	Assess pasture damage especially wet weather  Avoidance of undersowing or repair to pasture
Respond to requirement for mineral adjustments	Avoid copper accumulation	Immediate and ongoing	Monitor copper status with vets  Avoid additional copper supplementation when feeding high rates PKE
Respect & Respond to Fonterra usage directives	Do not exceed 3kg PKE/cow/day	Immediate and ongoing; adjust as directed by Fonterra	Weekly & Monthly review of inventory of PKE fed

<b>Operational objective:</b> To effectively utilise maize silage (MS) within the Owl Farm businesses			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Minimise MS wastage	Appropriate inoculants, rolling & packing  Good face management  Appropriate feedout methods on ground  Only feed during true feed deficits	Immediate and ongoing	Assess new stack face for adequacy of packing  Feed test new stacks  Monitor stack face for spoilage/heating  Assess wastage of maize in paddock  Monitor post-grazing pasture residuals
Minimise pasture damage in paddock	Feed along fencelines	Immediate and ongoing	Assess pasture damage, evidence of maize 'burn'  Avoidance of undersowing or repair to pasture
Respond to requirement for mineral adjustments	Offset MS nutritional limitations appropriately  Calcium, sodium, magnesium	Immediate and ongoing	Monitor mineral status with vets  Appropriate mineral supplementation as directed

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<b>Operational objective:</b> To effectively utilise pasture baleage within the Owl Farm businesses			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Minimise baleage wastage	Appropriate harvest decisions, wilting & baling Appropriate feedout methods on ground Only feed during true feed deficits	Immediate and ongoing	Assess new bales for adequacy of packing Feed test new lines of bales Assess wastage of baleage in paddock Monitor post-grazing pasture residuals
Minimise pasture damage in paddock	Feed along fencelines	Immediate and ongoing	Assess pasture damage, under feedout areas Avoidance of undersowing or repair to pasture

### iii. Rationale

#### • kgDM pasture consumed per ha

- KgDM harvested per ha/yr is a key focus for Owl Farm given the strong, positive association between kgDM of pasture harvested vs. profitability of pasture-based businesses such as Owl Farm
- Future pasture harvested KPI targets that could be reasonably adopted for use by Owl Farm might be the top 10% of Waikato dairy farms as nominated by redsky modelling.

#### • Gigajoules (GJ) consumed per ha/yr

- Slower rates of paddock development (including but not limited to drainage work, addressing of capital fertiliser requirements and soil pH remediation where relevant), regrassing and pasture development will extend the timeline over which this KPI may be reached because:
  - Strategies with slower paddock development and pasture renewal rates result in pastures that are older on average and hence lower yielding.
  - 'New pastures' decline in yield over time therefore a slower renewal rate of recently renewed pastures will slow rate of improvement across the entire farm.

#### • Pasture condition scoring

- This will be an annual process undertaken to build a measure of pasture improvement over years to come.
- Proportion of paddocks in each category could be included as an ongoing and future series of KPI's for the Owl Farm Business

## h. Community engagement

### i. Policies

- Four Farm Focus days will be held annually
- Website, Facebook and Twitter will be updated weekly

### ii. Plan

<b>Operational Objective:</b> To establish Owl Farm so as to develop and demonstrate good practice in pasture based dairy farming systems and to transfer them to dairy farms.			
<b>KPI</b>	<b>Target/Action</b>	<b>Timeframe</b>	<b>Measure</b>
Farmer engagement	People attending focus days People attending technical workshops People visiting owlfarm website Views and followers on Facebook/Twitter	2016/17	Average of 200 attendees at focus days Return attendees 2+ a year 200 farm visitors outside of focus days Views on website 500 followers on Facebook/Twitter
Farmer behaviour change	Influence positive change on others farms.	2016/17	Farmer survey More people at focus days Return attendees

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Visibility	Regular exposure through Waikato Times and Farming magazines.	2016/17	Continued invitation to provide monthly editorial material. Continued presence of reporters at Farm Focus Days.
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**Operational Objective:** To develop and implement a communications plan to engage the wider community around what we are doing and why.

KPI	Target/Action	Timeframe	Measure
Annual communications plan	Review and update communications plan annually	May every year	Owl Farm Performance plan signed off by Farm Governance Committee Feedback provided on operational objectives by members of the Farm Management Committee

**Operational Objective:** Contribute to building positive perceptions around dairying

KPI	Target/Action	Timeframe	Measure
More public have been exposed to Owl Farm and dairying.	Public open day held annually Exposure to farming practices through information boards along walk way Community planting days	2016/17	Number of people attending open days and community planting events.
Engagement with local primary schools	Increased number of younger students visiting the farm	2016/17	TBC

**i. Rationale**

- **To establish Owl Farm so as to develop and demonstrate good practice in pasture based dairy farming systems and to transfer them to dairy farms.**

NOTES



# ONE YEAR IN – LESSONS LEARNT

It's been a hugely challenging year for all within the industry, but one that's ultimately been rewarding and once again demonstrated the resilient nature of dairy farmer's nationwide.

We have definitely had our fair share of challenges throughout the year and each of them have provided invaluable learnings for everyone involved and will ultimately make us much the wiser as we progress through the next couple of seasons.

## Eczema

The last couple of years we have been hit hard by eczema in the back end of the season, this year has unfortunately been no exception. Although this has been a particularly difficult summer with eczema being prevalent even within the best equipped farms there are some lessons we can take forward and changes we can make to our system to better combat this next summer.

- We ended up having to dry off 61 cows at the end of March displaying traits of clinical and sub-clinical eczema. This has cost precious production at the back end of an already compromised season.
- Weekly spore count reading thanks to the support of Cambridge Vets have allowed us good visibility as to where levels have been throughout summer.
- Our zinc management system involves dosing the water through the dosatron. Unfortunately a large number of water pipes on farm remain above ground which has meant leaks have been a constant management task over summer. Fortunately our Halo system alerts us to leaks, however we have on a couple of occasions we weren't able to react fast enough and the damage was done.
- Once the initial outbreak occurred in-shed drenching began immediately every second morning, from that moment we didn't have anything else showing traits of clinical eczema.
- Burying remaining overland water pipes is a priority over winter.
- Starting in-shed drenching early next season will be likely.
- Early stage investigations into in-shed feeding have occurred and a business case is being developed as to whether this could be the best way for us to manage eczema as a more cost effective short term measure than constructing a feed pad. In-shed feeding would also have significant benefits from utilisation of feed and staff time.

## Underweight heifers

- Much has been discussed about the size of our 2015 R2 Heifers and the impact that this has played on both productive and reproductive performance through the course of this season.
- Investing in off-site grazing has been well received with returning heifers in great condition and 2015 calves also exceeding weight targets.
- Keeping feed intakes high for this group across winter will ensure they are in the best possible condition come calving and are capable of putting up with the demands of milking.

## Pasture Quality

- Optimising home grown feed must remain the priority for us.
- Having measured our pastures performance throughout the year we very quickly realised the big gap which existed between our best and poorest performing paddocks.
- We have developed a pasture renovation strategy in conjunction with both PGGW Seeds and Ballance Agri-Nutrients which is discussed in detail below.

## NOTES

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# OWL FARM PASTURE RENOVATION STRATEGY

With the 2016/17 dairy season looming we have spent considerable time planning our farm system to ensure Owl Farm's continued resilience in the face of global volatility.

We have learnt two very valuable lessons this season. Firstly, we need to significantly lower our operating budget and ensure costs are controlled more stringently and, secondly, we need to be getting more out of our pastures. Fortunately the two go hand in hand, putting further emphasis on pasture grown will allow us to lower our farm working expenses (FWE) through reducing reliance on brought in feed.

A lot of discussion is currently focused around where the milk price is likely to be set for next season. In absence of any clear price signals, we've chosen to model the \$4.60 per kilogram of milk solid which Westpac, our demonstration partner, is currently forecasting. Our absolute priority with this in mind is the necessity to control our cost structure which is currently unsustainable. Survival mode requires building a survival budget. Unforeseen and unavoidable circumstances have meant our current years' FWE have blown out and are likely to finish up in excess of 4.50kgMS. All excuses aside this is quite simply not good enough! That said we have set ourselves a target cost structure of \$3.50kgMS and assumed an additional average debt loading of \$1.00kgMS to ensure accountability and relevance when it comes to cost control.

The majority of commentators have recently been signalling a return to New Zealand dairying fundamentals, focusing on pasture with less reliance on brought in supplements as a means for lowering FWE. This is the direction of travel we are looking to implement; however, in order to achieve this, we must first address the disparities in pasture grown across the farm.

For us to achieve \$3.50kgMS FWE, we need to address our biggest expense item, in this case brought in feed, simple as that. To address brought in feed we either need to address stocking rate or pasture grown. We are reluctant to drop stock numbers significantly as at 2.9 cows/ha we aren't currently a highly stocked farm, and provided pasture growth is being optimised, this should be sustainable. Taking an optimistic long term view, we are also reluctant to sell in a low only to potentially need to buy once more at a high.

To that end we have chosen to focus current investment on increasing our profit stream and to continue as planned with our pasture renovation, the return on that investment and our ability to reduce our reliance on brought in feed far surpasses the cost of this undertaking.

## Pasture Grown

Weekly pasture metering has identified a measured difference of more than 3tDM/ha pasture grown between our top and bottom paddocks. We have also undertaken two pasture condition scoring exercises (Appendix 1) in conjunction with identifying the presence of weeds, pests and persistence (scored 1-3). This combination has provided a very clear picture that our pastures are currently sub-par.

Using this data we have prioritised where our attention should be focused to ensure we achieve our objective of optimising pasture grown and harvested. Appendix 2 shows the range of information used in decision making around pasture renovation. Pasture grown per hectare as a metric alone isn't sufficient in this situation due to heavy burden of weed presence and pest species present following years of little renovation. The latter two, along with persistence, have also been used with the pasture condition scoring information to objectively review per-paddock performance. Per paddock pasture growth data (from 1 June 2015 to 31 January 2016) has been ranked best to worst using Minda's Land and Feed programme. Interestingly, Appendix 2 shows the importance of looking at the entire picture. Unfortunately, our pasture meter measures height only, not density or type/species of sward. Yes, paddock 26 has grown the most per hectare, but the quality of what's grown, harvested and converted into milk solids is likely poor due to the condition score 2 associated with this paddock from weed burden. The second paddock, paddock 28, is what the goal is. This is new grass re-drilled following chicory last year, little weed or pest burden and a condition score 4. The more paddocks we have producing this will significantly reduce our reliance on brought in feed, although this doesn't happen overnight and not without considerable future planning.

Working closely with PGGW Seeds, we'll continue to put 10% of the farm into summer crop to ensure we can continually renew old and tired pastures and provide a high energy feed source during the summer. Sowing these paddocks in an annual (WinterStarII) in March will ensure additional pasture is grown (modelled at >3tDM/ha) between now and September with a modelled economic benefit of \$374/ha. This also allows two opportunities to rid these paddocks of nuisance weeds, which continue to be a problem for Owl Farm. Twelve hectares is currently in annuals, one of which is a chicory paddock going through its second cropping rotation due to nuisance weeds dominating this crop in the second half of its grazing rotation, another signal that having two opportunities to spray the weeds out needs to be a priority if we are serious about improving our pastures long term.

## NOTES

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The 12ha which have been selected for annuals are the worst paddocks identified through the pasture condition scoring exercise and those generally in close proximity to the farm dairy with the availability to receive effluent. Ideally, the 12ha of annuals will also be used for an early cut of silage once they have been sprayed out ready for the summer crop to be drilled. An additional 3ha will be cropped in September/October to ensure 10% of the milking platform is renewed. These paddocks are not suitable for silage and therefore the decision was made not to put these through an annual.

In addition to summer cropping, we have also chosen to undersow an additional 32ha. These are the paddocks which were condition scored at 2 and 3 which haven't been selected for summer cropping. These aren't necessarily the lowest yielding paddocks but the ones with the open swards and with heavy weed burden. Once again the modelled increase in pasture grown demonstrates an average of 1.3tDM/ha more grown across the 150ha milking platform. This additional feed means our reliance of PKE could be reduced by almost 50%.

Pasture weed spraying will also occur on this 32ha in late April/May once they have had their first grazing post undersowing. At this time many of the weeds will be dying away along with the summer grass so is our best opportunity to rid the pastures of these nuisance weeds given we can't afford to wait until late spring and have our undersowing efforts undertaken in vain. We still have Valdo and Baton on hand from when this exercise was meant to take place in late spring last year. Due to staffing and resources at that time it wasn't done.

Undersowing, spraying weeds and summer cropping are all very well with regard to pasture renovation, but another priority which is often overlooked is nutrient management. Ensuring the paddocks are at optimal fertility is the last piece of the puzzle in safeguarding the ability for our paddocks to perform at their potential and optimise pasture grown per hectare. Working closely with Ballance Agri Nutrients, we have increased the number of soil test blocks across the farm to ensure coverage accurately reflects different management areas and soil types across the farm. Improved block identification will allow a much more targeted approach to ensuring soil fertility is optimised. Soil testing has been changed from spring to autumn also to allow adequate time to budget for the year ahead. We are currently awaiting results.

With all pasture renovation, we acknowledge there is an associated cost; however, we have said from the outset that pasture optimisation is one of the most important objectives we need to achieve. Without any additional feeding facilities and the low payout likely to continue, investing in this aspect of our farm is crucial to our financial performance.

A pasture renovation report which was produced by PGG Wrightson Seeds has been included as Appendix 3. This goes through the various recommendations which have been followed regarding pasture renovation including the costs and likely return on investment.

We absolutely acknowledge that this strategy comes with a cost and that any costs may be very difficult to fathom for many at this point. These costs have been built into this season's cost structure which obviously will contribute to finishing in excess of \$4.50kgMS. We have set a very clear mandate for Owl Farm with regard to reinvestment: All money spent must have a return on investment. The numbers in Appendix 3 below show very clearly there is an economic benefit of undertaking this work. We also have to acknowledge that there has been very little undertaken with regard to pasture renovation over the past 15 years and that for us to become less reliant on imported feed and to develop a financially sustainable system we need to invest in our pastures long term. Optimising home grown feed has always been central to our strategic objectives.

Another objective of ours is the transfer of information across to the farming community. We are also keen to enable opportunities to engage with farmers outside of the four focus days we have each year. With this in mind, we are going to hold two drop-in sessions on Friday 29 April and Friday 13 May from 1 to 3pm where anyone can come along and look at the new grass paddocks and pick the brains of the experts from PGG Wrightson Seeds and Ballance Agri Nutrients around the strategy which we have employed and how we have gone about implementation.

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## Appendix

### Appendix 1: Pasture Condition Scoring Factsheet

Reproduced from the Pasture Renewal Charitable Trust Pasture Condition Score Guide:

<http://www.pasturerenewal.org.nz/assets/Uploads/pasture-condition.pdf>

#### CONDITION SCORE 5

##### Description

- Whole paddock has dense sward of desired grasses and clovers

##### Suggested Action

- No action required. Would be happy if whole farm in this state

5



#### CONDITION SCORE 4

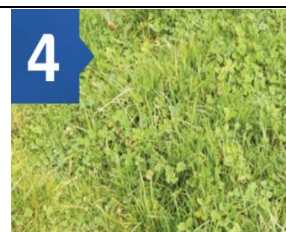
##### Description

- Parts of the paddock show signs of low level damage, less vigorous grasses and some weeds

##### Suggested Action

- Check fertility. Apply summer N to encourage tillering. Paddock probably OK for coming season

4



#### CONDITION SCORE 3

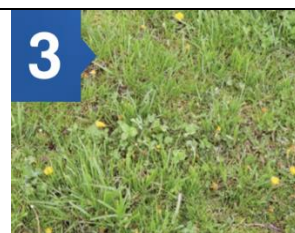
##### Description

- Majority of paddock has low level damage, weeds, and less vigorous grasses

##### Suggested Action

- Apply summer N. Undersow in the autumn with perennial ryegrass containing appropriate endophyte

3



#### CONDITION SCORE 2

##### Description

- Parts of the paddock have severe damage, a lot of weeds and bare ground

##### Suggested Action

Either:

- Sow in perennial ryegrass in autumn, or:
- Undersow with Italian ryegrass in autumn and plan to renew in following 6-12 months, or:
- In spring oversow chicory with fertiliser, or undersow paddocks with chicory, and plan to renew in 6-18 months.

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#### CONDITION SCORE 1

##### Description

- Entire paddock severely damaged

##### Suggested Action

- Sow into summer crop in spring, and plan to sow in perennial pasture in the autumn

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## Appendix 2: Owl Farm Pasture Assessment Data 2016

Paddock	Ha	Condition Score (1-5)	Pest (1-3)	Weeds (1-3)	Persistence (1-3)	Est. kgDM/ha
26	1.39	2	2	3	3	10055
28	2.76	4	1	2	1	10044
23	1.54	3	3	2	3	9959
34	1.91	2	2	3	3	9939
48	1.51	4	3	4	3	9614
72	1.57	3	2	2	2	9512
18	1.85	3	3	2	2	9462
25	1.61	1	3	3	3	9320
19	1.53	4	2	1	1	9229
17	1.57	4	1	2	1	9163
64	1.66	2	3	3	2	9125
71	1.55	3	2	2	2	9083
22	1.67	5	1	1	1	9075
82	0.93	3	2	3	2	9057
13	1.64	4	2	2	1	9016
73	1.33	3	3	2	2	8997
29	2.09	4	1	2	1	8972
40	2.57	3	2	3	2	8955
43	1.71	3	2	2	2	8938
47	1.61	3	2	2	2	8928
4	2.17	2	3	3	3	8893
83	0.98	3	2	3	2	8823
77	0.83					8778
59	1.09	2	2	2	2	8767
81	0.19	3	2	3	3	8751
33	2.43	2	2	3	3	8739
41	1.47	4	2	2	2	8701
32	1.83	2	3	3		8695
27	1.32	3	2	3	3	8686
74	2.03	2	3	3	3	8616
69	1.62	3	1	2	2	8576
53	1.86	3	2	2	2	8560
38	1.73	1	3	3	3	8532
12	1.73	4	1	1	1	8505
24	1.73	2	3	2	3	8472
37	1.94	1	3	3	3	8452
80	0.87					8407
20	1.98	4	2	1	2	8407
3	2.27	2	3	2	3	8384
63	0.95	2	3	3	2	8379
70	1.61	3	3	3	3	8320
62	2.00	3	2	2	2	8308
49	2.54	1	2	2	3	8254
85	1.41					8122
16	1.65	4	2	2	1	8108
21	1.56	5	1	1	1	8108
14	1.66	3	3	2	2	8095
31	2.67	2	2	3	3	8088
2	1.15	3	2	2	2	8031
44	1.10	3	2	2	2	8028
60	2.67					8022

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1	1.55	3	2	2	2	7896
50	1.46	4	2	2	2	7874
86	1.36	3	1	1	1	7802
58	1.16	ng				7785
46	2.20	3	2	3	2	7735
67	0.82	3	1	1	1	7725
36	1.42	2	3	3	3	7709
65	1.44	2	3	3	3	7673
61	2.72	3	2	2	2	7616
42	1.67	2	2	2	2	7548
51	1.46	3	2	2	2	7514
30	2.63	2	2	3	3	7506
57	2.54					7485
78	1.46					7438
84	1.33	3	1	1	1	7309
79	0.86	3	2	3	2	7250
35	2.22	2	2	3	3	7169
66	2.33					7077
68	0.97	3	1	2	1	6698
39	1.60	2	3	3	3	6639
52	1.60	Chicory				
55	2.10	Chicory				
56	2.43	Chicory				
54	1.38	4	2	2	2	
45	2.46	Chicory				
11	1.12	Chicory				
15	1.63	Chicory				
5	1.41	Chicory				
6	1.40	Chicory				

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### Appendix 3: Owl Farm Autumn Re-Grassing Recommendations 2016

REPORT PREPARED BY EMMA BELL & CHARLOTTE WESTWOOD, PGG WRIGHTSON SEEDS

The following report provides background to the pasture renewal plans at Owl farm for 2016:

- UNDERSOWING RUN OUT PASTURE
- PASTURE WEED SPRAYING
- SPRING CROP 2016
- RE-GRASSING CHICORY PADDOCKS
- SUMMARY

#### 1.0 Undersowing

##### RECOMMENDATION

Undersow a total of 32ha of Condition Score 2 & 3 pastures. This will occur from mid-March onwards, following the cows around the rotation. Given the chemical on hand — Baton/Valdo — it requires new grass to be at the 2.5-3 leaf stage at the very least before it can be sprayed.

There should be no loss of production in the interim when undersowing these pastures, only a with-holding period on seed treatment which is three weeks. Currently the farm is on a 40 day round which should be adequate time to first grazing. Again, timing will be important as will base fertiliser recommendations from Ballance.

**Table 1.1 Paddocks identified for undersowing**

Pasture Condition Score	Paddocks
2	3, 4, 24, 25,26,27, 30, 33, 34, 35, 36, 42, 58
3	44, 47, 78, 79, 81, 82,83, 84
<b>Total Area</b>	<b>32ha</b>

The cultivar choice for undersowing will depend on the Block type specified on the farm maps provided. We will use a combination of short-term (Italian with endophyte) and long term (diploid perennial ryegrass) for undersowing, as using only short-term ryegrass would mean a significant amount of area would have to be addressed in 18-months or 2 years' time.

**Blocks 1 & 2:** Undersow with a hardy diploid perennial ryegrass such as Rely or Samson AR37. Total recommended area = 6.5ha

**Blocks 3, 5:** Undersow with a good high performance diploid perennial ryegrass such as One50 AR37 or Excess AR37. Total recommended area = 12.6ha

**Blocks 4, 6 & 7:** Undersow Lush AR37, an Italian ryegrass with AR37 endophyte (18 month-2 year option). Total recommended area = 12.16 ha

##### COST

The cost of undersowing is stated in the table below, assuming we are using Super Strike treated seed at a 16kg/ha sowing rate for Italian Ryegrass & 14kg/ha for Diploid Perennial Ryegrass.

**Table 1.2 Cost of Undersowing Lush AR37 Tetraploid Italian Ryegrass**

	\$/ha
S/S Lush AR37 @ 16kg/ha	\$160
Slug Out @ 10kg/ha	\$86
DAP @ 150kg/ha	\$130
Drilling	\$140
<b>TOTAL COST/HA</b>	<b>\$516</b>
<b>TOTAL COST for 12.1ha</b>	<b>\$6,243</b>

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**Table 1.3 Cost of Undersowing Diploid Perennial Ryegrass**

	\$/ha
S/S Diploid Ryegrass AR37 @ 14kg/ha	\$200
Slug Out @ 10kg/ha	\$86
DAP @ 150kg/ha	\$130
Drilling	\$140
<b>TOTAL COST/HA</b>	<b>\$556</b>
<b>TOTAL COST for 20ha</b>	<b>\$11,120</b>

**BENEFIT**

The benefit of undersowing has been assumed in the following tables which demonstrate the potential benefit of undersowing using Italian Ryegrass with AR37. The following assumptions have been made:

- Undersowing does not require the paddock to be taken out of the round for extended periods of time, so there is no opportunity cost associated with pasture being taken out.
- An estimated annual yield for pure sward Italian Ryegrass has been assumed at 16,000kgDM/ha as representative for the Waikato, and using this information in an undersowing scenario, we have assumed 30% of the pure sward yield would contribute to pastures in year one (5,280kgDM/ha).
- The second year has been assumed at 80% of the year-one yield.

**Table 1.4 Predicted Pasture Grown from Italian Ryegrass with AR37**

Pure Sward Italian Ryegrass Annual Yield	16000	kgDM/ha
Assumed yield benefit for undersowing in Year 1	5280	kgDM/ha
Assumed yield benefit for undersowing in Year 2	4224	kgDM/ha

**Table 1.5 Estimated Economic Benefit of Undersowing Italian Ryegrass in Year One**

Annual Dry Matter Production Currently	9000	kgDM/ha
Assumed additional DM Production from Italian	5280	kgDM/ha
Assumed Annual Yield of Undersown Area	14280	kgDM/ha
Value of extra feed (@ 32c/kgDM)	\$ 1,690	\$/ha
Cost of Undersowing	\$ 516	\$/ha
<b>Economic Benefit (Net Profit/ha)</b>	<b>\$ 1,173</b>	<b>\$/ha</b>

\*Value of feed calculated using DairyNZ average Feed Value for Upper North Island.

We have assumed these paddocks are currently growing 9,000kgDM/ha on an annual basis according to the pasture growth rate data and given these are amongst the poorer performing paddocks on farm. In Table 1.5 the estimated economic benefit of undersowing has been calculated as a benefit of \$1,173/ha in the first year.

- The value of extra feed has been calculated according to the Dairy NZ seasonal Feed Values for the upper North Island, across the five seasons (winter, early spring, late spring, summer and autumn).
- Annual dry matter production over these seasons has been given a weighting using some local data from PGG Wrightson Seeds Trials. The total value of feed over the season has been calculated at 32c/kgDM, as demonstrated in Table 1.6 below.

## NOTES

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**Table 1.6 Economic Value of Feed over Seasons**

	\$/kgDM	% Annual DM production per season *	\$/kgDM
Winter EV	0.28	11	0.03
Early Spring EV	0.45	13	0.06
Late Spring EV	0.17	31	0.05
Summer EV	0.37	29	0.11
Autumn EV	0.37	16	0.06
<i>Total DM Production over 12 months</i>			0.32

(EV = Economic values for perennial ryegrass)

\*The percentage of Annual DM Production per season has been calculated using data from the PGG Wrightson Seeds local trials, showing the proportion of dry matter grown across the different seasons.

- Across the 12.16ha, it is estimated that the area undersown into Italian ryegrass will contribute an extra 64TDM of pasture grown in year one.

Blocks 1, 2, 3 & 5 are to be undersown with perennial diploid ryegrasses. In terms of calculating the benefit, the same theory could be applied for the perennial pastures, though the ongoing benefit will be longer lasted with a perennial ryegrass. New perennial ryegrass annual dry matter production has been assumed at 12,000kgDM/ha in this scenario, which would be an average expectation for a Waikato Dairy Farm.

**Table 1.6 Predicted pasture grown from undersowing with perennial ryegrass**

Pure Sward Perennial Ryegrass Annual Yield	12000	kgDM/ha
Assumed yield benefit for undersowing in Year 1	3600	kgDM/ha
Assumed yield benefit for undersowing in Year 2 (90%)	3240	kgDM/ha
Assumed yield benefit for undersowing in year 3 (80%)	2880	kgDM/ha

Across 20ha the additional dry matter production from undersowing with perennial ryegrass could equate to 72TDM of additional feed grown in year one, with subsequent years expected to be 64.8TDM and 57.6TDM respectively. In year one the net economic benefit at 32c/kgDM equates to \$596/ha, after taking into account the cost of undersowing @ \$556/ha.

## SUMMARY & ACTIONS

- It is obvious that by using some modest assumptions there is significant benefit in undersowing these poorer performing paddocks as opposed to status quo, with the additional yield paying for the cost of undersowing within a year.
- Total area for undersowing is to be decided so seed can be ordered ASAP as there is some pressure on seed supply currently for some varieties.
- There should be no loss of production as undersowing occurs after a hard-graze, and Tom has organised for the contractor to be flexible and 'follow the cows' around the farm.

## 2.0 Pasture Weed Spraying

### TIMING OF SPRAYING

During spring 2015 we missed the opportunity to address weeds in the 60ha of area that was identified as requiring weed spraying. After a pasture walk with Nufarm, we came to the conclusion that a late April/early May pasture spray would still be satisfactory. This will occur in the paddocks identified for undersowing and will occur when the undersown pasture has reached the 2.5-3 leaf stage.

We currently have approximately 60ha of Baton on hand and 45ha worth of Valdo. While some of the Valdo was used in the chicory paddocks in the spring, it may not be necessary to replace this stock as we can selectively target paddocks for Valdo if certain weeds are present (i.e. Chickweed & Storksbill). See table below for breakdown of weed spectrum:

#### NOTES

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**Table 2.1 Weeds controlled by chemical**

<b>Baton @ 1.5kg/ha</b>	<b>Valdo @ 65g/ha</b>
Buttercups	Amaranthus
Dandelions	Mallow
Seedling Docks	Creeping Yellow Cress
Seedling Ragwort	Chickweed
Fathen	Hedge Mustard
Hedge Mustard	Oxeye Daisy
Plantains	Willow Weed
Thistles (Californian etc.)	Wire Weed (young seedlings)

**Table 2.2 Pasture Weed Spray cost**

	<b>\$/ha</b>
Baton @ 1.5kg/ha	\$33
Valdo @ 65g/ha	\$31
Bonza @ 500ml/ha	\$6
Application	\$15
<b>TOTAL COST/HA</b>	<b>\$85</b>

**SUMMARY & ACTIONS**

- All area for undersowing will also be sprayed in late April/early May
- For further information on chemical recommendations please consult Paul Addison from Nufarm.

**3.0 Spring cropping 2016****AREA OF CROP & FEED BUDGET**

Approximately 15 hectares has been indicated as the area required for crop in spring 2016, which includes paddock 45 which will need to be re-cropped in spring. Currently we are feeding approximately 2.2kgDM/cow/day of chicory, which makes up a small fraction of the total diet. There is the opportunity to increase the amount of crop offered to 5.2kgDM/cow/day if we take out this amount of area, assuming a 70 day feeding period and an average crop yield of 11TDM/ha. This scenario is to be modelled in FARMAX.

This proposed area equates to 10% of 150 effective ha of milking platform for the spring, which is in line with industry standards for annual pasture renovation.

**Table 3.1 Area of Summer Brassica (combination of turnips & forage rape)**

<b>Area of Summer Brassica, Spring Sown 2016</b>		
<b>Proposed area:</b>	15	ha
<b>Potential yield</b>	11,000	kgDM/ha
<b>Overall potential yield</b>	165,000	kgDM total yield
<b>No. of cows summer milk</b>	450	in milk cows
<b>Required feeding period</b>	70	days
<b>Amount to offer</b>	<b>5.2</b>	<b>kgDM/cow/day</b>

Using the same assumptions as the above table, **15ha** of chicory (effective hectares) would increase crop consumed to approximately 2.8kgDM/cow/day, assuming a 21 day rotation. Brassicas will offer more feed over a targeted period, i.e. feeding for 70 days, while chicory offers less feed from mid-December through to end of March for the same amount of area. We anticipate to use a combination of turnips and forage rape with different maturity dates

**ESTIMATED COST OF CROP**

The cost of growing Brassica crops has been assumed at \$1200/ha (able to provide a breakdown of costs if required). This takes in to account base fertiliser, lime, and nitrogen, multiple insecticides, a post emergence herbicide and cost of contractors.

## NOTES

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Assuming an average yield of 11TDM/ha, the cost of crop will be assumed at **10.9c/kgDM**. If we take into account the cost of pasture foregone, as demonstrated in table 3.2, (\$1200 + \$996 = \$2196/ha), the cost of crop at 11TDM/ha would be **19.9c/kgDM**. Crude assumptions not taking into account nutritional advantages of crop vs existing pasture.

**Table 3.2 Opportunity Cost of Pasture Foregone (October-March)**

	kgDM/ha	c/kgDM**	\$/ha
Late Spring	2640	0.17	448.8
Summer	1480	0.37	547.6
<b>Total</b>	<b>4120</b>	<b>0.54</b>	<b>996.4</b>

\*Assumed dry matter production grown from late October through to March

\*\*Dairy NZ Feed Values for the upper North Island during Late Spring & Summer

## Paddock Selection

Using data collected from the pasture condition score exercise and pasture growth rates that have been collated in MINDA Land and Feed, we have chosen 15ha worth of paddocks to go into crop this coming spring. Paddock selection was also made on the basis of proximity to the dairy shed, but also ability to access effluent.

Condition Score	Paddock Number
<b>1</b>	37, 38, 49, 45( <i>chicory pdk</i> )
<b>2</b>	39
<b>3</b>	14, 51, 53, 54
<b>TOTAL AREA</b>	<b>15 hectares</b>

## ANNUAL RYEGRASS IN CROP ROTATION

There is a significant advantage in taking pre-crop paddocks through an Annual Ryegrass. Using an Annual Ryegrass will provide another opportunity to target problem weeds, which have certainly compromised some crop paddocks this season, including paddock 45 which will go through crop again this coming season. An area of 11.6ha has been sprayed out for annual ryegrass — 3.4 ha will be left in current pasture until spring.

**Table 3.4 Cost of WinterStar II (WSII)**

	\$/ha
WeedMaster TS540 @ 4L/ha	56
AgChem Application	13
Slug Out @ 10kg/ha	86
S/S WinterStarII @ 28kg/ha	211
DAP @ 150kg/ha	130
Drilling	140
<b>TOTAL COST/HA</b>	<b>636</b>
<b>TOTAL COST for 11.6ha</b>	<b>\$7,377</b>

**Table 3.5 Advantage of using WinterStar II (WSII)**

Pasture Grown (April-Sep)	4751	kgDM/ha
WSII Grown from April-Sep	7541	kgDM/ha
Yield Advantage (WS vs Status Quo)	2970	kgDM/ha
Value of extra feed	1010	\$/ha
Cost of WSII	636	\$/ha
<b>Economic Benefit (Net Profit/ha)</b>	<b>374</b>	<b>\$/ha</b>

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- Pasture grown from April-September has been calculated using the DairyNZ Pasture Growth Rate Data for the Cambridge/Ohaupo area — this is likely generous given the paddocks we have selected are amongst the poorest performing paddocks on farm
- WSII grown from April-September is taken using an average yield of 3 local Annual Ryegrass Trials at Te Awamutu over 3 years
- The value of the extra feed has been calculated using DairyNZ seasonal feed values for autumn, winter and early spring 2016, which is 34c/kgDM over this period.

#### **SUMMARY & ACTIONS**

- 11.6ha of annual ryegrass & 15ha of summer brassica to be modelled in Farmax
- Area for annual ryegrass has been sprayed out — paddocks to be direct drilled on 11/12 March @ 28kg/ha with Superstrike WinterStarII with fertiliser and broadcast slug bait
- Seed has been delivered and paddocks will be drilled 11 & 12 March

#### **4.0 Re-grassing chicory paddocks**

##### **RECOMMENDATION**

- Mid-March onwards, spray chicory paddocks with 4L/ha Weed Master TS540 plus penetrant.
  - Ballance to provide fertiliser recommendations for new grass
  - Ensure chicory has at least 15cm of new re-growth as this will enhance the effectiveness of the kill of chicory plants. Too little cover will mean chicory will grow back and compete with new ryegrass plants
  - Sow perennial ryegrass before the end of March — any later will compromise establishment and reduce the chance of getting a grazing over winter.
- Decision to use a Roll-Seed-Roll method has been made for the following reasons:
  - Last year seed was drilled and there were a number of issues including gaps between drill rows being too wide and allowing A LOT of weeds to come and compete between drill rows
  - Clover was drilled and went too deep
  - Adequate compaction and even drilling depth will help even germination and make the timing of the post emergence herbicide easier

#### **NOTES**

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## COST

The area for perennial ryegrass will be sown in One50 AR37 Perennial Ryegrass which is a 5-star grass on the Dairy NZ Forage value Index (FVI) currently. Perennial ryegrass with clover to be drilled @ 25kg/ha.

**Table 4.1 Establishment of New Grass**

COST OF ESTABLISHMENT				
	Product	Rate	Per Hectare	Cost/ha
SPRAY-OUT	Weedmaster TS540	4	L/ha	\$56
	Pulse Penetrant	100	ml/100Lwater	\$2
	AgChem Application			\$13
FERTILISER	Fertiliser	150	kg/ha	\$130
PLANTING	S/S Grass & Clover Seed	25	kg/ha	\$350
	Cultivation *		per hectare	\$200
	Roller Drill *		Per Hectare	\$150
POST-EMERGE	Selective Herbicide (i.e. Tribal Gold)	4	L/ha	\$71
	AgChem Application			\$13
<b>TOTAL COST/ha</b>			<b>\$/hectare</b>	<b>\$985</b>

\*Estimated Costs ONLY

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## Summary

Assumptions for autumn 2016 regrassing: OWL FARM			
Assumptions as at	10/03/2016		
Area of Summer Brassica, Spring Sown 2016			
Proposed area:	15.0	ha	
Potential yield	11,000	kgDM/ha	
Overall potential yield	165,000	kgDM total yield	
No. of cows summer milk	450	in milk cows	
Required feeding period	70	days	
Amount to offer	5.2	kgDM/cow/day	
Milk price	\$ 4.15		
KgMS year end	185,000		
2. Operating Expenditure implications for multiple regrassing options			
1. Lush AR37 Italian Tetraploid ryegrass, or Excess or Rely AR37 diploid perennial ryegrass oversowing			
Area to sow	32.0	ha	
Estimated costs/ha*	\$ 516.00	per ha	
Total cost	\$16,512.00		
Cents per kgMS	\$ 0.089		
2. Winter Star II Annual Tetraploid ryegrass (pre summer crop planting)			
Area to sow	11.6	ha	
Estimated costs/ha*	\$ 636	per ha	
Total cost	\$ 7,352.16		
Cents per kgMS @ 185,000kgMS	\$ 0.040		
3. Perennial Ryegrass One50 or Excess AR37 establishment ex Chicory & ex Maize			
Area to sow	16.5	ha (excluding PDK 45)	
Estimated costs/ha*	\$ 985.00	per ha	
Total cost	\$16,252.50		
Cents per kgMS	\$ 0.088		
TOTAL regrassing commitments autumn 2016			
Sum all regrassing	\$40,116.66		
Cents per kgMS	\$ 0.217		
Budget for 2015/2016			
Budgeted	Actual STD expenditure		
Chicory	\$ 9,600.00	\$	9,910.00
"Regrassing"	\$ 7,200.00		0
Total cropping & regrassing	\$16,800.00	\$	9,910.00
Budget remaining for regrassing	\$ 6,890.00		
Op Ex investment required over and above bu	\$		33,226.66
	\$		0.180 per kgMS

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# OWL FARM: 2016 CAPITAL EXPENDITURE PROPOSAL

Re-investment into Owl Farm is crucial to ensure we are capable of achieving our vision and strategy. Much of this revolves around developing a resilient farm system capable of delivering sustainable profits while being conscious of our environmental limitations and ensuring animal welfare and the health and safety of our staff are of utmost importance.

In recent times reinvestment into the farm has been limited and is certainly a contributing factor to some of the limitations we have experienced this year. Although we acknowledge the farm will deliver a deficit this season and the appetite for reinvestment may be partial we also recognize that in order to get the best return from this asset that there are components which need addressing as a matter of priority. Externally there is a perception risk that we are not comparable as we have a business in behind the scenes capable of propping us up. We know this not to be the case and need to ensure clear communication of any spend and rationale to remain creditable.

As a demonstration farm it is important we lead from the front, part of that is acknowledging that all investments must have a solid business case and must be commercially viable for any other farmer considering similar upgrades to ensure we remain relevant. In the current dairying environment many farmers won't be reinvesting due to financial restrictions. We have discussed no additional capital works but accepted that this would only put us another year behind where we want to be. Instead we have responsibly scaled back or excluded items on the basis that we don't want to be seen to be investing in items which other farms wouldn't be able to justify.

All items are supported by a business case which illustrate the commercial gains.

Our current capital budget request includes the following

- Farm tracks/races - \$30,000
- Re-alignment of exit race at cowshed - \$5,000
- Crush for treating lame cows - \$5,000
- Drainage - \$15,000
- Water reticulation - \$10,000
- Fertiliser spreader - \$15,000
- Water blasting pad and water blaster - \$2,000

**Total requested \$82,000**

## **Farm Tracks and races \$30,000**

### **Description:**

Entry and exit race leading to the cowshed have a large amount of small stones on the surface which is contributing to our lameness problem. We have recently invested in taking the willows out beside the race which will ensure better cow flow and enable the track to dry out faster during winter/spring but we need to also address drainage and capping of the race. The track currently has a good base which we would continue to utilise, ideally a cap would be used on top of the race and frequent drainage channels would be cut into the side to ensure water drains readily.

We are asking seeking to straighten a section of race which will improve cow flow and take a hill out of the equation, see image below – this also shows the large number of small stones in this section. Although Cam is likely going to undertake the earthworks we will need materials to stabilise the race surface. Stabilisation material will also be required for the steep section of race leading up to kiddy block.



### **Reasons:**

So far this year we have had 87 lame cows, assume by seasons end this may be 100. Using the DairyNZ's lameness calculator we have been able to assume what the potential cost of this problem has been to our bottom line. I have made some loose estimates around where I think we would like to be regarding lameness to show the lost revenue we may currently be experiencing. As shown below using this model our bottom line could be improved by \$33,808.

Not all of this is attributed to the race but I think we could justifiably assume 50% could be attributed to the race and the other 50% attributed to exit race from dairy.

### NOTES

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# 1. Cost planning in Managing Lameness

Cost planning in managing lameness	Current farm data	Set your own targets
Herd size	<input type="text" value="460"/>	<input type="text" value="460"/>
Number of lame cows treated, plus the ones observed lame during the season	<input type="text" value="100"/>	<input type="text" value="40"/>
Average Days in milk	<input type="text" value="300"/>	<input type="text" value="300"/>
Production average kg MS per cow per annum	<input type="text" value="400"/>	<input type="text" value="450"/>
Milk Price per kg MS	\$ <input type="text" value="3.90"/>	\$ <input type="text" value="3.90"/>
Number of lame cows treated:		
* by farm staff:	<input type="text" value="60"/>	<input type="text" value="30"/>
* by vet:	<input type="text" value="40"/>	<input type="text" value="10"/>
* with antibiotics with a withholding period	<input type="text" value="40"/>	<input type="text" value="20"/>
Number cows culled for lameness - Pre Christmas	<input type="text" value="0"/>	<input type="text" value="0"/>
Number cows culled for lameness - Post Christmas	<input type="text" value="20"/>	<input type="text" value="5"/>

- Quite a few assumptions made here but a fairly accurate reflection on what the cost of lameness would have been.
- Used a consistent milk payout to standardise it

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## Potential Lost Revenue

Cost of healthy hoof advisory service	Current farm situation	Farm target	
<b>DIRECT COST OF LAMENESS (LOST PRODUCTION)</b>	<b>\$141</b>	<b>\$156</b>	per lame cow
Loss of milk solids production	\$141	\$156	per lame cow
<b>COST OF TREATMENT</b>	<b>\$101</b>	<b>\$58</b>	per lame cow
Cost of farm staff cow treatment	\$9	\$12	per lame cow
Cost of veterinary treatment	\$91	\$46	per lame cow
<b>WASTAGE</b>	<b>\$215</b>	<b>\$146</b>	per lame cow
Cow specifically culled for lameness	\$200	\$125	per lame cow
Discarded Milk	\$15	\$21	per lame cow
<b>IMPACT ON REPRODUCTIVE PERFORMANCE</b>	<b>\$107</b>	<b>\$108</b>	per lame cow
Decrease of six week in-calf rate	\$7	\$8	per lame cow
Empty rate	\$100	\$100	per lame cow
<b>TOTAL COST DUE TO LAMENESS</b>	<b>\$563</b>	<b>\$467</b>	per lame cow
<b>TOTAL COST DUE TO LAMENESS</b>	<b>\$56347</b>	<b>\$22539</b>	for Business per season

## Potential Improvement

Difference between current data and your goal for lameness may lead to an improvement for the business per season of

\$33808

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### Pro's

- Less lame cows
- Improved production
- Less wasted milk
- Improved speed walking to and from cowshed
- Less farm labour spent on checking feet (av. 2 hours per week @\$25/hr = \$2600 per year)

### Con's

- Cost

### Impact on health and safety

- Less lame cows, less time in crate checking feet

### Environmental

- NA

<b>Cost</b>	\$30,000	\$ - pa
<b>Savings</b>	\$15,000	\$ 15,000pa
<b>Return on Investment</b>	50%	
<b>Discounted cashflow</b>	\$79,637	
<b>On-going labour commitment</b>	60% less time/cost	

### On-going cost, maintenance, replacement commitment

- Every 2 or 3 years replace the top layer of race and compact ~\$10,000

### Recommendation, why?

- Undertake race improvements over winter, some significant gains to be made with regard to lameness and importance of finishing the job we started with regards to removing trees.

### Alternatives?

- Do less or nothing.

### Re-alignment of exit race at cowshed - \$5,000

#### Description:

Currently 5 90o turns for the cows when exiting the race, picture below show's 3. Rotation on the cows hoof causes the pad to wear and making the penetration of small stones on the track more common.

The idea is to box out the exit race and take up to two of the turns out allowing a curved exit with more space than the current tight corners.

#### Reasons:

Previous investigations have shown white line to be the predominant cause of lameness on farm, this in conjunction with the small stones on the farm tracks surface penetrating thin hoof pads has been a leading factor in lameness.

The other 50% reduction in potential impact to bottom line from lameness calculation can be attributed here.

### Pro's

- Less lame cows
- Improved production
- Less wasted milk
- Less farm labour spent on checking feet (av. 2 hours per week @\$25/hr = \$2600 per year)

### Con's

- May be a band aid solution, if we are looking to do quick and dirty fix – need to ensure we get expert advice on best possible route.



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### Impact on health and safety

- Less lame cows, less time in crate checking feet

### Environmental

- NA

Cost	\$5,000	\$ - pa
Savings	\$15,000	\$15,000 pa
Return on Investment	300%	
Discounted cashflow	\$104,637	
On-going labour commitment	60% less time checking feet, rather than on average 100 hours annually it would 40 hours	

### On-going cost, maintenance, replacement commitment

- NA

### Recommendation, why?

- Get further advice from vet and other specialists around the exact configuration of exit race to reduce pressure on cow's feet. Then progress with improvements.

### Alternatives?

- Rubber matting on the corners to reduce the wear on cows feet from abrasive concrete, depending on long term use of current farm dairy?

### Crush for treating lame cows - \$5,000

#### Description:

Current crush secures the cow's head but doesn't lift the cow to immobilise therefore not reducing pressure and stress on the cow or staff looking at feet.

#### Reasons:

With many cows becoming lame lifting and treating cows feet has become a common occurrence. This is a stressful time for the animal and when not secured and lifted by a belly strap they are prone to going down while in the crush and having their head secured.

To ensure this task is prioritised by staff and our stock return to good health as fast as possible we need to make this an easy job.

Depending on the outcome of the realignment of exit race a new/or modified crush is being requested with belly straps to enable the animal to be lifted and then treated. The models which have been quoted are around the \$5,000 mark.



#### NOTES

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# How it works

The double belly straps hold the cow, immobilising and relaxing her, and preventing her from 'going down' and breaking a hip during treatment.

The back hoof is then secured to a supporting bar leaving the operator with both hands free and out of the way of the knife. The front hoof is winched onto a wooden cradle and held securely with a rope.



**Race Wrangler®**

## Pro's

- Less stress on the cow
- Faster response with opportunity to better treat the animal means quicker recovery time and less time out of the herd and less impact on milk production.
- Easier and safer for staff
- Less reliance on vet coming in to treat lame cows

## Con's

- Cost

## Impact on health and safety

- Not as much risk for staff if the animal goes down, working with sharp utensils so need to ensure the animal is secure as possible. Much less stress on the animal as well.

## Environmental

- NA

<b>Cost</b>	\$5,000	\$ - pa
<b>Savings</b>	\$1,000	\$ 1,000 pa
<b>Return on Investment</b>	20%	Improved H&S
<b>Discounted cashflow</b>	\$2,309	
<b>On-going labour commitment</b>	Half the time per cow to treat.	

## NOTES

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### On-going cost, maintenance, replacement commitment

- NA

### Recommendation, why?

- Undertake upgrade to current crush or retrofit new model. As a demonstration farm we need to be showing best practice with regards to animal welfare and health and safety – both aspects are questionable under the current management.

### Alternatives?

- Have external hoof doctor come in with crush and treat all lame cows once identified – significant cost and not enabling our staff to manage issues on farm when identified – therefore would not recommend this option.

### **Drainage \$15,000**

#### Description:

Four paddocks adjacent to the Waikato River on the lower half of the farm have several springs/seepage areas which come to the surface through the terraced landscape identified here. The culminating drain which goes directly through the middle of paddock 53 has a significant volume of water draining even in the summer months. Construction of Novaflo has been suggested to improve drainage in these paddocks. The rough areas have been illustrated with the red lines on the diagram below. Mole ploughing is being suggested as the fix for drainage issues in paddock 6 adjacent to the gymnasium.



#### Reasons:

These area's become easily waterlogged and are prone to significant pugging events when stock are in these paddocks during winter and spring especially. Pugging limits pasture grown as it disturbs plants and the soil structure. Several photos have been provided below to illustrate the heavy burden of water pepper weed which grows back in place of pasture, this is unpalatable for stock and therefore a waste of potential grazing utilisation.

NOTES





Undertaking drainage work in these paddocks will allow us to grow more pasture as we reduce pugging which will lead to increased milk in the vat. It's difficult to objectively determine the lost production as our pasture metering is likely to overstate the pasture grown per ha within these paddocks as wet boggy areas are avoided when measuring.

It could be equivalent to 1-2tonnes additional pasture grown per ha within these paddocks. Conservatively say 1 tDM/ha extra over 8ha = an extra 8tDM/ha. Using DairyNZ Economic value of feed over the season we can attribute a value of 32c per kgDM, 8tDM is therefore equivalent to \$2560 in feed.

**Table 1.6 Economic Value of Feed over Seasons**

	\$/kgDM	% Annual DM production per season *	\$/kgDM
Winter EV	0.28	11	0.03
Early Spring EV	0.45	13	0.06
Late Spring EV	0.17	31	0.05
Summer EV	0.37	29	0.11
Autumn EV	0.37	16	0.06
<b>Total DM Production over 12 months</b>			<b>0.32</b>

(EV = Economic values for perennial ryegrass)

\*The percentage of Annual DM Production per season has been calculated using data from the PGG Wrightson Seeds local trials, showing the proportion of dry matter grown across the different seasons.

### The cost of doing nothing

Research has shown that pasture seriously pugged in Spring will produce about 40% less DM than undamaged pasture through the following season. For each ha of damaged pasture with a normal production of 14,000kg DM, (ave for SDF) this is equivalent to a loss of 5600kg DM, at 20c/kgDM this is a revenue loss of over \$1000/ha. Pasture yield reductions of up to 80% have been recorded....

Losses will continue over following years as the affected areas will likely become infested with weeds and unproductive grasses. If soil structure is not repaired affected areas will also become more prone to future pugging due to impeded drainage.

#### NOTES

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## Pro's

- Less pugging
- More pasture grown per ha, better quality pasture grown
- Less invasive weeds
- More milk in the vat
- Aesthetically better in regards to demonstration farm
- Benefit of doing now is that it ties in with re-grassing.

## Con's

- Cost

## Impact on health and safety

- Less risk of getting stuck in mud – several instances where we have had to pull fertiliser trucks out

## Environmental

- Less pugging therefore less potential for phosphorus to be lost to river in overland flow
- Improved drainage will increase nitrates which escape through the soil, but a small impact when averaged out across the milking platform.

<b>Cost</b>	\$15,000	\$ - pa
<b>Savings</b>	\$2,500	\$2,500 pa
<b>Return on Investment</b>	16%	6 years to pay off
<b>Discounted cashflow</b>	\$3,711	
<b>On-going labour commitment</b>	Less requirement to erect fences to exclude stock	

## On-going cost, maintenance, replacement commitment

- No ongoing cost initially, ongoing maintenance in form of cleaning open drains out and spraying any weeds.

## Recommendation, why?

- Undertake subsurface drainage. Reduce impact of pugging in winter/spring and avoid weed burden in summer. Improve the productive capability of these paddocks to ensure pasture grown and harvested is optimised in line with strategic objectives.
- Long term return on asset
- *Ideally we could prioritise this to start immediately as now is the best time to undertake this work.*

## Alternatives?

- Fence and retire these sections of drainage – makes the asset completely unproductive.

## Water Reticulation - \$10,000

### Description:

Continuous water leaks and inability to deliver cows the required minerals during key times of the year must be a priority. All overland water pipes need to be buried to reduce splits from stock and machinery. Some pipes need to be upgraded and enlarged to ensure stock receive adequate water, this is particularly important during summer.

### Reasons:

Eczema has had another significant impact this summer which has led to premature requirement to dry cows off and has significantly impacted our production.

Not all animals affected with FE show physical signs (i.e. clinical FE) although liver damage (i.e. subclinical FE) has occurred. It is estimated that for every clinical case there will be 10 cows with subclinical FE.

Milk production of animals with subclinical FE can be depressed by up to 50%. Blood tests can be used to monitor the extent of subclinical FE.

Badly damaged liver tissue will not regenerate. Chronic wasting and/or death may occur at the time of damage or months later when the animal is under stress (e.g. calving).

### NOTES

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This season eczema has probably cost us 5000kgMS of production and may impact some cow's performance next year. Even at a \$3.90kgMS this is still significant at \$19,500 – not all this value will be attributed to ensuring stock get adequate dosing of minerals from water but leaks over late summer would have definitely contributed to at least 50%.

Frequent water leaks over summer have impacted stocks ability to access sufficient drinking water. This not only has a significant impact on production and animal health but takes a large amount of time for staff to locate and fix pipes.

#### Pro's

- Increased production
- Animal welfare
- Less wasted staff time
- Save money on pipe fittings/fixtures.
- Not wasting expensive minerals to the paddocks through water leaks.

#### Con's

- Cost

#### Impact on health and safety

- NA

#### Environmental

- NA

<b>Cost</b>	\$10,000	\$ - pa
<b>Savings</b>	\$10,000	\$10,000 pa
<b>Return on Investment</b>	100%	
<b>Discounted cashflow</b>	\$63,091	
<b>On-going labour commitment</b>	Less – less time fixing broken pipes.	

#### On-going cost, maintenance, replacement commitment

- NA- buried pipes will mean significantly less time wasted throughout the season searching for leaks and fixing.

#### Recommendation, why?

- Undertake improvements to stock drinking water over winter when cows are dry. Bury pipes and replace sections where mainline is either too small or has too many joiners.

#### Alternatives?

- Do nothing

#### **Fertiliser Spreader - \$15,000**

##### Description:

4-6 tonne fertiliser spreader - 2nd hand

##### Reasons:

Currently spend between 10-15k on the spreading of fertiliser each year from an outside contractor, although things like Lime would still likely be applied through outside contractors we could hope to eliminate 75% of this cost from our operating budget.

Timing of nitrogen and fertiliser application is often crucial in terms of the response rate and pasture grown and therefore optimising milk in the vat. With 3 full time labour units and maintenance becoming less of a time constraint there is an opportunity to get a better return on the investment through undertaking this ourselves.

#### Pro's

- Better timing of application
- Better response rate regarding pasture grown
- Ability to grow and harvest more home grown feed.
- Ability to apply little and often

#### NOTES

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### Con's

- Increased workload for staff
- Increased wear and tear on tractor
- Increased fuel consumption

### Impact on health and safety

- Majority of nitrogen fertiliser could be delivered in bags and stored on the concrete floor of the implement shed, however potential need to drive tractor and fertiliser spreader down to Hautapu to load up, more time on road which has associated risks.
- No additional risk on farm- no difference regarding application on farm to feeding silage or topping.

### Environmental

- Less is more - ability to undertake little and often, lowering environmental impact and maximising pasture grown.

<b>Cost</b>	\$15,000	\$ 1,000 pa fuel
<b>Savings</b>	\$7,500	\$7,500 pa
<b>Return on Investment</b>	50%	
<b>Discounted cashflow</b>	\$36,481	
<b>On-going labour commitment</b>	\$4,160 Figure based on 4 hours per week (208 hours total) @ \$20 an hour	

### On-going cost, maintenance, replacement commitment

- More wear and tear on tractor.

### Recommendation, why?

- Purchase a spreader over autumn/winter. In addition to the cost savings from applying ourselves there will also be significant gains to be made in income through additional DM grown and consequently milk in the vat.
- *Ideally we could get this signed off quickly as well as currently 2 good refurbished spreaders available through Te Awamutu which have warranties as well.*

### Alternatives?

- Continue using external contractor – increase operating budget.

### Water blasting pad and water blaster- \$2,000

#### Description:

Pad which can be used to park vehicles and implements on for the purpose of cleaning. Blaster for the purpose of cleaning vehicles.

#### Reasons:

Don't currently have a suitable facility except for the back of the yard where the cows are milked. Often this is task that could easily be undertaken by staff member not milking. Needs to be easily accessible to ensure staff use.

Ability to keep machinery clean will ensure it lasts longer and that any defects are picked up faster. As a demonstration farm we need to be presentable and ensure we are prepared to be on show any day of the week.

### Pro's

- Machinery clean and presentable
- Less maintenance

### Con's

- Increased workload for staff (but done little and often shouldn't be a big time constraint).

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**Impact on health and safety**

- NA

**Environmental**

- NA

<b>Cost</b>	\$2,000	\$ pa
<b>Savings</b>	\$1000	\$1000 pa
<b>Return on Investment</b>	50%	
<b>Discounted cashflow</b>	\$4,864	
<b>On-going labour commitment</b>	1 hour per week, 52 hours @\$20 = \$1040	

**On-going cost, maintenance, replacement commitment**

- NA

**Recommendation, why?**

- Construct a concrete pad beside the sediment trap on the side of the tanker loop at the same time as realignment of exit race at the cowshed. Purchase a petrol powered pressure blaster.

**Alternatives?**

- Do nothing

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# Next Farm Focus Day

Wednesday, 14 September 2016



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