He Waka Eke Noa

Primary Sector Climate Action Partnership

Farm case studies report

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He Waka Eke Noa: Farm case studies report

Report purpose

The Farm case studies report provides a financial analysis of the impacts of the pricing system and settings on a range of different farm systems within each industry.

The estimated cost faced and financial impacts of three different pricing systems (Processor-level NZ ETS, Farm-level Levy with incentive discounts and a Processor-level Hybrid Levy with Emissions and Sequestration Management Contracts) on sixteen different farm systems were analysed. The analysis also considered five combinations of price settings for methane (CH_4) and nitrous oxide (N_2O), and three for sequestration.

Relationship between the Sectoral impacts and Farm case studies reports

The Sectoral impacts and Farm case studies reports provide insights into the different impacts of the proposed pricing systems.

The Farm case studies report demonstrates the impact of the different pricing systems using five price settings, on sixteen different (representative and actual) farm systems. The impact of He Waka Eke Noa eligible sequestration is provided using three different price settings. The case studies analysis does not 'model' a response to emissions pricing, it only shows the cost faced and the financial impacts of this at a point in time. It does not explain the overall distributional impacts within an industry or farm class. This is a limitation of the approach, as in reality where mitigations are available, farmers would work to mitigate their exposure to emissions pricing and we would expect the actual cost faced to differ as a result of this.

Some mitigations were applied to the Farm-level Levy and Processor-level Hybrid Levy for illustrative purposes, however, no mitigation modelling was carried out for the NZ ETS so results will need to be interpreted with caution.

The Sectoral impacts report shows the impacts of the three different pricing systems alongside a range of different price settings on the primary sector, and the individual dairy, red meat, and horticultural industries. The sectoral impacts modelling also shows how a farmer might respond to an emissions price and different options for recycling the revenue.

The sectoral impacts modelling was used to inform the price settings and incentive discounts used in the case studies analysis.

The farm case studies analysis provides further context for the sectoral impacts modelling, i.e., each industry is made-up of different farm systems that are impacted in different ways by the different pricing systems and price settings.

Case studies analysis overview

Pricing systems

The pricing systems analysed were:

- Processor-level NZ ETS
- Farm-level Levy with incentive discounts and sequestration

- Processor-level Hybrid Levy with Emissions and Sequestration Management Contracts (EMC and SMC)

Price settings

Five price settings were used to provide a comparative analysis between the three pricing systems. These represented the assumed price settings for agriculture in the NZ ETS for 2025 and 2030. The carbon price is derived from Climate Change Commission's *'Our Path to 2035'* scenario.[1] Under the NZ ETS backstop option, processors would initially receive an allocation of NZUs equal to 95% of their emissions phasing out one percentage point per year till 2030.

- 2025 scenario – carbon price of $85/t CO_2e with 95% discount for methane and nitrous oxide
- 2030 scenario – carbon price of $138/t CO_2e with 90% discount for methane and nitrous oxide

The sectoral impacts modelling was used to determine a combination of price settings that would achieve the desired emissions reductions for 2030. The impacts of the resulting three price settings were also analysed:

- $106/t CH_4 for methane; $41/t CO_2e for nitrous oxide; $138/t CO_2e for sequestration
- $173/t CH_4 for methane; $41/t CO_2e for nitrous oxide; $138/t CO_2e for sequestration (Farm-level Levy only)
- $345/t CH_4 for methane; $41/t CO_2e for nitrous oxide; $138/t CO_2e for sequestration

Sequestration

The impacts of He Waka Eke Noa eligible sequestration were analysed for the Farm-level Levy and the Processor-level Hybrid Levy at three different price settings. This enabled a better understanding of the impact of sequestration on the cost faced and potential reward gained by the different farm systems:

- Full carbon price
- 25% discount on carbon price
- Equivalent to nitrous oxide price

Farm case studies

Sixteen farm case studies were used to understand the impacts of the different pricing systems and price settings. The case studies included:

- North Island Hill Country
- North Island Intensive
- South Island Hill Country
- South Island Hill Country with Deer
- South Island Mixed Cropping
- Māori agribusiness Sheep and Beef farms (x3)
- Canterbury Dairy
- Taranaki Dairy
- Bay of Plenty/Waikato Dairy

[1] https://www.climatecommission.govt.nz/get-involved/sharing-our-thinking/data-and-modelling.

- Māori agribusiness Dairy farms (x5)

The Māori agribusiness farms, and South Island Mixed Cropping farm used actual farms for the case study. The other case studies were developed using average data for that region or farm system type.

A detailed summary of each farm case study is provided in Appendix A.

Method

For the averaged farms, the red meat farms were based on average B+LNZ Economic Service data for that farm class and region; and the dairy farms were based on average DairyNZ statistics for that region.

Farmax was used to model each of the case studies (except the South Island Mixed cropping farm, as it is unable to suitably model arable and vegetable crop production) and provide farm emissions by gas and economic farm surplus (EFS).[2] For the case studies derived from average data the production parameters were adjusted within each Farmax model to ensure each farm system was biologically feasible.

To set the incentive discounts under the Farm-level Levy and the Emissions Management Contract (EMC) reward under the Processor-level Hybrid Levy:

- Adoption of low methane sheep genetics, resulting in a 10% reduction in sheep methane emissions based on a 50:50 sheep to other livestock ratio, was assumed for red meat farms.
- Use of a feed additive, resulting in a 12% reduction in methane emissions based on the additive being shed fed twice daily, was assumed for dairy farms.

Table 1 provides a summary of each farm's emissions and potential emissions reductions by gas.

The sequestration numbers applied to the farm case studies were derived through analysing data supplied by Fonterra, QEII, Pāmu, and Regional Councils, and applying these relationships to each case study farm. Only He Waka Eke Noa eligible sequestration was used in the analysis.

There is a wide range of vegetation that could be eligible for He Waka Eke Noa on farms, but there is limited data on actual vegetation. These case studies provide a broad estimate of sequestration that could be rewarded. Farmers may enter this vegetation over time, particularly if fencing is required.

The sequestration assumptions used for each case study are provided in Appendix B and summarised in Appendix B Table 1.

The different pricing systems and price settings were then applied to each case study as appropriate.

Analysis outputs included:

- Emissions by gas
- Emissions cost by gas
- Potential emissions reductions by gas
- Incentive discounts

[2] Economic Farm Surplus (EFS) is earnings before interest, tax and rent – it includes wages, management wage and also depreciation.

- Sequestration on farm
- Sequestration reward
- Economic farm surplus (earnings before interest, tax, and rent)
- Impact of the cost faced, and reward gained on Economic Farm Surplus
- The impact of the cost faced on a per kg of milk solids, beef and sheep meat, venison, and N-fertiliser

Case studies insights

A summary of the outputs from the case studies analysis is provided in Tables 2 through 6.

Pricing system comparative analysis

Impact of the ***Processor-level NZ ETS*** price on cost per unit of production – *Table 2*

- Dairy: Cost in 2025 is $0.04 per kg MS (milk solids); in 2030 this increases to $0.16 per kg MS.
- Red meat: Cost in 2025 is $0.10 per kg sheep meat, $0.07 per kg beef, and $0.15 per kg venison; in 2030 this increases to $0.30 per kg sheep meat, $0.22 per kg beef, and $0.46 per kg venison.
- Fertiliser: Cost in 2025 is $0.02 per kg N; in 2030 this increases to $0.07 per kg N.

Impact of the ***Processor-level NZ ETS*** on economic farm surplus (EFS) – *Tables 3a and 4a*

- The 2025 price results in <5% impact EFS on most farms. Red meat farms have a higher impact on their EFS than dairy farms.
- The 2030 price results in a much greater impact on EFS. Red meat farms again have a higher impact on their EFS than dairy farms. This could potentially impact the viability of some red meat farming systems.
- Red meat farms that are predominantly breeding or trading operations face the lowest price under the Processor-level NZ ETS system due to the output-based methodology, i.e., they sell very few stock direct to the processor.
- No sequestration is recognised under the Processor-level NZ ETS, meaning farms with areas of non-eligible NZ ETS vegetation will face a higher net price than under the Farm-level Levy.

Impact of the ***Farm-level Levy*** price on cost per unit of production – *Table 2*

- Dairy: Cost in 2025 is between $0.04 and $0.05 per kg MS (milk solids); in 2030 this increases to between $0.12 and $0.15 per kg MS (slightly lower cost than processor-level).
- Red meat: Cost in 2025 is between $0.11 and $0.23 per kg sheep meat, $0.08 and $0.17 per kg beef, and $0.26 per kg venison. In 2030 this increases to between $0.23 and $0.76 per kg sheep meat, $0.16 and $0.55 per kg beef, and $0.86 per kg venison. Finishing farms face a lower cost than the processor-level and breeding and trading farms a much higher cost.
- Fertiliser: Cost in 2025 is $0.02 per kg N and $0.07 per kg N in 2030 (same cost as processor-level).

Impact of the ***Farm-level Levy*** on economic farm surplus (EFS) – *Tables 3b and 4b*

- For dairy farms the 2025 price results in a lower cost than the Processor-level NZ ETS and therefore a lower impact on EFS. This is mainly due to the farm-level methodology used, but the incentive discounts and reward from sequestration also have an impact.
- For most red meat farms, the 2025 price results in a lower cost and impact on EFS than the Processor-level NZ ETS. This is due to the incentive discounts and reward from sequestration.
- Red meat farms that are predominantly breeding or trading operations face a range of costs and impacts on EFS. The farm-level methodology accounts for all their emissions and, even with the incentive discount, results in a higher cost and impact; however, the reward for sequestration can further offset this cost but only if the full or 25% discounted carbon price is received.
- The 2030 price results in a much greater impact on EFS. Red meat farms have a higher impact on their EFS than dairy farms. This will impact the viability of some red meat farming systems.

Impact of the ***Processor-level Hybrid Levy*** price on cost per unit of production – *Table 2*

- The ***Processor-level Hybrid Levy*** cost per unit of production is the same as the ***Processor-level NZ ETS***.

Impact of the ***Processor-level Hybrid Levy*** on economic farm surplus (EFS) – *Tables 3c and 4c*

- For dairy farms, the 2025 price results in a higher cost and impact on EFS than the Farm-level Levy but a lower cost and impact than the Processor-level NZ ETS. This due to the output-based methodology when compared to the Farm-level Levy; and the incentive discounts and reward from sequestration when compared to the Processor-level NZ ETS.
- For intensive red meat farms, the 2025 price results in a higher cost and impact than the Farm-level Levy but a lower cost and impact than the Processor-level NZ ETS. This is, again, due to the output-based methodology when compared to the Farm-level Levy; and the incentive discounts and reward from sequestration when compared to the Processor-level NZ ETS.
- Red meat farms that are predominantly breeding or trading operations, face a much lesser cost or receive a credit. This is due to the output-based methodology, the incentive discounts, and the reward from sequestration.
- The 2030 price results in a much greater impact on EFS. Intensive red meat farms have a higher impact on their EFS than extensive red meat and dairy farms. This will impact the viability of these farming systems.

Price setting analysis

General observations

- Changes in price settings result in a similar impact being observed across all farm systems, i.e., different price settings cannot be used as a clear lever to re-distribute costs between industries or farm-systems.
- The methane price has the largest impact upon cost faced.

High methane and nitrous oxide price – *Tables 5a and 5b*

- Under the Farm-level Levy, the EFS for all red meat farms is significantly impacted; the cost will impact the viability of all farms.

- Under the Processor-level Hybrid Levy, the EFS for red meat finishing farms is significantly impacted; the cost will impact the viability of these farms.
- Dairy faces a similar impact on EFS under both systems; the cost would not impact the viability of most farms.

Low methane and high nitrous oxide price – *Tables 6a, 6b and 6c*

- Under the Farm-level Levy, the EFS for all red meat farms is impacted but to a lesser extent than the high methane scenario; the cost will impact the viability of breeding or trading farms.
- Under the Processor-level Hybrid Levy, only the EFS for intensive red meat farms is impacted; the cost will impact the viability of these farms.
- Dairy faces a lower impact on EFS under both systems; the cost would not impact the viability of most farms.

Sequestration analysis

- If the sequestration price is linked to the nitrous oxide price (95%, 90% or 70% discount on the carbon price) a low reward is received. At these prices He Waka Eke Noa sequestration uptake is likely to be low, particularly when the associated liability is considered. A low reward for sequestration will impact on the viability of some red meat farms.
- The impact on EFS between the full and 75% sequestration rate is minimal.

Commodity prices

- A high-level commodity price sensitivity analysis was also undertaken as part of the case studies analysis. This showed that the ability of farms to face a price is strongly linked to the commodity price. Any price setting decision must consider future commodity prices if farms are to remain viable.

Table 1: Case studies emissions, sequestration, and emissions reductions

	Farm case studies initial emissions and sequestration			Methane reduction (kg CH_4/total ha)	Farm methane percentage reduction
	Methane (kg CH_4/total ha)	Nitrous oxide (t CO_2e/total ha)	Sequestration (t CO_2e/total ha)		
North Island Hill Country	109.56	0.63	0.09	5.48	5%
North Island Intensive	139.44	0.81	0.10	6.97	5%
South Island Hill Country	56.60	0.33	0.04	2.83	5%
South Island Deer	55.20	0.32	0.04	2.76	5%
South Island Mixed Cropping	145.48	0.50	0.05	7.27	5%
Māori Agribusiness Sheep + Beef 1	136.00	0.80	0.10	6.80	5%
Māori Agribusiness Sheep + Beef 2	132.00	0.76	0.24	6.60	5%
Māori Agribusiness Sheep + Beef 3	152.00	0.84	0.50	7.60	5%
Canterbury Dairy	408.00	3.10	0.06	48.96	12%
Taranaki Dairy	332.00	2.60	0.10	39.84	12%
Waikato/Bay of Plenty Dairy	348.00	2.60	0.05	41.76	12%
Māori Agribusiness Dairy 1	336.00	2.40	0.00	40.32	12%
Māori Agribusiness Dairy 2	300.00	2.40	0.00	36.00	12%
Māori Agribusiness Dairy 3	336.00	3.00	0.13	40.32	12%
Māori Agribusiness Dairy 4	276.00	2.40	0.94	33.12	12%
Māori Agribusiness Dairy 5	292.00	2.70	0.50	35.04	12%

Table 2: Cost per unit of production

	Milk solids	Beef	Sheep meat	Venison	N-Fertiliser
Processor-level NZ ETS or Hybrid Levy (no incentives or sequestration included)					
2025 - $85/t CO_2e with 95% discount	$0.05	$0.07	$0.10	$0.15	$0.02
2030 - $138/t CO_2e with 90% discount	$0.16	$0.22	$0.30	$0.46	$0.07
2030 - CH_4 $106/t; N_2O $138/t CO_2e with 70% discount	$0.13	$0.17	$0.25	$0.37	$0.21
2030 - CH_4 $345/t; N_2O $138/t CO_2e with 70% discount	$0.20	$0.30	$0.40	$0.62	$0.21
Farm-level Levy (no incentives or sequestration included)					
2025 - $85/t CO_2e with 95% discount	$0.04 - $0.05	$0.08 - $0.17	$0.11- $0.23	$0.26	$0.02
2030 - $138/t CO_2e with 90% discount	$0.12 - $0.15	$0.16 - $0.55	$0.23 - $0.76	$0.86	$0.07
2030 - CH_4 $106/t; N_2O $138/t CO2e with 70% discount	$0.09 - $0.11	$0.13 - $0.43	$0.17 - $0.58	$0.70	$0.21
2030 - $345/T CH_4; N_2O $138/t CO2e with 70% discount	$0.14 - $0.18	$0.22 - $0.72	$0.30 - $0.99	$1.12	$0.21

Table 3a: Comparative analysis of Processor-level NZ ETS in 2025

Farm type	2025 - CH_4 $106/t and N_2O $4/t CO_2e (95% discount on predicted carbon price of $85/t)	
	NZ ETS cost	EFS % change
North Island Hill Country	$6,543	-3.3%
North Island Intensive	$6,715	-4.7%
South Island Hill Country	$4,918	-2.6%
South Island Deer	$6,083	-2.7%
South Island Mixed Cropping	$7,502	-2.4%
Māori Agribusiness Sheep + Beef	$10,450 to $19,089	-2.0% to -3.3%
Canterbury Dairy	$17,337	-1.7%
Taranaki Dairy	$5,845	-1.7%
Waikato/Bay of Plenty Dairy	$6,798	-1.8%
Māori Agribusiness Dairy	$6,603 to $11,075	-1.5% to 6.4%

Prices calculated at a carbon price of $85/t CO_2e and 95% discount - methane $106/t CH_4 ($0.106 per kg) and nitrous oxide at $4/t CO_2e ($0.004 per kg)

Table 3b: Comparative analysis of Farm-level Levy in 2025

Farm type	2025 - CH_4 $106/t (unique rate) and N_2O $4/t CO_2e (95% discount on predicted carbon price of $85/t)							
	Farm-level Levy	Incentive discount (x7 multiplier)	Sequestration $85/t (full carbon price)	Sequestration $64/t (75% carbon price)	Sequestration $4/t (same as N_2O price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$7,254	$2,061	$3,927	$2,945	$196	-0.6%	-1.1%	-2.5%
North Island Intensive	$5,066	$1,438	$2,587	$1,940	$129	-0.7%	-1.2%	-2.4%
South Island Hill Country	$11,320	$3,217	$5,227	$3,920	$261	-1.5%	-2.2%	-4.2%
South Island Deer	$11,048	$3,137	$5,227	$3,920	$261	-1.2%	-1.7%	-3.4%
South Island Mixed Cropping	$4,301	$1,322	$1,006	$754	$50	-0.6%	-0.7%	-0.9%
Māori Agribusiness Sheep + Beef	$12,917 to $22,693	$3,673 to $6,502	$8,400 to $62,391	$6,300 to $46,793	$420 to $3,120	-0.6% to 6.3%	-1.0% to 4.2%	-2.1% to -1.6%
Canterbury Dairy	$13,147	$8,464	$1,154	$866	$58	-0.4%	-0.4%	-0.5%
Taranaki Dairy	$4,948	$3,163	$928	$696	$46	-0.3%	-0.3%	-0.5%
Waikato/Bay of Plenty Dairy	$6,280	$4,059	$602	$451	$30	-0.4%	-0.5%	-0.6%
Māori Agribusiness Dairy	$6,426 to $9,346	$4,087 to $6,103	$0 to $38,549	$0 to $28,912	$0 to $1,927	-2.3% to 7.0%	-2.3% to 5.1%	-2.3% to -0.3%

Prices calculated at a carbon price of $85/t CO_2e and 95% discount - methane $106/t CH_4 ($0.106 per kg) and nitrous oxide at $4/t CO_2e ($0.004 per kg)

Table 3c: Comparative analysis of Processor-level Hybrid Levy with Emissions Management Contracts in 2025

Farm type	2025 - CH_4 $106/t (unique rate) and N_2O $4/t CO_2e (95% discount on predicted carbon price of $85/t)							
	Processor-level Hybrid Levy	EMC incentive discount (x7 multiplier)	Sequestration $85/t (full carbon price)	Sequestration $64/t (75% carbon price)	Sequestration $4/t (same as N_2O price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$6,543	$2,061	$3,927	$2,945	$196	-0.3%	-0.8%	-2.1%
North Island Intensive	$6,715	$1,438	$2,587	$1,940	$129	-1.9%	-2.3%	-3.6%
South Island Hill Country	$4,918	$3,217	$5,227	$3,920	$261	1.9%	1.2%	-0.8%
South Island Deer	$6,083	$3,137	$5,227	$3,920	$261	1.0%	0.4%	-1.2%
South Island Mixed Cropping	$7,502	$1.322	$1,006	$754	$50	-1.6%	-1.7%	-2.0%
Māori Agribusiness Sheep + Beef	$10,450 to $19,089	$3,673 to $6,502	$8,400 to $62,391	$6,300 to $46,793	$420 to $3,120	0.5% to 6.8%	0.1% to 4.7%	-1.0% to -2.3%
Canterbury Dairy	$17,337	$8,464	$1,154	$866	$58	-0.8%	-0.8%	-0.9%
Taranaki Dairy	$5,845	$3,163	$928	$696	$46	-0.5%	-0.6%	-0.8%
Waikato/Bay of Plenty Dairy	$6,798	$4,059	$602	$451	$30	-0.6%	-0.6%	-0.7%
Māori Agribusiness Dairy	$6,603 to $11,075	$4,087 to $6,103	$0 to $38,505	$0 to $28,912	$0 to $1,927	-2.4% to 6.8%	-2.4% to 4.6%	-2.4% to -0.6%

Prices calculated at a carbon price of $85/t CO_2e and 95% discount - methane $106/t CH_4 ($0.106 per kg) and nitrous oxide at $4/t CO_2e ($0.004 per kg)

Table 4a: Comparative analysis of Processor-level NZ ETS in 2030

Farm type	2030 - CH_4 $345/t and N_2O $14/t CO_2e (90% discount on predicted carbon price of $138/t)	
	NZ ETS cost	EFS % change
North Island Hill Country	$20,852	-10.4%
North Island Intensive	$21,401	-14.9%
South Island Hill Country	$15,674	-8.4%
South Island Deer	$19,389	-8.5%
South Island Mixed Cropping	$24,358	-7.8%
Māori Agribusiness Sheep + Beef	$33,304 to $60,832	-6.3% to -10.5%
Canterbury Dairy	$55,290	-5.6%
Taranaki Dairy	$18,664	-5.6%
Waikato/Bay of Plenty Dairy	$21,679	-5.7%
Māori Agribusiness Dairy	$21,061 to $33,847	-4.7% to -20.4%

Prices calculated at a carbon price of $138/t CO_2e and 90% discount - methane $345/t CH_4 ($0.345 per kg) and nitrous oxide $14/t CO_2e ($0.014 per kg)

Table 4b: Comparative analysis of Farm-level Levy in 2030

Farm type	2030 - CH_4 $345/t (unique rate) and N_2O $14/t CO_2e (90% discount on predicted carbon price of $138/t)							
	Farm-level Levy	Incentive discount (x7 multiplier)	Sequestration $138/t (full carbon price)	Sequestration $104/t (75% carbon price)	Sequestration $14/t (same as N_2O price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$23,600	$6,707	$6,376	$4,782	$638	-5.2%	-6.0%	-8.1%
North Island Intensive	$16,481	$4,681	$4,200	$3,150	$420	-5.3%	-6.0%	-7.9%
South Island Hill Country	$36,829	$10,470	$8,486	$6,365	$849	-9.5%	-10.7%	-13.6%
South Island Deer	$35,941	$10,211	$8,486	$6,365	$849	-7.6%	-8.5%	-10.9%
South Island Mixed Cropping	$13,994	$4,304	$1,633	$1,224	$163	-2.6%	-2.7%	-3.0%
Māori Agribusiness Sheep + Beef	$52,628 to $73,829	$11,954 to $21,162	$13,637 to $101,293	$10,228 to $75,970	$1,364 to $10,129	-4.5% to 6.7%	-5.2% to 3.2%	-6.9% to -5.4%
Canterbury Dairy	$42,765	$27,550	$1,874	$1,406	$187	-1.3%	-1.4%	-1.5%
Taranaki Dairy	$16,095	$10,295	$1,506	$1,130	$151	-1.3%	-1.3%	-1.7%
Waikato/Bay of Plenty Dairy	$20,428	$13,211	$977	$733	$98	-1.6%	-1.7%	-1.9%
Māori Agribusiness Dairy	$20,903 to $30,404	$13,302 to $19,864	$0 to $62,586	$0 to $46,939	$0 to $6,259	-7.3% to 10.3%	-7.3% to 7.1%	-7.3% to -1.0%

Prices calculated at a carbon price of $138/t CO_2e and 90% discount - methane $345/t CH_4 ($0.345 per kg) and nitrous oxide $14/t CO_2e ($0.014 per kg)

Table 4c: Comparative analysis of Processor-level Hybrid Levy with Emissions Management Contracts in 2030

Farm type	2030 - CH_4 $345/t (unique rate) and N_2O $14/t CO_2e (90% discount on predicted carbon price of $138/t)							
	Processor-level Hybrid Levy	EMC reward (x7 multiplier)	Sequestration $138/t (full carbon price)	Sequestration $124/t (90% carbon price)	Sequestration $14/t (same as N_2O Price)	EFS % change (full carbon price)	EFS % change (90% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$20,852	$6,707	$6,376	$4,782	$638	-3.9%	-4.7%	-6.7%
North Island Intensive	$21,401	$4,681	$4,200	$3,150	$420	-8.7%	-9.4%	-11.3%
South Island Hill Country	$15,674	$10,470	$8,486	$6,365	$849	1.8%	0.6%	-2.3%
South Island Deer	$19,389	$10,211	$8,486	$6,365	$849	-0.3%	-1.2%	-3.6%
South Island Mixed Cropping	$24,358	$4,304	$1,633	$1,224	$163	-5.9%	-6.0%	-7.3%
Māori Agribusiness Sheep + Beef	$33,304 to $60,832	$11,954 to $21,162	$13,637 to $101,293	$10,228 to $75,970	$1,364 to $10,129	-0.9% to 8.4%	-1.5% to 5.0%	-7.3% to -3.2%
Canterbury Dairy	$55,290	$27,550	$1,874	$1,406	$187	-2.6%	-2.7%	-2.8%
Taranaki Dairy	$18,664	$10,295	$1,506	$1,130	$151	-2.1%	-2.2%	-2.5%
Waikato/Bay of Plenty Dairy	$21,679	$13,211	$977	$733	$98	-2.0%	-2.0%	-2.2%
Māori Agribusiness Dairy	$21,061 to $33,847	$13,302 to $19,864	$0 to $62,586	$0 to $46,939	$0 to $6,259	-7.5% to -9.5%	-7.5% to 6.4%	-7.5% to -1.8%

Prices calculated at a carbon price of $138/t CO_2e and 90% discount - methane $345/t CH_4 ($0.345 per kg) and nitrous oxide $14/t CO_2e ($0.014 per kg)

Table 5a: Alternative price setting analysis of Farm-level Levy in 2030

Farm type	2030 - CH_4 $345/t (unique rate) and N_2O $41/t CO_2e (70% discount on predicted carbon price of $138/t)							
	Farm-level Levy	Incentive discount (x7 multiplier)	Sequestration $138/t (full carbon price)	Sequestration $104/t (75% carbon price)	Sequestration $41/t (same as N_2O price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$32,471	$6,707	$6,376	$4,782	$1,913	-9.6%	-10.4%	-11.9%
North Island Intensive	$22,696	$4,681	$4,200	$3,150	$1,260	-9.6%	-10.3%	-11.6%
South Island Hill Country	$50,655	$10,470	$8,486	$6,365	$2,546	-16.9%	-18.1%	-20.1%
South Island Deer	$49,471	$10,211	$8,486	$6,365	$2,546	-13.5%	-14.4%	-16.1%
South Island Mixed Cropping	$17,389	$4,304	$1,633	$1,224	$490	-3.6%	-3.8%	-4.0%
Māori Agribusiness Sheep + Beef	$57,753 to $100,560	$11,954 to $21,162	$13,637 to $101,293	$10,228 to $75,970	$4,091 to $30,388	-8.3% to 3.0%	-9.0% to 0.5%	-10.1% to -6.7%
Canterbury Dairy	$62,700	$27,550	$1,874	$1,406	$562	-3.4%	-3.4%	-3.5%
Taranaki Dairy	$23,773	$10,295	$1,506	$1,130	$452	-3.6%	-3.7%	-3.9%
Waikato/Bay of Plenty Dairy	$29,829	$13,211	$977	$733	$293	-4.1%	-4.1%	-4.3%
Māori Agribusiness Dairy	$31,038 to $46,442	$13,302 to $19,864	$0 to $62,586	$0 to $46,939	$0 to $18,776	-17.1% to 7.2%	-17.1% to 4.0%	-17.1% to -1.6%

Prices calculated at a methane price of $345/t CH_4 ($0.345 per kg) and nitrous oxide price of $41/t CO_2e ($0.041 per kg)

Table 5b: Alternative price setting analysis of Processor-level Hybrid Levy with Emissions Management Contracts in 2030

Farm type	2030 - CH_4 $345/t (unique rate) and N_2O $41/t CO_2e (70% discount on predicted carbon price of $138/t)							
	Processor-level Hybrid Levy	EMC incentive discount (x7 multiplier)	Sequestration $138/t (full carbon price)	Sequestration $124/t (90% carbon price)	Sequestration $41/t (same as N_2O Price)	EFS % change (full carbon price)	EFS % change (90% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$29,003	$6,707	$6,376	$4,782	$1,913	-7.9%	-8.7%	-10.1%
North Island Intensive	$29,857	$4,681	$4,200	$3,150	$1,260	-14.6%	-15.3%	-16.6%
South Island Hill Country	$21,991	$10,470	$8,486	$6,365	$2,546	-1.6%	-2.8%	-4.8%
South Island Deer	$27,136	$10,211	$8,486	$6,365	$2,546	-3.7%	-4.6%	-6.3%
South Island Mixed Cropping	$36,364	$4,304	$1,633	$1,224	$490	-9.7%	-9.8%	-10.0%
Māori Agribusiness Sheep + Beef	$45,918 to $82,646	$11,954 to $21,162	$13,637 to $101,293	$10,228 to $75,970	$4,091 to $30,388	-4.9% to 5.4%	-6.7% to 2.0%	-10.0% to -4.3%
Canterbury Dairy	$84,946	$27,550	$1,874	$1,406	$562	-5.6%	-5.6%	-5.7%
Taranaki Dairy	$29,105	$10,295	$1,506	$1,130	$452	-5.2%	-5.3%	-5.5%
Waikato/Bay of Plenty Dairy	$33,302	$13,211	$977	$733	$293	-5.0%	-5.0%	-5.2%
Māori Agribusiness Dairy	$32,690 to $54,011	$13,302 to $19,864	$0 to $62,586	$0 to $46,939	$0 to $18,776	-18.7% to 5.7%	-18.7% to 2.6%	-18.7% to -3.1%

Prices calculated at a methane price of $345/t CH_4 ($0.345 per kg) and nitrous oxide price of $41/t CO_2e ($0.041 per kg)

Table 6a: Alternative price setting analysis of Farm-level Levy in 2030

Farm type	2030 - CH_4 $106/t (unique rate) and N_2O $41/t CO_2e (75% discount on predicted carbon price of $138/t)							
	Farm-level Levy	Incentive discount (x7 multiplier)	Sequestration $138/t (full carbon price)	Sequestration $104/t (75% carbon price)	Sequestration $41/t (same as N_2O price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$19,196	$2,061	$6,376	$4,782	$1,913	-5.3%	-6.1%	-7.6%
North Island Intensive	$13,431	$1,438	$4,200	$3,150	$1,260	-5.4%	-6.1%	-7.5%
South Island Hill Country	$29,931	$3,217	$8,486	$6,365	$2,546	-9.7%	-10.9%	-12.9%
South Island Deer	$29,260	$3,137	$8,486	$6,365	$2,546	-7.7%	-8.7%	-10.3%
South Island Mixed Cropping	$8,870	$1,322	$1,633	$1,224	$490	-1.9%	-2.0%	-2.2%
Māori Agribusiness Sheep + Beef	$34,092 to 58,674	$3,673 to $6,502	$13,637 to $101,293	$10,228 to $75,970	$4,091 to $30,388	-4.7% to 6.7%	-5.4% to 3.3%	-6.5% to 3.0%
Canterbury Dairy	$39,980	$8,464	$1,874	$1,406	$562	-3.0%	-3.0%	-3.1%
Taranaki Dairy	$15,283	$3,163	$1,506	$1,130	$452	-3.2%	-3.3%	-3.5%
Waikato/Bay of Plenty Dairy	$18,933	$4,059	$977	$733	$293	-3.6%	-3.7%	-3.8%
Māori Agribusiness Dairy	$20,067 to $30,096	$4,087 to $6,103	$0 to $62,586	$0 to $46,939	$0 to $18,776	-15.4% to 7.7%	-15.4% to 4.5%	-15.4% to -1.1%

Prices calculated at a methane price of $106/t CH_4 ($0.106 per kg) and nitrous oxide price of $41/t CO_2e ($0.041 per kg)

Table 6b: Alternative price setting analysis of Farm-level Levy in 2030

Farm Type	2030 - CH_4 $173/t (unique rate) and N_2O $14/t CO_2e (90% discount on predicted carbon price of $138/t)							
	Farm-level Levy	Incentive discount (x7 multiplier)	Sequestration $104/t (full carbon price)	Sequestration $104/t (75% carbon price)	Sequestration $14/t (same N_2O price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same N_2O price)
North Island Hill Country	$14,045	$3,363	$6,376	$4,782	$638	-2.1%	-2.9%	-5.0%
North Island Intensive	$9,814	$2,347	$4,200	$3,150	$420	-2.3%	-3.0%	-4.9%
South Island Hill Country	$21,914	$5,250	$8,486	$6,365	$849	4.4%	-5.5%	-8.4%
South Island Deer	$21,395	$5,120	$8,486	$6,365	$849	-3.4%	-4.3%	-6.8%
South Island Mixed Cropping	$7,864	$2,158	$1,633	$1,224	$163	-1.3%	-1.4%	-1.8%
Māori Agribusiness Sheep + Beef	$24,993 to $43,685	$5,994 to $10,612	$13,637 to $101,293	$10,228 to $75,970	$1,364 to $10,129	-1.9% to 9.3%	-2.6% to 5.9%	-4.3% to -3.1%
Canterbury Dairy	$26,414	$13,815	$1,874	$1,406	$187	-1.1%	-1.1%	-1.3%
Taranaki Dairy	$9,985	$5,162	$1,506	$1,130	$151	-1.0%	-1.1%	-1.4%
Waikato/Bay of Plenty Dairy	$12,587	$6,625	$977	$733	$98	-1.3%	-1.4%	-1.5%
Māori Agribusiness Dairy	$13,008 to $19,233	$6,670 to $9,961	$0 to $62,586	$0 to $46,939	$0 to $6,259	-6.1% to 10.6%	-6.1% to 7.5%	-6.1% to -0.7%

Prices calculated at a methane price of $173/t CH_4 ($0.173 per kg) and nitrous oxide price of $41/t CO_2e ($0.041 per kg)

Table 6c: Alternative price setting analysis of Processor-level Hybrid Levy with Emissions Management Contracts in 2030

Farm type	2030 - CH_4 $106/t (unique rate) and N_2O $41/t CO_2e (70% discount on predicted carbon price of $138/t)							
	Processor-level Hybrid Levy	EMC incentive discount (x7 multiplier)	Sequestration $138/t (full carbon price)	Sequestration $104/t (75% carbon price)	Sequestration $41/t (same as N_2O Price)	EFS % change (full carbon price)	EFS % change (75% carbon price)	EFS % change (same as N_2O price)
North Island Hill Country	$17,499	$2,061	$6,376	$4,782	$1,913	-4.5%	-5.3%	-6.7%
North Island Intensive	$18,080	$1,438	$4,200	$3,150	$1,260	-8.6%	-9.4%	-10.7%
South Island Hill Country	$13,409	$3,217	$8,486	$6,365	$2,546	-0.9%	-2.0%	-4.1%
South Island Deer	$16,497	$3,137	$8,486	$6,365	$2,546	-2.1%	-3.1%	-4.7%
South Island Mixed Cropping	$23,710	$1,322	$1,633	$1,224	$490	-6.6%	-6.7%	-7.0%
Māori Agribusiness Sheep + Beef	$27,407 to $48,412	$3,673 to $6,502	$13,637 to $101,293	$10,228 to $75,970	$4,091 to $30,388	-1.7% to 8.1%	-2.4% to 4.7%	-1.6% to 5.8%
Canterbury Dairy	$57,201	$8,464	$1,874	$1,406	$562	-4.7%	-4.8%	-4.9%
Taranaki Dairy	$19,907	$3,163	$1,506	$1,130	$452	-4.6%	-4.7%	-4.9%
Waikato/Bay of Plenty Dairy	$22,422	$4,059	$977	$733	$293	-4.5%	-4.6%	-4.7%
Māori Agribusiness Dairy	$22,235 to $38,776	$4,087 to $6,103	$0 to $62,586	$0 to $46,939	$0 to $18,776	-17.5% to 6.5%	-17.5% to 3.3%	-17.5% to -2.3%

Prices calculated at a methane price of $106/t CH_4 ($0.106 per kg) and nitrous oxide price of $41/t CO_2e ($0.041 per kg)

Appendix A: Overview of case studies

Sixteen farm systems were modelled to show the financial impacts of a range of pricing systems and price settings. Eight are representative farm models constructed in Farmax, based on the B+LNZ Economic Service data for the sheep and beef farms, and DairyNZ statistics for the dairy farms. The Māori farm case studies are based on actual farms, which include six trusts, and two incorporations. Two of the trusts are administered by Te Tumu Paeroa. Where multiple land uses exist within a larger-scale entity, only one has been reflected in the case study. The range of impacts across these entities for each industry are presented in this document.

Appendix A - Table 1: Overview of Sheep, Beef and Deer farm case studies

Sheep, Beef and Deer Farms		North Island Hill Country	North Island Intensive	South Island Hill Country	South Island Deer	South Island Mixed Cropping	Māori Agribusiness Sheep and Beef 1	Māori Agribusiness Sheep and Beef 2	Māori Agribusiness Sheep and Beef 3
Description		Breeding and finishing operation.	Sheep and cattle breeding and finishing operation with only a small percentage of lambs finished. Steers, a techno bull-beef and yearling dairy grazers (May to May contract).		The farm is the same as South Island Hill Country but with the sheep and beef operation scaled back to 53% of the operation and 47% deer. The model used 5-year average for schedule and velvet prices.	On the plains and irrigated by pivot and lateral spray irrigation. Soils are versatile, of optimum fertility, free draining and suitable for intensive cropping (LUC 1 & 2).	Central North Island sheep and beef farm with breeding ewes, finishing cattle and dairy grazers.	Breeding operation including breeding ewes and cattle.	Breeding operation including breeding ewes and cattle.
Area		Total area of 525ha with 507ha effective, including 53ha flats, 238ha rolling hills and 234ha steep.	Total area of 290ha with 278ha effective, mostly flats.	Total area of 1,562ha with 1,532ha effective, including 200ha flats, 409ha rolling, 326ha steep and 627ha tussock.	Total area of 1,562ha with 1,532ha effective, including 200ha flats, 409ha rolling, 326ha steep and 627ha tussock.	Total area of 261ha with 245ha effective	Total area of 966ha with 908ha effective.	Total area of 1,079ha with 750ha effective.	Total area of 1,459ha with 1,153ha effective
Livestock - Sheep	Ewe Hogget	420	420	969	485		820	495	1,600
	MA Ewes	1,680	660	3,591	1,796	250	2,200	1,274	5,345
	Lambs (weaned)	2,127	939	4,434	2,216	2,600			
	Rams	25	10	36	18		30	12	85
	Mixed Hogget						40	1,017	
	Mixed Sheep						20		
	Total Sheep	**4,252**	**2,029**	**9,030**	**4,515**	**2,850**	**3,110**	**2,798**	**7,030**
Livestock - Beef	MA Cows	157		279	140				270
	Dairy Grazers		90						
	Heifer Calves	79		150	75				
	1-year Heifers	78		69	35		689		144
	2-year Heifers	37		67	34				144
	Steer Calves	79	90	150	75				
	1-year Steers	77	89					14	97
	2-year Steers	78	90					69	95
	Bulls								13
	Breeding Bulls	4		6	3				
	Bull Calves		120						
	1-year Bulls		119				182	216	50
	2-year Bulls		118				148	636	
	Total Beef	**589**	**716**	**721**	**362**		**1,019**	**935**	**813**
Livestock – Deer	Hinds				900				
	2-year Hinds				185				
	1-year Hinds				190				
	Hind Fawns (weaned)				280				
	Stag Fawns (weaned)				280				
	1-year Stags (sold)				230				

Sheep, Beef and Deer Farms		North Island Hill Country	North Island Intensive	South Island Hill Country	South Island Deer	South Island Mixed Cropping	Māori Agribusiness Sheep and Beef 1	Māori Agribusiness Sheep and Beef 2	Māori Agribusiness Sheep and Beef 3
	Breeding Stags				**29**				
	Total Deer				**1,865**				
Livestock - Velveting stags	1-year Stags				50				
	2-year Stags				45				
	MA Stags				200				
	Total Stags				**295**				
Crops grown	Wheat					10.5 t/ha			
	Barley					8 t/ha			
	Ryegrass seed					2,480 kg/ha			
	Peas - garden					5 t/ha			
	Clover					1,000 kg/ha			
N-Fertiliser (kgN/ha)		7	21	3	3	215	6	10	0
Notes		All lambs are finished, except replacements. Lambing percentage is 130%. All steers are kept and sold as two-year olds and all heifers are sold at 20 months, except for 25% replacements.	Lambing percentage is 145%. All lambs are sold prime. Steers bought at 7 months and fattened to 2.5 years; bull calves bought at four months and fattened to the same age.	MA cows grazed on tussock and brought down for calving (Sept to Jan). MA ewes grazed on tussock from mid-January until the beginning of April. Lambing percentage is 128%. 27% of lambs sold prime the rest store. All calves except replacements sold as weaners.	Lambing percentage is 128%. The surplus weaner hinds are sold at weaning while the weaner stags are kept and sold the following spring.	Lambing percentage is 180%. 60% of total annual farm revenue is earned from crop sales 40% from lamb finishing and trading. Breeding ewes used to manage crop residue and strategic grazing of crops	Lambing percentage is 134%.	Lambing percentage is 130%	Lambing percentage is 130%
Feed		Supplements made include 10ha (30 tonnes) of swedes/kale, 10ha (8 tonnes) of leafy turnips (8 tonnes/ha), and 240 bales of baleage.	Supplements made include 12ha (108 tonnes) of plantain and 610 bales of baleage.	Supplements made include 20ha (90 tonnes) of swedes and 600 bales of baleage.	All other aspects of the farm system are the same apart from an additional 10 tonnes of oat grain bought in.	No supplement imported.	Supplements made include 17ha (162 tonnes) Chou and 42ha (126 tonnes) pasture silage.	No supplements are made or bought.	A total of 57ha of forage crops are grown and fed on farm. No supplements are made or bought.
Economic Farm Surplus		**$201,176 or $397/ha**	**$144,063 or $518/ha**	**$187,327 or $122/ha**	**$228,268 or $149/ha**	**$314,253 or $1,283/ha**	**$529,585 or $583/ha**	**$494,397 or $659/ha**	**$731,113 or $634/ha**

Appendix A - Table 2: Overview of Dairy farm case studies

Dairy Farms		Canterbury	Taranaki	Waikato/Bay of Plenty	Māori Agribusiness Dairy 1	Māori Agribusiness Dairy 2	Māori Agribusiness Dairy 3	Māori Agribusiness Dairy 4	Māori Agribusiness Dairy 5
Area		Total area of 240ha with 233ha effective, and effluent block of 86ha.	Total area of 112ha with 107ha effective.	Total area of 136ha with 131ha effective.	Total area of 213ha with 204ha effective.	Total area of 160ha with 153ha effective.	Total area of 190ha with 170ha effective.	Total area of 480ha with 234ha effective.	Total area of 267ha with 219ha effective.
Livestock - Dairy	MA Cows	809	298	373	610	450	515	600	599
	1-year Heifers	182	64						
	Heifer Calves (born)	186	65	81					
	Bobby Calves (sold)	623	227	289					
KgMS		349,135	118,296	134,925	223,264	132,403	183,483	165,318	192,362
N-Fertiliser (kgN/ha)		163	139	120	56	87	150	34	134
Notes		Heifers grazed on-farm	Heifers grazed on-farm.	Heifers grazed off-farm	Heifers grazed off-farm	Heifers grazed off-farm	Heifers wintered on-farm	Heifers grazed off-farm	Heifers grazed off-farm
Feed		215 tonnes of silage, 145 tonnes of barley grain and 5.7 tonnes of calf meal are bought. Supplements made include 200 tonnes of fodder beet and 13 tonnes of pasture silage.	Supplements made include 72 tonnes of turnips and 62.5 tonnes of pasture silage. 113 tonnes of maize silage, 42 tonnes of hay, 49.8 tonnes of Palm Kernel Expeller, 19.3 tonnes of Distillers Grain and 2.2 tonnes of calf meal is bought.	Supplements made include 106 tonnes of maize silage and 25 tonnes of pasture silage. 85 tonnes of maize silage, 190 tonnes of Palm Kernel Expeller and 2.7 tonnes of calf meal is bought in.	Supplements made include 9ha (108 tonnes) kale, 8ha (56 tonnes) bulb turnips and 20 tonnes pasture silage. 215 tonnes of palm kernel expeller, 230 tonnes of pasture silage, 75 hay bales and 5.1 tonnes of calf meal is bought.	Supplements made include 13 ha (130 tonnes) bulb turnips and 6ha (160 tonnes) maize silage. 33 tonnes of Palm Kernel Expeller and 3 tonnes of calf meal is bought.	Supplements made include 164 tonnes of maize silage, 14ha (119 tonnes) bulb turnips, 1ha (18 tonnes) fodder beet and 50 tonnes of pasture silage. 220 tonnes of Palm Kernel Expeller is bought.	Supplements made include 60 tonnes of pasture silage and 150 bales of baleage. 140 tonnes of Palm Kernel Expeller and 25 bales of baleage are bought.	Supplements made include 88 tonnes of pasture silage. 321 tonnes of Palm Kernel Expeller is bought.
Economic Farm Surplus		**$991,267 or $4,254/ha**	**$334,024 or $3,122/ha**	**$383,640 or $2,929/ha**	**$758,268 or $3,717/ha**	**$103,477 or $676/ha**	**$546,367 or $3,214/ha**	**$498,932 or $2,132/ha**	**$338,135 or $1,544/ha**

Appendix B: Assumptions

Sheep and Beef land classes

Farms were split into flat, rolling, and steep, each with different associated productivity and modelled by land class.

Emissions factors

The following emissions factors were used for the Processor-level NZ ETS and Hybrid Levy. The emissions factors used have not been gazetted, however they were calculated by MPI using the latest production statistics and national inventory methodologies and were reviewed in a 2019 report:

- Beef = 15.6
- Sheep = 21.4
- Deer = 33.8
- Milk solids = 8.76
- Urea = 5.07

The Farmax model was used to calculate emissions for the Farm-level Levy. Farmax uses emissions factors from the NZ National Inventory in combination with other internationally recognised emissions factors. These are comparable to the Processor-level NZ ETS emissions factors.

Processor-level NZ ETS and Processor-level Hybrid Levy calculation

A Processor-level NZ ETS and Processor-level Hybrid Levy cost was calculated, based on the following formula:

- Kg meat (beef, sheep meat, venison) x relevant EF x 5% x NZ ETS cost of carbon ($85/t)
- Kg milk solids x EF x 5% x NZ ETS cost of carbon ($85/t)
- Kg N applied (assumed to be urea) x EF x 5% x NZ ETS cost of carbon ($85/t)
- The relevant production figures were obtained from the Farmax model.

The total Processor-level NZ ETS cost included:

- Sheep and beef = meat + nitrogen fertiliser cost
- Dairy farms = milk solids + meat + nitrogen cost

Sequestration

The following table below provides the sequestration applied to each case study.

For the Māori Agribusiness case studies, the actual areas of He Waka Eke Noa eligible sequestration within each farm were used.

For the other case studies, Pāmu, Fonterra, Regional Council and QEII data was used to estimate the average area of sequestration that would likely be present on each farm system modelled.

There is a wide range of vegetation that could be eligible for He Waka Eke Noa on farms, but there is limited data on actual vegetation. These case studies provide a broad estimate of sequestration that could be rewarded. Farmers may enter this vegetation over time, particularly if fencing is required.

Appendix B - Table 1: Details of the sequestration applied to each case study

	Riparian	Pre-2008 native	Post-2008 native	Space planting	Macrocarpa	Shelterbelt	Scattered trees	Total area	Sequestration (tCO_2e/total ha)
North Island Hill Country	8.0		2.0	2.6				12.6	46.2
North Island Intensive	3.0	4.5			0.9			8.4	30.4
South Island Hill Country	2.0	15.1			0.9	1.0	2.0	21.0	61.5
South Island Deer	2.0	15.1			0.9	1.0	2.0	21.0	61.5
South Island Mixed Cropping	1.0	1.0	1.0					3.0	11.8
Māori Agribusiness Sheep + Beef 1		54.0						54.0	98.8
Māori Agribusiness Sheep + Beef 2		140.0						140.0	256.2
Māori Agribusiness Sheep + Beef 3	159.0	97.0						256.0	734.0
Canterbury Dairy	1.5	1.0	1.0					3.5	13.6
Taranaki Dairy	1.0	0.5	1.0					2.5	10.9
Waikato/Bay of Plenty Dairy	1.5	1.0						2.5	7.1
Māori Agribusiness Dairy 1								0.0	0.0
Māori Agribusiness Dairy 2								0.0	0.0
Māori Agribusiness Dairy 3		13.0						13.0	23.8
Māori Agribusiness Dairy 4	2.0	244.0						246.0	453.5
Māori Agribusiness Dairy 5	38.0							38.0	133.0