

Economic contribution of the New Zealand red meat industry



Full Report

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Executive Summary

The Meat Industry Association (MIA) in conjunction with Beef + Lamb New Zealand Ltd (B+LNZ) commissioned an economic contribution assessment of the red meat industry, including production, processing and exporting, examined individually and collectively. This report provides the results of that analysis.

The availability of aggregated private data covering both sectors (for B+LNZ in the form of Sheep and Beef Farm Surveys and for MIA from the previously conducted cost analysis exercise), to augment public data, provides a unique opportunity for such an analysis.

The economic contribution of the red meat industry (i.e. livestock production and red meat processing and exporting in aggregate) on New Zealand as a whole is summarised in the table below.

Economic contribution of the red meat industry, New Zealand, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	35,702	3,775	1,477
Flow-on contribution	56,719	8,197	3,124
Total contribution	92,421	11,973	4,601
As % of New Zealand	4.7%	4.2%	4.0%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The red meat industry accounts for over 92,000 jobs, nearly \$12 billion in industry value added and \$4.6 billion in household income, including flow on effects. It accounts for 4.7 per cent of total national employment and over 4 per cent of national industry value added and household income when flow-on effects are taken into account. Whilst the contribution to the national economy in absolute terms is obviously very substantial, it might be thought that the percentage contribution is small. However, this would not be correct.

In order to provide context for this analysis, one should note that in most developed countries, the tertiary or service sector contributes around 80 per cent of national industry value added, and New Zealand is no exception. The following table provides a summary distribution of industry value added by industry for the year ending March 2018, and indicates that the tertiary sector contributes around 81 per cent and primary and secondary sectors contribute around 19 per cent of gross industry value added in New Zealand.

In order to prevent double counting, it is best to compare direct contributions to national value added without flow-on effects. On that basis, the red meat sector contributes directly around 1.4 per cent to national industry value added. This means it contributes fully 7.7 per cent of all national non-tertiary value added.

Contribution to Gross Industry Value Added by industry, New Zealand, 2017-18

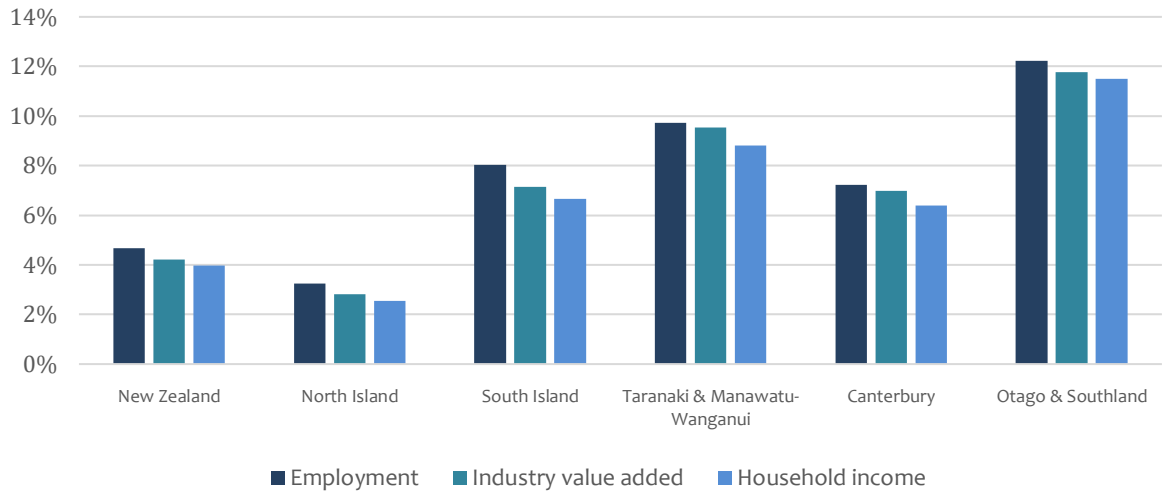
	2018	
	\$ million	% of total
Agriculture	12,431	4.7%
Forestry and logging	1,910	0.7%
Fishing, aquaculture and agriculture, forestry and fishing support services	2,470	0.9%
Mining	2,883	1.1%
Food, beverage and tobacco product manufacturing	10,602	4.0%
Textile, leather, clothing and footwear manufacturing	674	0.3%
Wood and paper products manufacturing	2,288	0.9%
Printing	681	0.3%
Petroleum, chemical, polymer and rubber product manufacturing	5,452	2.1%
Non-metallic mineral product manufacturing	1,210	0.5%
Metal product manufacturing	3,044	1.2%
Transport equipment, machinery and equipment manufacturing	4,897	1.9%
Furniture and other manufacturing	767	0.3%
Electricity, gas, water and waste services	8,026	3.0%
Construction	18,540	7.0%
Wholesale trade	14,202	5.4%
Retail trade	12,998	4.9%
Accommodation and food services	6,360	2.4%
Transport, postal, and warehousing	13,012	4.9%
Information media and telecommunications	6,777	2.6%
Financial and insurance services	16,973	6.4%
Rental, hiring, and real estate services	21,171	8.0%
Owner-occupied property operation	18,321	6.9%
Professional, scientific, and technical services	23,152	8.8%
Administrative and support services	5,681	2.1%
Local government administration	1,374	0.5%
Central government administration, defence, and public safety	10,157	3.8%
Education and training	12,258	4.6%
Health care and social assistance	16,843	6.4%
Arts and recreation services	3,853	1.5%
Other services	5,314	2.0%
Total all industries	264,323	100.0%
Primary industry sector	19,694	7.5%
Secondary industry sector	29,615	11.2%
Tertiary industry sector	215,012	81.3%

Source: SNZ data

As noted above, at the national level, the red meat processing sector contributes approximately 4.7 percent of FTE employment and 4.2 percent of industry value added when flow-on effects are taken into account. The top sector benefitting from flow-on employment impacts is agriculture, and these impacts predominantly flow to the dairy cattle farming sector.

However, the magnitude of the contribution is more pronounced at the regional level as illustrated in the figure below. In Otago and Southland for example, the industry’s contribution is around 12 per cent of employment, industry value added and household income, which is very substantial indeed.

Contribution of the red meat industry in total (including flow-on effects) to the relevant economy, 2017-18



1.0 Introduction

SG Heilbron Economic & Policy Consulting (SGH or the Consultants) has previously prepared a report for the Meat Industry Association (MIA) examining the costs to operate and associated regulatory components in the red meat processing sector¹. The report recommended, inter alia, that the industry undertake an economic contribution analysis, utilising the data provided by processors, to inform governments and other stakeholders about the economic contribution of the industry and provide the information necessary to support the effective dissemination of the costs competitiveness work.

Accordingly, MIA in conjunction with Beef + Lamb New Zealand Ltd (B+LNZ) commissioned the consultants to conduct an economic contribution assessment of the red meat industry, including production, processing and exporting, examined individually and collectively. This report provides the results of that analysis.

2.0 Understanding of the task

The New Zealand Meat Industry Association (MIA) and Beef + Lamb New Zealand (B+LNZ) commissioned an economic contribution assessment covering both beef and lamb (and to a lesser extent, deer) production, processing and exporting. The availability of aggregated private data covering both sectors (for B+LNZ in the form of producer surveys and for MIA from the previously conducted cost analysis exercise), to augment public data, provides a unique opportunity for such an analysis, with the resulting analysis benefitting from the authenticity of the data and facilitating ‘buy in’ from producers and processors in the dissemination of the results of such through-chain collaboration.

The MIA and B+LNZ required the research to achieve the following outcomes:

1. An analysis that identifies the economic contribution of the beef and sheepmeat production, processing and exporting industries in 2017-18.
2. Identifies the economic contribution of the industries, both separately and combined, in direct terms and with flow-on effects, in relation to the metrics of employment (measured as full-time equivalent (FTE) positions), industry value added and household income.
3. The contributions are identified at national, island levels and for three selected regions².

¹ Meat Processing and Regulatory Costs – July 2019. SG Heilbron Economic & Policy Consulting

² It should be noted that the original proposal for this Project nominated four regions, namely Taranaki, Manawatu-Wanganui, Canterbury and Southland. However, this was amended to ensure that slaughter numbers for the assessment of the processing sector could be scaled up to reflect data published by Statistics New Zealand. Accordingly, the regional results now reflect three regions, namely: Taranaki & Manawatu-Wanganui combined, Canterbury, and Otago & Southland combined.

4. Produce a report outlining the methodology and results.

3.0 Methodology

The methodology to undertake the economic contribution assessment is summarised as follows:

- Development of the relevant input output (IO) tables for 2017-18. The IO tables were constructed using a range of data available from Statistics New Zealand (SNZ).
- Analysis of primary data regarding livestock production. B+LNZ supplied data from its Sheep and Beef Farm Survey for each of the geographical regions. That data was analysed to concord with IO categories for expenditure and income.
- Analysis of primary data relating to red meat processing. Aggregated data provided by red meat processing facilities for the previously mentioned cost to operate study was analysed by animal type, scaled up using data from SNZ relating to slaughter numbers to reflect the total sector and allocated to the relevant IO categories. The existing data was augmented by supplementary information from processors regarding the proportion of expenditure made within and outside the relevant region for sub-national IO tables.
- Insertion of a new sector into the IO tables reflecting either livestock production or red meat processing, with the new sectors then being subtracted from the relevant “parent” sector already in the table (*Agriculture* in the case of livestock production and *Meat and Meat Product Manufacturing* in the case of red meat processing).
- Assessment of the economic contribution of each of livestock production and red meat processing for each geographical area in terms of employment (FTEs), industry value added and household income, including both direct and flow-on impacts.
- Aggregation of the livestock production and red meat processing and exporting sectors in the IO tables to create a red meat industry sector and calculation of the economic contribution of that resultant sector.

A more detailed description of the Methodology is provided in Appendix 1 of this report.

4.0 Economic contribution of the livestock production sector

The economic contribution of the livestock production sector reflects expenditure made by farms in the production of beef cattle, sheep and, to a lesser extent deer, which form a relatively small proportion of the sector. It should be noted that data on farms provided by B+LNZ also incorporates other aspects of production including, for example, crop growing, wool production and revenue derived from grazing of dairy cattle. For this reason, not the expenditure measured can be directly attributed to that associated with the production of cattle, sheep and deer. Data on expenditure in the livestock

production sector does not necessarily align directly with the categories in the IO table. The distribution of the proportion of expenditure for each of these across the relevant IO categories was reviewed in conjunction with representatives from B+LNZ. This is addressed in more detail in Appendix 1 of this report.

The economic contribution of the livestock production sector by geographical region is summarised below.

4.1 Economic contribution – New Zealand

The economic contribution of the livestock production sector on New Zealand as a whole is summarised in Table 4.1.

Table 4.1: Economic contribution of livestock production, New Zealand, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	16,040	2,129	346
Flow-on contribution	27,745	4,130	1,649
Total contribution	43,785	6,259	1,994
As % of New Zealand	2.2%	2.2%	1.7%

Source: SGH estimates using B+LNZ and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the livestock production sector supports approximately 2.2 percent of the FTE workforce in New Zealand, with 16,040 FTEs being employed directly and a further 27,745 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow on employment impacts are, in descending order of significance:

- Agricultural support services (5,390 FTEs or 21.2% of total employed in the sector);
- Financial & insurance services (2,490 FTEs or 3.7% of total employed in the sector);
- Public administration & defence (2,140 FTEs or 1.9% of total employed in the sector);
- Basic material wholesaling (1,300 FTEs or 6.3% of total employed in the sector);
- Agriculture (1,140 FTEs or 1.2% of total employed in the sector); and
- Health care & social assistance (1,010 FTEs or 0.5% of total employed in the sector).

It should be noted that the flow-on impacts include both industrial support and consumption induced effects as defined in Appendix 1 – Estimating economic contributions. It is the latter effect which results in *health care & social assistance* ranking in the top six sectors.

Industry value added

The livestock production sector is also estimated to contribute approximately 2.2 percent of New Zealand's industry value added when flow-on effects are taken into account. This equates to approximately NZ\$2.1 billion in direct effects and NZ\$4.1 billion in flow-on impacts. The top six sectors benefitting from flow on industry value added impacts, in descending order of significance, are:

- Financial & insurance services;
- Agricultural support services;
- Rental, hiring & real estate;
- Owner-occupied property operation;
- Basic material wholesaling; and
- Fertiliser & pesticide manufacturing.

Household income

Finally, the livestock production sector is estimated to contribute approximately 1.7 percent of national household income, equating to almost NZ\$2 billion in 2017-18. As a result of relatively low compensation of employees in the sector, combined with owners reportedly being remunerated from gross operating surplus (gross profit before depreciation and tax), almost 83 percent of the household income impacts are derived from flow-on effects.

4.2 Economic contribution – North Island

The economic contribution of the livestock production sector on the North Island is summarised in Table 4.2.

Table 4.2: Economic contribution of livestock production, North Island, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	8,330	1,107	191
Flow-on contribution	12,158	1,858	763
Total contribution	20,488	2,965	954
As % of North Island	1.4%	1.3%	1.0%

Source: SGH estimates using B+LNZ and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the livestock production sector supports approximately 1.4 percent of the FTE workforce in the North Island, with approximately 8,300 FTEs being employed directly and a further 12,200 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agricultural support services (2,250 FTEs or 13.6% of total employed in the sector);
- Financial & insurance services (1,170 FTEs or 2.1% of total employed in the sector);

- Public administration & defence (940 FTEs or 1.0% of total employed in the sector);
- Basic material wholesaling (560 FTEs or 3.6% of total employed in the sector);
- Health care & social assistance (450 FTEs or 0.3% of total employed in the sector); and
- Agriculture (410 FTEs or 0.7% of total employed in the sector).

Industry value added

The livestock production sector is also estimated to contribute approximately 1.3 percent of the North Island's industry value added when flow-on effects are taken into account. This equates to approximately NZ\$1.1 billion in direct effects and NZ\$1.9 billion in flow-on impacts. The top six sectors benefitting from flow on industry value added impacts are, in descending order of significance:

- Financial & insurance services;
- Agricultural support services;
- Rental, hiring & real estate;
- Owner-occupied property operation;
- Fertiliser & pesticide manufacturing; and
- Public administration & defence.

Household income

Finally, the livestock production sector is estimated to contribute approximately 1.0 percent of household income in the North Island, equating to almost NZ\$1 billion in 2017-18. As a result of relatively low compensation of employees in the sector, combined with owners reportedly being remunerated from gross operating surplus, almost 80 percent of the household income impacts are derived from flow-on effects.

4.3 Economic contribution – South Island

The economic contribution of the production sector on the South Island is summarised in Table 4.3.

Table 4.3: Economic contribution of livestock production, South Island, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	7,710	1,022	155
Flow-on contribution	12,265	1,600	671
Total contribution	19,975	2,622	826
As % of South Island	4.1%	4.1%	3.0%

Source: SGH estimates using B+LNZ and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the livestock production sector supports approximately 4.1 percent of the FTE workforce in the South Island, with approximately 7,700 FTEs being employed directly and a further approximately 20,000 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agricultural support services (2,830 FTEs or 32.1% of total employed in the sector);
- Financial & insurance services (1,090 FTEs or 10.3% of total employed in the sector);
- Public administration & defence (770 FTEs or 3.8% of total employed in the sector);
- Agriculture (680 FTEs or 1.9% of total employed in the sector);
- Basic material wholesaling (680 FTEs or 12.5% of total employed in the sector); and
- Other wholesaling (400 FTEs or 3.7% of total employed in the sector).

Industry value added

The livestock production sector is also estimated to contribute approximately 4.1 percent of the South Island's industry value added when flow-on effects are taken into account. This equates to approximately NZ\$1.0 billion in direct effects and NZ\$1.6 billion in flow-on impacts. The top six sectors benefitting from flow on industry value added impacts are, in descending order of significance:

- Financial & insurance services;
- Agricultural support services;
- Rental, hiring & real estate;
- Owner-occupied property operation;
- Basic material wholesaling; and
- Public administration & defence.

Household income

Finally, the livestock production sector is estimated to contribute approximately 3.0 percent of household income in the South Island, equating to more than NZ\$0.8 billion in 2017-18. As a result of relatively low compensation of employees in the sector, combined with owners reportedly being remunerated from gross operating surplus, more than 81 percent of the household income impacts are derived from flow-on effects.

4.4 Economic contribution – Taranaki & Manawatu-Wanganui combined

The economic contribution of the livestock production sector on the combined Regional Council areas of Taranaki and Manawatu-Wanganui is summarised in Table 4.4.

Table 4.4: Economic contribution of livestock production, Taranaki & Manawatu-Wanganui combined, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	1,960	236	46
Flow-on contribution	3,968	599	205
Total contribution	5,928	835	251
As % of Taranaki & Manawatu-Wanganui combined	4.3%	4.4%	3.4%

Source: SGH estimates using B+LNZ and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the livestock production sector supports approximately 4.3 percent of the FTE workforce in the combined Regional Council areas of Taranaki and Manawatu-Wanganui, with approximately 1,960 FTEs being employed directly and a further almost 4,000 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (510 FTEs or 4.1% of total employed in the sector);
- Agricultural support services (480 FTEs or 21.2% of total employed in the sector);
- Financial & insurance services (320 FTEs or 11.4% of total employed in the sector);
- Public administration & defence (220 FTEs or 2.2% of total employed in the sector);
- Health care & social assistance (180 FTEs or 1.2% of total employed in the sector);
- and
- Basic material wholesaling (170 FTEs or 11.1% of total employed in the sector).

Industry value added

The livestock production sector is also estimated to contribute approximately 4.4 percent of the industry value added in the combined Regional Council areas of Taranaki and Manawatu-Wanganui when flow-on effects are taken into account. This equates to approximately NZ\$0.24 billion in direct effects and NZ\$0.6 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture;
- Financial & insurance services;
- Agricultural support services;
- Rental, hiring & real estate;
- Owner-occupied property operation; and

- Public administration & defence.

Household income

Finally, the livestock production sector is estimated to contribute approximately 3.4 percent of household income in the combined Regional Council areas of Taranaki and Manawatu-Wanganui, equating to approximately NZ\$0.25 billion in 2017-18. As a result of relatively low compensation of employees in the sector, combined with owners reportedly being remunerated from gross operating surplus, almost 82 percent of the household income impacts are derived from flow-on effects.

4.5 Economic contribution – Canterbury

The economic contribution of the livestock production sector on the Canterbury Regional Council (Environment Canterbury) area is summarised in Table 4.5.

Table 4.5: Economic contribution of livestock production, Canterbury, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	3,860	569	108
Flow-on contribution	10,025	1,333	500
Total contribution	13,885	1,902	609
As % of Canterbury	5.2%	5.4%	4.3%

Source: SGH estimates using B+LNZ and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the livestock production sector supports approximately 5.2 percent of the FTE workforce in the Canterbury Regional Council area, with approximately 3,860 FTEs being employed directly and more than 10,000 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (1,600 FTEs or 11.4% of total employed in the sector);
- Agricultural support services (1,450 FTEs or 49.3% of total employed in the sector);
- Financial & insurance services (790 FTEs or 12.6% of total employed in the sector);
- Public administration & defence (560 FTEs or 4.8% of total employed in the sector);
- Basic material wholesaling (520 FTEs or 15.6% of total employed in the sector); and
- Health care & social assistance (360 FTEs or 1.4% of total employed in the sector).

Industry value added

The livestock production sector is also estimated to contribute approximately 5.4 percent of the industry value added in the Canterbury Regional Council area when flow-on effects are taken into account. This equates to approximately NZ\$0.57 billion in direct effects and NZ\$1.3 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Financial & insurance services;
- Agriculture;
- Rental, hiring & real estate;
- Agricultural support services;
- Owner-occupied property operation; and
- Basic material wholesaling.

Household income

Finally, the livestock production sector is estimated to contribute approximately 4.3 percent of household income in the Canterbury Regional Council area, equating to approximately NZ\$0.6 billion in 2017-18. As a result of relatively low compensation of employees in the sector, combined with owners reportedly being remunerated from gross operating surplus, more than 82 percent of the household income impacts are derived from flow-on effects.

4.6 Economic contribution – Otago & Southland combined

The economic contribution of the production sector on the combined Regional Council areas of Otago and Southland is summarised in Table 4.6.

Table 4.6: Economic contribution of red meat production, Otago & Southland combined, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	3,200	484	53
Flow-on contribution	6,765	824	305
Total contribution	9,965	1,308	358
As % of Otago & Southland combined	6.9%	7.1%	5.1%

Source: SGH estimates using B+LNZ and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the livestock production sector supports approximately 6.9 percent of the FTE workforce in the combined Regional Council areas of Otago and Southland, with approximately 3,200 FTEs being employed directly and almost 6,800 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow on employment impacts are, in descending order of significance:

- Agricultural support services (1,450 FTEs or 39.1% of total employed in the sector);
- Agriculture (930 FTEs or 6.3% of total employed in the sector);
- Financial & insurance services (480 FTEs or 15.4% of total employed in the sector);
- Public administration & defence (370 FTEs or 6.2% of total employed in the sector);
- Basic material wholesaling (280 FTEs or 19.3% of total employed in the sector); and
- Health care & social assistance (210 FTEs or 1.5% of total employed in the sector).

Industry value added

The livestock production sector is also estimated to contribute approximately 7.1 percent of the industry value added in the combined Regional Council areas of Otago and Southland when flow-on effects are taken into account. This equates to approximately NZ\$0.48 billion in direct effects and NZ\$0.82 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Financial & insurance services;
- Agricultural support services;
- Rental, hiring & real estate;
- Agriculture;
- Owner-occupied property operation; and
- Basic material wholesaling.

Household income

Finally, the livestock production sector is estimated to contribute approximately 5.1 percent of household income in the combined Regional Council areas of Otago and Southland, equating to approximately NZ\$0.36 billion in 2017-18. As a result of relatively low compensation of employees in the sector, combined with owners reportedly being remunerated from gross operating surplus, more than 85 percent of the household income impacts are derived from flow-on effects.

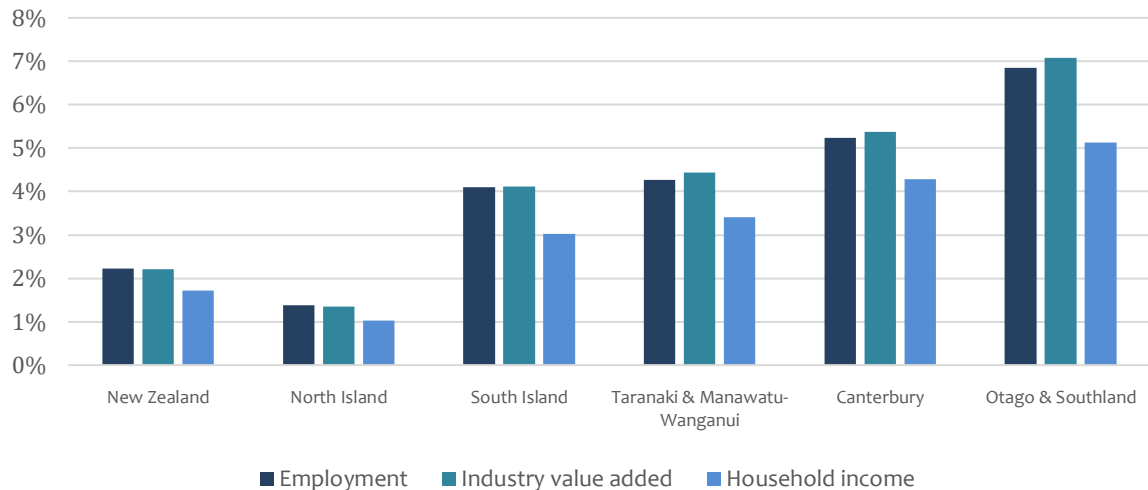
4.7 Summary for the livestock production sector

The preceding analysis illustrates that the economic contribution of the livestock production sector, including flow-on impacts, measured in total and contribution to the national and relevant regional economy, under the metrics of employment (FTE), industry value added and household income varies significantly between the geographical regions examined. The sector is, however, a significant contributor to the economy, particularly at the regional level.

At the national level, the sector contributes approximately 2.2 percent of FTE employment and industry value added when flow-on effects are taken into account, a

proportion which is significant. However, the magnitude of the contribution is more pronounced at the regional level as illustrated below.

Figure 4.1: Contribution of the livestock production sector (including flow-on effects) to the relevant economy, 2017-18



The overall contribution of the red meat industry, defined as livestock production combined with the red meat processing sector, is assessed in Section 6 of this report.

5.0 Economic contribution of the red meat processing and exporting sector

The economic contribution of the red meat processing and exporting sector reflects expenditure made by processing facilities in the processing of cattle (including beef and dairy cattle including bobby calves), sheep and, to a lesser extent, deer, which form only a very small proportion of the red meat processing and exporting sector. It should be noted that the processing of deer is only included for New Zealand as a whole.

A key point to note is that the processing data includes that associated with adult beef and dairy cattle. The latter, whilst accounting for approximately 42 percent of all adult cattle processed³ as reported by SNZ, in 2017-18, would generally not be included in the B+LNZ Sheep and Beef Farm Survey, particularly in relation to dairy cows. A proportion of expenditure on cattle by the red meat processing sector has therefore been assumed to be directed to the dairy farming sector (a sub-sector of *Agriculture*

³<http://archive.stats.govt.nz/infoshare/SelectVariables.aspx?pxID=51cbd441-cb4e-444c-9267-1db497bc4a72>

in this analysis). Whilst this varies by geographical region, it approximates 35 percent for New Zealand as a whole, in line with B+LNZ estimates⁴.

5.1 Economic contribution – New Zealand

The economic contribution of the red meat processing and exporting sector on New Zealand as a whole is summarised in Table 5.1.

Table 5.1: Economic contribution of red meat processing and exporting, New Zealand, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	19,662	1,645	1,131
Flow-on contribution	66,673	9,457	3,193
Total contribution	86,335	11,103	4,324
As % of New Zealand	4.4%	3.9%	3.7%

Source: SGH estimates using aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat processing and exporting sector supports approximately 4.4 percent of the FTE workforce in New Zealand, with approximately 19,660 FTEs being employed directly and almost 66,700 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Beef & sheep farming (13,810 FTEs or 86.1% of total employed in the sector);
- Agriculture (balance excluding beef & sheep farming) (10,870 FTEs or 13.4% of total employed in the sector);
- Agricultural support services (5,040 FTEs or 19.9% of total employed in the sector);
- Financial & insurance services (2,830 FTEs or 4.3% of total employed in the sector);
- Public administration & defence (2,490 FTEs or 2.2% of total employed in the sector); and
- Road transport (2,400 FTEs or 6.1% of total employed in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

⁴ B+LNZ have noted that their estimates differ from those published by SNZ (which in turn are derived from Ministry of Primary Industries and NAIT data). B+LNZ estimate that approximately 35 percent of cattle slaughter is derived from dairy farms.

The red meat processing and exporting sector is also estimated to contribute approximately 3.9 percent of the industry value added in New Zealand when flow-on effects are taken into account. This equates to approximately NZ\$1.6 billion in direct effects and NZ\$9.5 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Beef & sheep farming;
- Agriculture (balance excluding beef & sheep farming);
- Financial & insurance services;
- Owner-occupied property operation;
- Rental, hiring & real estate; and
- Agricultural support services.

Household income

Finally, the red meat processing and exporting sector is estimated to contribute approximately 3.7 percent of household income in New Zealand, equating to approximately NZ\$4.3 billion in 2017-18. As a result of relatively low average compensation of employees in the sector almost 74 percent of the household income impacts are derived from flow-on effects.

5.2 Economic contribution – North Island

The economic contribution of the red meat processing and exporting sector on the North Island is summarised in Table 5.2. It should be noted that the direct contribution totals for the North and South Islands combined are marginally lower than for New Zealand as a whole, as deer processing has been excluded from each island's contributions.

Table 5.2: Economic contribution of red meat processing, North Island, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	11,267	883	595
Flow-on contribution	34,902	5,013	1,686
Total contribution	46,169	5,896	2,281
As % of North Island	3.1%	2.7%	2.5%

Source: SGH estimates using aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat processing and exporting sector supports approximately 3.1 percent of the FTE workforce in the North Island, with approximately 11,300 FTEs being employed directly and a further almost 35,000 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Beef & sheep farming (7,470 FTEs or 89.7% of total employment in the sector);
- Agriculture (balance excluding beef & sheep farming) (6,290 FTEs or 12.1% of total employment in the sector);
- Agricultural support services (2,320 FTEs or 14.0% of total employment in the sector);
- Financial & insurance services (1,450 FTEs or 2.6% of total employment in the sector);
- Road transport (1,350 FTEs or 4.8% of total employment in the sector); and
- Public administration & defence (1,210 FTEs or 1.3% of total employment in the sector).

Industry value added

The red meat processing and exporting sector is also estimated to contribute approximately 2.7 percent of the North Island's industry value added when flow-on effects are taken into account. This equates to approximately NZ\$0.9 billion in direct effects and NZ\$5.0 billion in flow-on impacts. The top six sectors benefitting from flow on industry value added impacts are, in descending order of significance:

- Beef & sheep farming;
- Agriculture (balance excluding beef & sheep farming);
- Financial & insurance services;
- Owner-occupied property operation;
- Rental, hiring & real estate; and
- Agricultural support services.

Household income

Finally, the red meat processing sector is estimated to contribute approximately 2.5 percent of household income in the North Island, equating to almost NZ\$2.3 billion in 2017-18. As a result of relatively low compensation of employees in the sector almost 74 percent of the household income impacts are derived from flow-on effects.

5.3 Economic contribution – South Island

The economic contribution of the red meat processing sector on the South Island is summarised in Table 5.3. It should be noted that the direct contribution totals for the North and South Islands combined are marginally lower than for New Zealand as a whole, as deer processing has been excluded from each island's contributions.

Table 5.3: Economic impact of red meat processing, South Island, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contributions	8,168	725	510
Flow-on contributions	25,396	3,082	1,079
Total contributions	33,564	3,807	1,589
As % of South Island	6.9%	6.0%	5.8%

Source: SGH estimates using aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat processing and exporting sector supports approximately 6.9 percent of the FTE workforce in the South Island, with approximately 8,200 FTEs being employed directly and a further 25,400 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Beef & sheep farming (5,530 FTEs or 71.7% of total employment in the sector);
- Agriculture (balance excluding beef & sheep farming) (5,140 FTEs or 17.9% of total employment in the sector);
- Agricultural support services (2,180 FTEs or 24.7% of total employment in the sector);
- Financial & insurance services (970 FTEs or 9.1% of total employment in the sector);
- Road transport (850 FTEs or 7.9% of total employment in the sector); and
- Health care & social assistance (690 FTEs or 1.5% of total employment in the sector).

Industry value added

The red meat processing and exporting sector is also estimated to contribute approximately 6.0 percent of the South Island's industry value added when flow-on effects are taken into account. This equates to approximately NZ\$0.7 billion in direct effects and NZ\$3.1 billion in flow-on impacts. The top six sectors benefitting from flow on industry value added impacts are, in descending order of significance:

- Beef & sheep farming;
- Agriculture (balance excluding beef & sheep farming);
- Financial & insurance services;
- Rental, hiring & real estate;
- Owner-occupied property operation; and
- Agricultural support services.

Household income

Finally, the red meat processing and exporting sector is estimated to contribute approximately 5.8 percent of household income in the South Island, equating to almost NZ\$1.6 billion in 2017-18. As a result of relatively low compensation of employees in the sector almost 68 percent of the household income impacts are derived from flow-on effects.

5.4 Economic contribution – Taranaki & Manawatu-Wanganui combined

The economic contribution of the red meat processing sector on the combined Regional Council areas of Taranaki and Manawatu-Wanganui is summarised in Table 5.4. It should

be noted that processors within the overall region were asked to provide data relating to the proportion of total expenditure by category that was made within and outside the region. Expenditure made outside the region is treated as an import in the IO analysis and accordingly, it should be recognised that red meat processing facilities in the Taranaki and Manawatu-Wanganui region contribute to the economy of other regions through e.g. processing livestock sourced externally.

Table 5.4: Economic contribution of red meat processing, Taranaki & Manawatu-Wanganui combined, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	3,216	262	188
Flow-on contribution	8,139	1,231	370
Total contribution	11,355	1,493	558
As % of Taranaki & Manawatu-Wanganui	8.2%	7.9%	7.6%

Source: SGH estimates using aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat processing sector supports approximately 8.2 percent of the FTE workforce in the combined Regional Council areas of Taranaki and Manawatu-Wanganui, with approximately 3,200 FTEs being employed directly and a further more than 8,100 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (balance excluding beef & sheep farming) (1,350 FTEs or 4.1% of total employment in the sector);
- Beef & sheep farming (1,240 FTEs or 63.4% of total employment in the sector);
- Agricultural support services (420 FTEs or 18.3% of total employment in the sector);
- Health care & social assistance (390 FTEs or 2.6% of total employment in the sector);
- Road transport (350 FTEs or 0.9% of total employment in the sector); and
- Other retailing (300 FTEs or 4.9% of total employment in the sector).

Industry value added

The red meat processing sector is also estimated to contribute approximately 7.9 percent of the industry value added in the combined Regional Council areas of Taranaki and Manawatu-Wanganui when flow-on effects are taken into account. This equates to approximately NZ\$0.26 billion in direct effects and NZ\$1.2 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture (balance excluding beef & sheep farming);
- Beef & sheep farming;
- Owner-occupied property operation;
- Rental, hiring & real estate;
- Financial & insurance services; and
- Agricultural support services.

Household income

Finally, the red meat production and exporting sector is estimated to contribute approximately 7.6 percent of household income in the combined Regional Council areas of Taranaki and Manawatu-Wanganui, equating to approximately NZ\$0.56 billion in 2017-18. As a result of relatively low compensation of employees in the sector, approximately two-thirds of the household income impacts are derived from flow-on effects.

5.5 Economic contribution – Canterbury

The economic contribution of the red meat processing and exporting sector on the Canterbury Regional Council area is summarised in Table 5.5. It should be noted that processors within the overall region were asked to provide data relating to the proportion of total expenditure by category that was made within and outside the region. Expenditure made outside the region is treated as an import in the IO analysis and accordingly, it should be recognised that red meat processing facilities in the Canterbury region contribute to the economy of other regions through e.g. processing livestock sourced externally.

Table 5.5: Economic contribution of red meat processing, Canterbury, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	3,237	261	194
Flow-on contribution	7,501	1,055	347
Total contribution	10,738	1,315	541
As % of Canterbury	4.0%	3.7%	3.8%

Source: SGH estimates using aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat processing and exporting sector supports approximately 4.0 percent of the FTE workforce in the Canterbury Regional Council area, with approximately 3,200 FTEs being employed directly and a further 7,500 FTE jobs being underpinned by the sector as a result of flow-on impacts.

The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Beef & sheep farming (1,520 FTEs or 39.4% of total employment in the sector);

- Agriculture (balance excluding beef & sheep farming) (760 FTEs or 7.4% of total employment in the sector);
- Agricultural support services (580 FTEs or 19.6% of total employment in the sector);
- Financial & insurance services (390 FTEs or 6.2% of total employment in the sector);
- Health care & social assistance (320 FTEs or 1.2% of total employment in the sector); and
- Public administration & defence (260 FTEs or 2.3% of total employment in the sector).

Industry value added

The red meat processing and exporting sector is also estimated to contribute approximately 3.7 percent of the industry value added in the Canterbury Regional Council area when flow-on effects are taken into account. This equates to approximately NZ\$0.26 billion in direct effects and NZ\$1.1 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Beef & sheep farming;
- Financial & insurance services;
- Owner-occupied property operation;
- Rental, hiring & real estate;
- Agriculture (balance excluding beef & sheep farming); and
- Agricultural support services.

Household income

Finally, the red meat production and exporting sector is estimated to contribute approximately 3.8 percent of household income in the Canterbury Regional Council area, equating to approximately NZ\$0.54 billion in 2017-18. As a result of relatively low compensation of employees in the sector, approximately 64 percent of the household income impacts are derived from flow-on effects.

5.6 Economic contribution – Otago & Southland combined

The economic contribution of the red meat processing and exporting sector on the combined Regional Council areas of Otago and Southland is summarised in Table 5.6. It should be noted that processors within the overall region were asked to provide data relating to the proportion of total expenditure by category that was made within and outside the region. Expenditure made outside the region is treated as an import in the IO analysis and accordingly, it should be recognised that red meat processing facilities in the Otago and Southland regions contribute to the economy of other regions.

Table 5.6: Economic contribution of red meat processing, Otago & Southland combined, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	4,475	363	274
Flow-on contribution	10,180	1,390	414
Total contribution	14,655	1,752	687
As % of Otago & Southland	10.1%	9.5%	9.8%

Source: SGH estimates using aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat processing and exporting sector supports approximately 10.1 percent of the FTE workforce in the combined Regional Council areas of Otago and Southland, with approximately 4,500 FTEs being employed directly and a further 10,200 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Beef & sheep farming (2,160 FTEs or 67.6% of total employment in the sector);
- Agriculture (balance excluding beef & sheep farming) (1,250 FTEs or 10.8% of total employment in the sector);
- Agricultural support services (1,050 FTEs or 7.1% of total employment in the sector);
- Financial & insurance services (430 FTEs or 13.6% of total employment in the sector);
- Health care & social assistance (400 FTEs or 3.0% of total employment in the sector); and
- Other retailing (340 FTEs or 5.1% of total employment in the sector).

Industry value added

The red meat processing and exporting sector is also estimated to contribute approximately 9.5 percent of the industry value added in the combined Regional Council areas of Otago and Southland when flow-on effects are taken into account. This equates to approximately NZ\$0.36 billion in direct effects and NZ\$1.4 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Beef & sheep farming;
- Agriculture (balance excluding beef & sheep farming);
- Financial & insurance services;
- Owner-occupied property operation;
- Rental, hiring & real estate; and
- Agricultural support services.

Household income

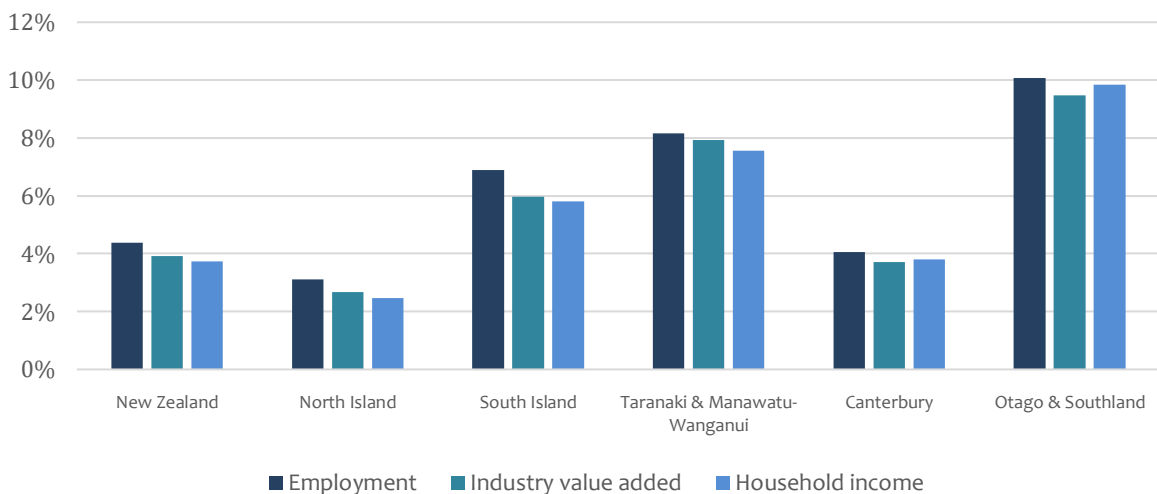
Finally, the red meat production sector is estimated to contribute approximately 9.8 percent of household income in the combined Regional Council areas of Otago and Southland, equating to approximately NZ\$0.69 billion in 2017-18. As a result of relatively low compensation of employees in the sector, approximately 60 percent of the household income impacts are derived from flow-on effects.

5.7 Summary for the red meat processing and exporting sector

The preceding analysis illustrates that the economic contribution of the red meat processing sector, including flow-on impacts, measured in total and contribution to the national and relevant regional economy, under the metrics of employment (FTE), industry value added and household income varies significantly between the geographical regions examined. The sector is, however, a significant contributor to the economy, particularly at the regional level.

At the national level, the sector contributes approximately 4.4 percent of FTE employment and 3.9 percent of industry value added when flow-on effects are taken into account, a proportion which is significant. However, the magnitude of the contribution is more pronounced at the regional level as illustrated below.

Figure 5.1: Contribution of the red meat processing sector (including flow-on effects) to the relevant economy, 2017-18



6.0 Economic contribution of the red meat industry in total

This section examines the economic contribution of the red meat industry in total i.e. livestock production and red meat processing and exporting combined, at each of the geographic areas already outlined. It is important to note that this contribution cannot be measured by simply aggregating the results for each of the livestock production and red meat processing sectors as this would result in significant over-estimation through double-counting, particularly related to livestock transactions. In addition, it

would also reflect double-counting in flow-on impacts e.g. expenditure by the red meat processing and exporting sector on livestock has flow-on effects in the livestock production sector which have already been included, either directly or indirectly, in that sector.

In order to overcome these issues, estimating the contribution of the red meat industry in total has been undertaken by aggregating the two sectors in the relevant IO tables. This effectively leaves the initial contributions of both sectors intact but reduces the combined flow-on effects.

It should again be noted that the economic contribution of the red meat industry in total includes the processing of dairy cattle and bobby calves, a proportion of which are not included in the B+LNZ Sheep and Beef Farm Survey. Accordingly, the economic contribution of the red meat industry in total is larger than it would be if only beef cattle were included.

6.1 Economic contribution – New Zealand

The economic contribution of the red meat industry (i.e. livestock production and red meat processing and exporting in aggregate) on New Zealand as a whole is summarised in Table 6.1.

Table 6.1: Economic contribution of the red meat industry, New Zealand, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	35,702	3,775	1,477
Flow-on contribution	56,719	8,197	3,124
Total contribution	92,421	11,973	4,601
As % of New Zealand	4.7%	4.2%	4.0%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat industry supports approximately 4.7 percent of the FTE workforce in New Zealand, with approximately 35,700 FTEs being employed directly and more than 56,700 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (11,040 FTEs or 11.4% of total employment in the sector);
- Agricultural support services (5,790 FTEs or 22.8% of total employment in the sector);
- Financial & insurance services (3,180 FTEs or 4.8% of total employment in the sector);

- Public administration & defence (2,790 FTEs or 2.5% of total employment in the sector);
- Road transport (2,510 FTEs or 6.4% of total employment in the sector); and
- Health care & social assistance (2,330 FTEs or 1.3% of total employment in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

The red meat industry is also estimated to contribute approximately 4.2 percent of the industry value added in New Zealand when flow-on effects are taken into account. This equates to approximately NZ\$3.8 billion in direct effects and NZ\$8.2 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture;
- Financial & insurance services;
- Owner-occupied property operation;
- Rental, hiring & real estate;
- Agricultural support services; and
- Road transport.

Household income

Finally, the red meat industry is estimated to contribute approximately 4.0 percent of household income in New Zealand, equating to approximately NZ\$4.6 billion in 2017-18. As a result of relatively low average compensation of employees in the sectors almost 68 percent of the household income impacts are derived from flow-on effects.

6.2 Economic contribution – North Island

The economic contribution of the red meat industry (i.e. livestock production and red meat processing and exporting in aggregate) on the North Island is summarised in Table 6.2.

Table 6.2: Economic contribution of the red meat industry, North Island, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	19,597	1,986	785
Flow-on contribution	28,678	4,214	1,594
Total contribution	48,275	6,200	2,379
As % of North Island	3.2%	2.8%	2.6%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat industry supports approximately 3.2 percent of the FTE workforce in the North Island, with approximately 19,600 FTEs being employed directly and almost 28,700 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (6,330 FTEs or 10.5% of total employment in the sector);
- Agricultural support services (2,560 FTEs or 15.4% of total employment in the sector);
- Financial & insurance services (1,570 FTEs or 2.8% of total employment in the sector);
- Road transport (1,390 FTEs or 4.9% of total employment in the sector);
- Public administration & defence (1,300 FTEs or 1.4% of total employment in the sector); and
- Health care & social assistance (1,120 FTEs or 0.8% of total employment in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

The red meat industry is also estimated to contribute approximately 2.8 percent of the industry value added in the North Island when flow-on effects are taken into account. This equates to approximately NZ\$2.0 billion in direct effects and NZ\$4.2 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture;
- Financial & insurance services;
- Owner-occupied property operation;
- Rental, hiring & real estate;
- Agricultural support services; and
- Road transport.

Household income

Finally, the red meat industry is estimated to contribute approximately 2.6 percent of household income in the North Island, equating to approximately NZ\$2.4 billion in 2017-18. As a result of relatively low average compensation of employees in the sectors almost 67 percent of the household income impacts are derived from flow-on effects.

6.3 Economic contribution – South Island

The economic contribution of the red meat industry (i.e. livestock production and red meat processing in aggregate) on the South Island is summarised in Table 6.3.

Table 6.3: Economic contribution of the red meat industry, South Island, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	15,878	1,744	664
Flow-on contribution	23,342	2,804	1,159
Total contribution	39,219	4,548	1,823
As % of South Island	8.0%	7.1%	6.7%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat industry supports approximately 8.0 percent of the FTE workforce in the South Island, with approximately 15,900 FTEs being employed directly and more than 23,300 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (5,340 FTEs or 14.7% of total employment in the sector);
- Agricultural support services (2,980 FTEs or 33.8% of total employment in the sector);
- Financial & insurance services (1,280 FTEs or 12.1% of total employment in the sector);
- Road transport (960 FTEs or 8.8% of total employment in the sector);
- Public administration & defence (890 FTEs or 4.4% of total employment in the sector); and
- Health care & social assistance (790 FTEs or 1.7% of total employment in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

The red meat industry is also estimated to contribute approximately 7.1 percent of the industry value added in the South Island when flow-on effects are taken into account. This equates to approximately NZ\$1.7 billion in direct effects and NZ\$2.8 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture;
- Financial & insurance services;
- Rental, hiring & real estate;

- Owner-occupied property operation;
- Agricultural support services; and
- Road transport.

Household income

Finally, the red meat industry is estimated to contribute approximately 6.7 percent of household income in the South Island, equating to approximately NZ\$1.8 billion in 2017-18. As a result of relatively low average compensation of employees in the sectors almost 64 percent of the household income impacts are derived from flow-on effects.

6.4 Economic contribution – Taranaki & Manawatu-Wanganui combined

The economic contribution of the red meat industry (i.e. livestock production and red meat processing in aggregate) on the combined Regional Council areas of Taranaki and Manawatu-Wanganui is summarised in Table 6.4.

Table 6.4: Economic contribution of the red meat industry, Taranaki & Manawatu-Wanganui, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	5,176	498	234
Flow-on contribution	8,340	1,300	416
Total contribution	13,516	1,798	650
As % of Taranaki & Manawatu-Wanganui	9.7%	9.5%	8.8%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat industry supports approximately 9.7 percent of the FTE workforce in the combined Regional Council areas of Taranaki and Manawatu-Wanganui, with approximately 5,200 FTEs being employed directly and more than 8,300 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (1,540 FTEs or 12.3% of total employment in the sector);
- Agricultural support services (590 FTEs or 26.1 % of total employment in the sector);
- Health care & social assistance (450 FTEs or 3.1% of total employment in the sector);

- Financial & insurance services (410 FTEs or 14.7% of total employment in the sector);
- Road transport (390 FTEs or 11.1% of total employment in the sector); and
- Other retailing (350 FTEs or 5.8% of total employment in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

The red meat industry is also estimated to contribute approximately 9.5 percent of the industry value added in the combined Regional Council areas of Taranaki and Manawatu-Wanganui when flow-on effects are taken into account. This equates to approximately NZ\$0.5 billion in direct effects and NZ\$1.3 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture;
- Owner-occupied property operation;
- Financial & insurance services;
- Rental, hiring & real estate;
- Agricultural support services; and
- Electricity generation & supply.

Household income

Finally, the red meat industry is estimated to contribute approximately 8.8 percent of household income in the combined Regional Council areas of Taranaki and Manawatu-Wanganui, equating to approximately NZ\$0.65 billion in 2017-18. As a result of relatively low average compensation of employees in the sectors almost 64 percent of the household income impacts are derived from flow-on effects.

6.5 Economic contribution – Canterbury

The economic contribution of the red meat industry (i.e. livestock production and red meat processing in aggregate) on the Canterbury Regional Council area is summarised in Table 6.5.

Table 6.5: Economic contribution of the red meat industry, Canterbury, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	7,097	830	302
Flow-on contribution	12,062	1,639	608
Total contribution	19,159	2,469	911
As % of Canterbury	7.2%	7.0%	6.4%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat industry supports approximately 7.2 percent of the FTE workforce in the Canterbury Regional Council area, with approximately 7,000 FTEs being employed directly and more than 12,000 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agriculture (1,750 FTEs or 12.4% of total employment in the sector);
- Agricultural support services (1,450 FTEs or 49.4% of total employment in the sector);
- Financial & insurance services (870 FTEs or 13.8% of total employment in the sector);
- Public administration & defence (600 FTEs or 5.2% of total employment in the sector);
- Basic material wholesaling (530 FTEs or 16.2% of total employment in the sector); and
- Health care & social assistance (530 FTEs or 2.1% of total employment in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

The red meat industry is also estimated to contribute approximately 7.0 percent of the industry value added in the Canterbury Regional Council area when flow-on effects are taken into account. This equates to approximately NZ\$0.8 billion in direct effects and NZ\$1.6 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Financial & insurance services;
- Rental, hiring & real estate;
- Agriculture;
- Owner-occupied property operation;
- Agricultural support services; and
- Basic material wholesaling.

Household income

Finally, the red meat industry is estimated to contribute approximately 6.4 percent of household income in the Canterbury Regional Council area, equating to approximately NZ\$0.9 billion in 2017-18. As a result of relatively low average compensation of employees in the sectors almost 67 percent of the household income impacts are derived from flow-on effects.

6.6 Economic contribution – Otago & Southland combined

The economic contribution of the red meat industry (i.e. livestock production and red meat processing in aggregate) on the combined Regional Council areas of Otago and Southland is summarised in Table 6.6.

Table 6.5: Economic contribution of the red meat industry, Otago & Southland, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	7,675	847	327
Flow-on contribution	10,103	1,330	477
Total contribution	17,777	2,176	804
As % of Otago & Southland	12.2%	11.8%	11.5%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

The individual metrics are examined below.

Employment

Overall, it is estimated that the red meat industry supports approximately 12.2 percent of the FTE workforce in the combined Regional Council areas of Otago and Southland, with approximately 7,700 FTEs being employed directly and more than 10,000 FTE jobs being underpinned by the sector as a result of flow-on impacts. The top six sectors benefitting from flow-on employment impacts are, in descending order of significance:

- Agricultural support services (1,520 FTEs or 40.9% of total employment in the sector);
- Agriculture (1,440 FTEs or 9.8% of total employment in the sector);
- Financial & insurance services (580 FTEs or 18.6% of total employment in the sector);
- Health care & social assistance (460 FTEs or 3.5% of total employment in the sector);
- Public administration & defence (430 FTEs or 7.1% of total employment in the sector); and
- Other retailing (400 FTEs and 6.0% of total employment in the sector).

It should be noted that the flow-on impacts in *Agriculture* predominantly flow to the *Dairy cattle farming* sector.

Industry value added

The red meat industry is also estimated to contribute approximately 11.8 percent of the industry value added in the combined Regional Council areas of Otago and Southland when flow-on effects are taken into account. This equates to approximately NZ\$0.85 billion in direct effects and NZ\$1.3 billion in flow-on impacts. The top six sectors benefitting from flow-on industry value added impacts are, in descending order of significance:

- Agriculture;
- Financial & insurance services;
- Rental, hiring & real estate;
- Owner-occupied property operation;
- Agricultural support services; and
- Electricity generation & supply.

Household income

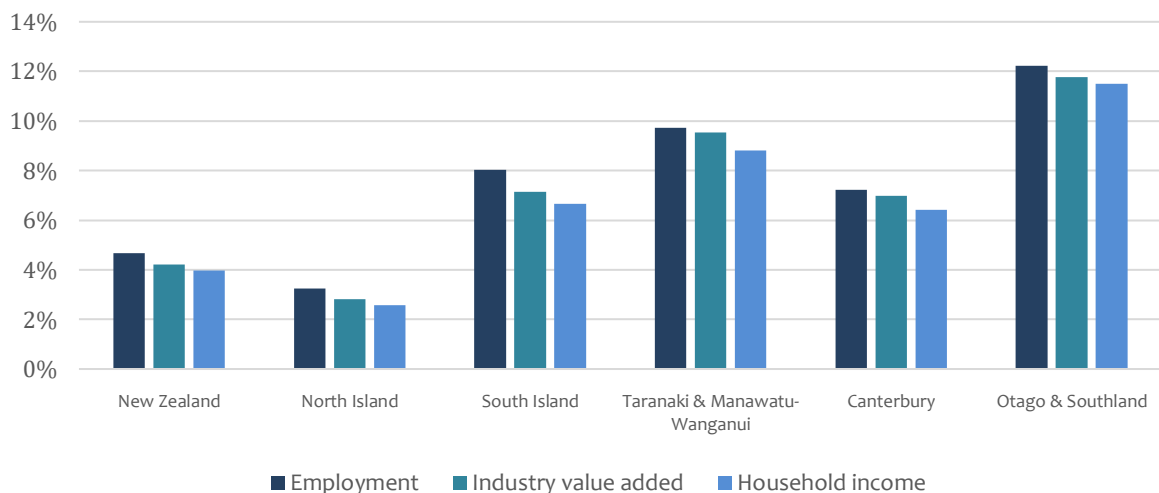
Finally, the red meat industry is estimated to contribute approximately 11.5 percent of household income in the combined Regional Council areas of Otago and Southland, equating to approximately NZ\$0.8 billion in 2017-18. As a result of relatively low average compensation of employees in the sectors almost 59 percent of the household income impacts are derived from flow-on effects.

6.8 Summary for the red meat industry in total

The preceding analysis illustrates that the economic contribution of the red meat industry in total, including flow-on impacts, measured in total and contribution to the national and relevant regional economy, under the metrics of employment (FTE), industry value added and household income varies significantly between the geographical regions examined. The sector is, however, a significant contributor to the economy, particularly at the regional level.

At the national level, the sector contributes approximately 4.7 percent of FTE employment and 4.2 percent of industry value added when flow-on effects are taken into account, a proportion which is significant. However, the magnitude of the contribution is more pronounced at the regional level as illustrated below.

Figure 6.1: Contribution of the red meat industry in total (including flow-on effects) to the relevant economy, 2017-18



7.0 Conclusions

The red meat industry and its individual components (livestock production and red meat processing and exporting) make a significant contribution to the New Zealand economy and, when examined at a regional level, can contribute more than 10 percent of the various measures when flow-on effects are included.

The red meat industry makes a significant contribution to the national economy in terms of employment, household income and industry value added, as summarised in Table 7.1.

When flow-on effects are taken into account, the red meat industry contributes 4.2 percent of national industry value added, 4.0 percent of household income and 4.7 percent of full-time equivalent employment.

Table 7.1: Economic contribution of the red meat industry, New Zealand, 2017-18

	Employment	Industry value added	Household income
	FTE	NZ\$ million	NZ\$ million
Direct contribution	35,702	3,775	1,477
Flow-on contribution	56,719	8,197	3,124
Total contribution	92,421	11,973	4,601
As % of New Zealand	4.7%	4.2%	4.0%

Source: SGH estimates using B+LNZ data, aggregated private data from processors and SNZ data

In order to provide overall context for this analysis, Table 7.2 provides a summary distribution of industry value added by industry for the year ending March 2018.

Table 7.2: Contribution to Gross Industry Value Added, New Zealand, 2017-18

	2018	
	\$ million	% of total
Agriculture	12,431	4.7%
Forestry and logging	1,910	0.7%
Fishing, aquaculture and agriculture, forestry and fishing support services	2,470	0.9%
Mining	2,883	1.1%
Food, beverage and tobacco product manufacturing	10,602	4.0%
Textile, leather, clothing and footwear manufacturing	674	0.3%
Wood and paper products manufacturing	2,288	0.9%
Printing	681	0.3%
Petroleum, chemical, polymer and rubber product manufacturing	5,452	2.1%
Non-metallic mineral product manufacturing	1,210	0.5%
Metal product manufacturing	3,044	1.2%
Transport equipment, machinery and equipment manufacturing	4,897	1.9%
Furniture and other manufacturing	767	0.3%
Electricity, gas, water and waste services	8,026	3.0%
Construction	18,540	7.0%
Wholesale trade	14,202	5.4%
Retail trade	12,998	4.9%
Accommodation and food services	6,360	2.4%

Transport, postal, and warehousing	13,012	4.9%
Information media and telecommunications	6,777	2.6%
Financial and insurance services	16,973	6.4%
Rental, hiring, and real estate services	21,171	8.0%
Owner-occupied property operation	18,321	6.9%
Professional, scientific, and technical services	23,152	8.8%
Administrative and support services	5,681	2.1%
Local government administration	1,374	0.5%
Central government administration, defence, and public safety	10,157	3.8%
Education and training	12,258	4.6%
Health care and social assistance	16,843	6.4%
Arts and recreation services	3,853	1.5%
Other services	5,314	2.0%
Total all industries	264,323	100.0%
Primary industry sector	19,694	7.5%
Secondary industry sector	29,615	11.2%
Tertiary industry sector	215,012	81.3%

Source: SNZ data

It should be noted that in most developed countries the tertiary or service sector contributes around 80 per cent of national industry value added, and New Zealand is no exception. The preceding table provides a summary distribution of industry value added by industry for the year ending March 2018, and indicates that the tertiary sector contributes around 81 per cent and primary and secondary sectors contribute around 19 per cent of gross industry value added in New Zealand.

In order to prevent double counting, it is best to compare direct contributions to national industry value added without flow-on effects. On that basis, the red meat sector contributes directly around 1.4 per cent to national industry value added. This means it contributes fully 7.7 per cent of all national non-tertiary value added.

Moreover, the red meat industry is a major contributor to the Island and regional economies identified in this report, with its contribution reaching more than 11.8 percent of value added and in excess of 12.2 percent of FTE employment in some cases.

The social impacts of the industry will be analysed in a subsequent study.

The project represents a significant achievement by, and for, the red meat industry. A large number of processors and exporters have provided up-to-date financial data to enable establishment of a comprehensive data set on industry costs which have enabled the industry to determine the economic contribution of the red meat processing sector regionally and nationally. Similarly, the Sheep and Beef Farm Surveys conducted by B+LNZ have permitted analysis of the economic contribution of the livestock production sector

There are also substantial secondary benefits for the industry generated by this research. The model can be used for analysing the contribution on the industry, and hence on the

regional, Island and national economies, of regulatory, technical or other developments which might impact it – e.g. new regulations, innovations or practices that affect the cost structure of the industry.

SG Heilbron Economic & Policy Consulting

January 2020

Appendix 1 – Input Output Analysis

Input output (IO) analysis is a macroeconomic analysis based on the interdependencies between economic categories, usually defined as industries or sub-industry categories. IO analysis is frequently used for estimating the contributions of sectors (defined as industry sectors, sub-sectors in isolation or in aggregate, or individual enterprises, on an economy) from existing operations (i.e. already part of the economy) or changes to these through either positive or negative economic shocks and analysing the flow-on effects throughout an economy.

The basis of IO analysis involves input output tables which include a series of rows and columns of data that quantify the supply chain for all sectors of an economy, representing inter-industry sales and purchases as well as sales to final demand (household and government final consumption expenditure, capital formation and exports) and expenditure on primary inputs (compensation of employees, gross operating surplus, taxes & subsidies on production & products and imports).

The data in each column corresponds to the level of inputs used in that industry's production function. For example, the column for *Meat and meat product manufacturing* illustrates the financial inputs required to produce meat products (e.g. livestock purchases, utilities usage, transport costs etc). The row for each sector in the matrix indicates the sales from that sector to other sectors (e.g. for *Agriculture*, sales to a range of food and beverage manufacturing sectors, and to the various final demand sectors).

The base table utilised for the analysis is derived from the most recent table published by Statistics New Zealand (SNZ) for New Zealand as a whole for the year end March 2013⁵, published in 2016. That table comprises 106 categories which, in turn, are concorded with ANZSIC classifications for 2006⁶.

The base table has been updated to 2017-18 using a range of data sources published by Statistics New Zealand including:

- Annual enterprise survey;
- Business demography data;
- Linked employer-employee data (LEED);
- Manufacturing survey;
- National accounts (income and expenditure); and
- National accounts (production and investment).

⁵ http://archive.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/input-output%20tables-2013.aspx

⁶ Australian and New Zealand Standard Industrial Classification 2006 - http://aria.stats.govt.nz/aria/?_ga=2.166244606.111743353.1574913770-1230729022.1555024637#ClassificationView:uri=http://stats.govt.nz/cms/ClassificationVersion/CARS5587

Employment numbers

The impact of employment can be measured in a number of ways but all primarily relate to using either:

1. total employment counts in a given time period; or
2. estimating the number of full-time equivalent (FTE) employees.

When conducting economic contribution analysis, the latter is the preferred method because it enables a direct comparison between industry sectors. Total employment counts do not reflect the differences between sectors in which a significant proportion of employment is on a part-time basis (e.g. *Retail trade, Accommodation, Food services*) and those in which the vast majority of employment is on a full-time basis (e.g. *Electricity, gas, water & waste services, Manufacturing, Financial & insurance services*). It also does not reflect the fact that, by international standards relating to labour force statistics, a part-time employee may work anywhere between one and 30 hours per week. The time differentiation for casual employment is not internationally recognised as part of the definition of employment when measuring the labour market, rather casual employment is a contractual definition and is classified only as either full-time or part-time.

SNZ publishes only limited data relating to FTE employment by industry sector under the Earnings and Employment Survey⁷. That data only categorises employment in aggregate and for a limited number of ANZSIC sectors (some of which are combined as illustrated below), which do not reflect the disaggregation into 106 categories provided in the national input output (IO) table. As a result, the relative ratio of FTE employment to total employment count would be misleading if the same ratios were applied across all relevant sub-sectors.

Industry sectors in the Earnings and Employment Survey:

- Forestry & mining
- Manufacturing
- Electricity, gas, water & waste services
- Construction
- Wholesale trade
- Retail trade
- Accommodation and food services
- Transport, postal & warehousing
- Information media & telecommunications
- Financial & insurance services
- Rental, hiring & real estate services
- Professional, scientific, technical, administrative & support services

⁷ <http://archive.stats.govt.nz/infoshare/SelectVariables.aspx?pxID=a8d5f939-8d0d-4ebb-9db4-5288f175253c>

- Public administration & safety
- Education & training
- Health care & social assistance
- Arts, recreation & other services

Given these differences in the source data, it was necessary to estimate FTE employment numbers for each of the 106 sectors identified in the national IO table. To do this, the following methodology was adopted.

Data from the Earnings and Employment Survey⁸ relating to employment by labour force status (working proprietors, full-time and part-time) for each of the above sectors was analysed to determine the overall proportion of employment in full-time and part-time categories and the associated number of part-time employees equating to one full-time employee.

The total number of employees (i.e. both full-time and part-time) for each of the 106 categories in the IO table was derived from data published by SNZ and allocated by category to each of the previously listed sectors utilised in the Earnings and Employment Survey.

It was then assumed that the distribution of full-time and part-time employment within each of the 106 categories would approximate that experienced in Australia where data from the 2016 Census on employment by labour force status is available at the ANZSIC 2006 Level 4 category. Within each IO category, the Australian distribution by full-time or part-time employment was applied to the total New Zealand employment numbers. The resultant output was then readjusted to reflect both total employment numbers by IO category and the distribution of full-time and part-time employment in each of the Earnings and Employment Survey sectors. The number of part-time employees was then adjusted by the previously calculated number of part-time employees equating to one full-time employee.

Overall, the total calculations reflect total employment numbers by IO category published by SNZ as well as the distribution of employment by status in the Earnings and Employment Survey from the same source.

A similar analysis was undertaken for both the North and South Island and the relevant regions but adjusted to allow for the overall distribution of employment by each of the 106 IO categories in each geographical area.

Aggregation of sectors

Whilst the base IO table has 106 sectors, a number of these are of little relevance to either the livestock production or red meat processing components of the red meat

⁸ <http://archive.stats.govt.nz/infoshare/SelectVariables.aspx?pxID=a653520e-7568-44c4-a025-7252ec5ce3eb>

industry in New Zealand. Accordingly, the national, and subsequent regional tables, were aggregated to reflect a total of 61 sectors which are outlined in Appendix 2 of this report.

After constructing the base tables, a new row and column were inserted to reflect the red meat production or processing sector, utilising the primary data provided by either B+LNZ or processors, scaled up to reflect national or regional totals where applicable. That new sector was then subtracted from the existing *Agriculture* or *Meat and meat product manufacturing* sectors in order to maintain the integrity of the overall table.

The tables are then rebalanced and the various measures of economic activity calculated, namely employment (measured as full-time equivalent (FTE) positions), industry value added (a sub-set and key component of gross national or regional product) and household income.

Regional tables

In creating the various regional tables, including the North and South Island tables, referred to in this report, the results were compared with the estimates of Gross Regional Product published by SNZ⁹, to ensure that, for each of the individual regions, the overall tables were compatible with published data.

Regional tables were constructed using Generation of Regional Input Output Tables (GRIT) files incorporated in the IO9 software used for this analysis. The GRIT approach is the most widely used method of constructing input output tables in Australia. It is also commonly employed in Europe and America.

The GRIT technique, developed by Professors West and Jensen of the University of Queensland, uses allocation methods and location quotients as well as primary data where available. That primary data is regarded as being superior to the data generated using statistical ratios alone. The software allows for manual changes to ratios derived from location quotients, impacting calculation of factors such as various primary inputs (e.g. compensation of employees, gross operating surplus and imports), final demand characteristics (e.g. household final consumption expenditure and exports) and output by sector. This allows for a regional table to be created which reflects available regional data rather than simply using the relevant ratios in the national table. The construction of the regional tables utilised in this analysis incorporated a range of regional data available from SNZ. The resultant tables were then compared with the national table as a validity check.

⁹ <http://archive.stats.govt.nz/infoshare/SelectVariables.aspx?pxID=8193e739-6851-4971-9784-38fed9943dce>

Estimating economic contributions

The economic contribution of each sector was measured in absolute values and as a percentage of the relevant regional economy. The contributions measured incorporate the following:

- Direct contributions resulting from expenditure associated with the operation of the livestock production or red meat processing facility – labour, materials, services;
- Indirect contributions resulting from the suppliers of the facility purchasing goods and services and hiring workers to meet demand – these “2nd round” contributions would not occur but for facility’s operations; and
- Induced contributions resulting from the employees of the facilities purchasing goods and services at a household level.

It is important to recognise that in estimating the contribution to the economy of the livestock production sector, the red meat processing sector or both in aggregate, that they are already part of the existing economy. Therefore, the sector being analysed must be subtracted from the overall economy (or its relevant “parent” sector being *Agriculture* in the case of red meat production and *Meat and meat product manufacturing* in the case of red meat processing) prior to calculating its economic contribution to ensure that the integrity of the table (measured as total Gross Domestic (or Regional) Product) is maintained.

This was undertaken separately for each of the livestock production and red meat processing sectors for New Zealand as a whole and each of the regions.

Livestock production

B+LNZ provided farm-level data from its Sheep and Beef Farm Survey, which is of a statistically representative sample of commercial sheep and beef farms in New Zealand. The weighted averages of metrics were scaled up to reflect the population in each geographical area (“region”) based on estimates provided by B+LNZ, which are derived from the Agricultural Production Census conducted by SNZ on behalf of Ministry for Primary Industries (MPI).

The expenditure categories used in the B+LNZ Sheep and Beef Farm Survey do not directly align with the categories in the IO table and therefore had to be allocated to individual IO categories. The distribution of the proportion of expenditure for each of these across the relevant IO categories was reviewed in conjunction with representatives from B+LNZ, and was informed by analysis of the B+LNZ Sheep and Beef Farm Survey data. The key proportional estimates by expenditure category are summarised below:

Input Output Table Category										
Expenditure category in B+LNZ Sheep and Beef Farm Survey	Veterinary & other professional services	Pharmaceutical mfg	Basic material w/saling	Agricultural support services	Fertiliser & pesticide mfg	Basic chemical product mfg	Agriculture	Repair	Other w/sale	Metal mfg
Livestock							100%			
Animal Health	25%	50%							25%	
Weed & Pest Control				30%		60%	10%			
Shearing Expenses				100%						
Fertiliser				20%	80%					
Lime				70%		30%				
Seeds			90%				10%			
Feed & Grazing							100%			
Cultivation & Sowing				100%						
Cash Crop Expenses			30%	70%						
Repairs & Maintenance			40%	30%				15%	10%	5%

B+LNZ also provided, from the Sheep and Beef Farm Survey, estimates of on-farm employment (measured in total FTE) and associated wages and salaries for each region.

Red meat processing

The aggregated private data provided directly to the Consultants was utilised to estimate a profile of the industry as a whole for each of the following geographical areas utilising published data on slaughter numbers for 2017-18¹⁰:

- New Zealand - data coverage from the survey was estimated to incorporate the following percentage of slaughter numbers by animal type:
 - Cattle – 59.3 percent
 - Calves – 65.1 percent
 - Sheep – 67.5 percent
 - Lambs – 66.9 percent
 - Deer – 81.9 percent
- North Island - data coverage from the survey was estimated to incorporate the following percentage of slaughter numbers by animal type:
 - Cattle – 46.7 percent
 - Calves – 49.0 percent
 - Sheep – 54.5 percent
 - Lambs – 47.4 percent
- South Island - data coverage from the survey was estimated to incorporate the following percentage of slaughter numbers by animal type:
 - Cattle – 86.4 percent
 - Calves – 90.2 percent

¹⁰ <http://archive.stats.govt.nz/infoshare/SelectVariables.aspx?pxID=13af6c9b-12b7-4ad3-afaf-c339634ea8ea>

- Sheep – 80.4 percent
- Lambs – 86.4 percent
- Taranaki and Manawatu-Wanganui - data coverage from the survey was estimated to incorporate the following percentage of slaughter numbers by animal type:
 - Cattle – 70.7 percent
 - Calves – 80.8 percent
 - Sheep – 66.9 percent
 - Lambs – 62.6 percent
- Canterbury - data coverage from the survey was estimated to incorporate the following percentage of slaughter numbers by animal type:
 - Cattle – 71.0 percent
 - Calves – 100.0 percent
 - Sheep – 51.9 percent
 - Lambs – 61.1 percent
- Otago and Southland - data coverage from the survey was estimated to incorporate the following percentage of slaughter numbers by animal type:
 - Cattle – 94.1 percent
 - Calves – 81.8 percent
 - Sheep – 76.3 percent
 - Lambs – 82.2 percent

In each case, the data provided by those processing facilities supplying information was scaled up, by animal type, to reflect the relevant geographical area in total, based on slaughter numbers available from SNZ.

Appendix 2 – Concordance of aggregated sectors in the input output tables

106 IO categories

Horticulture and fruit growing
 Sheep, beef cattle, and grain farming
 Dairy cattle farming
 Poultry, deer, and other livestock farming
 Forestry and logging
 Fishing and aquaculture
 Agriculture, forestry, and fishing support services
 Coal mining
 Oil and gas extraction
 Metal ore and non-metallic mineral mining and quarrying
 Exploration and other mining support services
 Meat and meat product manufacturing
 Seafood processing
 Dairy product manufacturing
 Fruit, oil, cereal, and other food product manufacturing
 Beverage and tobacco product manufacturing
 Textile and leather manufacturing
 Clothing, knitted products, and footwear manufacturing
 Wood product manufacturing

 Pulp, paper, and converted paper product manufacturing
 Printing
 Petroleum and coal product manufacturing
 Basic chemical and basic polymer manufacturing
 Fertiliser and pesticide manufacturing

 Pharmaceutical, cleaning, and other chemical manufacturing
 Polymer product and rubber product manufacturing
 Non-metallic mineral product manufacturing
 Primary metal and metal product manufacturing
 Fabricated metal product manufacturing
 Transport equipment manufacturing
 Electronic and electrical equipment manufacturing
 Machinery manufacturing
 Furniture manufacturing
 Other manufacturing
 Electricity generation and on-selling
 Electricity transmission and distribution
 Gas supply
 Water supply
 Sewerage and drainage services
 Waste collection, treatment, and disposal services
 Residential building construction
 Non-residential building construction
 Heavy and civil engineering construction
 Construction services
 Basic material wholesaling
 Machinery and equipment wholesaling
 Motor vehicle and motor vehicle parts wholesaling
 Grocery, liquor, and tobacco product wholesaling
 Other goods and commission based wholesaling
 Motor vehicle and motor vehicle parts retailing
 Fuel retailing
 Supermarket and grocery stores

61 IO categories

Agriculture
 Agriculture
 Agriculture
 Agriculture
 Forestry and logging
 Fishing and aquaculture
 Agricultural support services
 Mining
 Mining
 Mining
 Mining
 Meat and meat product manufacturing
 Seafood processing
 Dairy product manufacturing
 Fruit, oil, cereal, and other food product manufacturing
 Beverage and tobacco product manufacturing
 Textile manufacturing
 Textile manufacturing
 Wood product manufacturing
 Pulp, paper, and converted paper product manufacturing
 Printing
 Basic chemical manufacturing
 Basic chemical manufacturing
 Fertiliser and pesticide manufacturing
 Pharmaceutical, cleaning, and other chemical manufacturing
 Polymer product and rubber product manufacturing
 Non-metallic mineral product manufacturing
 Metal and metal product manufacturing
 Metal and metal product manufacturing
 Machinery and equipment manufacturing
 Machinery and equipment manufacturing
 Machinery and equipment manufacturing
 Other manufacturing
 Other manufacturing
 Electricity supply
 Electricity supply
 Gas supply
 Water supply
 Sewerage and drainage services
 Waste collection, treatment, and disposal services
 Construction
 Construction
 Construction
 Construction
 Basic material wholesaling
 Machinery and equipment wholesaling
 Other wholesaling
 Other wholesaling
 Other wholesaling
 Motor vehicle and motor vehicle parts retailing
 Fuel retailing
 Supermarket and grocery stores

106 IO categories

Specialised food retailing
 Furniture, electrical, and hardware retailing
 Recreational, clothing, footwear, and personal accessory retailing
 Department stores
 Other store-based retailing; non-store and commission based retailing
 Accommodation
 Food and beverage services
 Road transport
 Rail transport
 Other transport
 Air and space transport
 Postal and courier services
 Transport support services
 Warehousing and storage services
 Publishing (except internet and music publishing)
 Motion picture and sound recording activities
 Broadcasting and internet publishing
 Telecommunications services
 Library and other information services
 Banking and financing; financial asset investing
 Life insurance
 Health and general insurance
 Superannuation and individual pension services
 Auxiliary finance and insurance services
 Rental and hiring services (except real estate); non-financial asset leasing
 Residential property operation
 Non-residential property operation
 Real estate services
 Owner-occupied property operation
 Scientific, architectural, and engineering services
 Legal and accounting services
 Advertising, market research, and management services
 Veterinary and other professional services
 Computer system design and related services
 Travel agency and tour arrangement services
 Employment and other administrative services
 Building cleaning, pest control, and other support services
 Local government administration services
 Central government administration services
 Defence
 Public order, safety, and regulatory services
 Preschool education
 School education
 Tertiary education
 Adult, community, and other education
 Hospitals
 Medical and other health care services
 Residential care services and social assistance
 Heritage and artistic activities
 Sport and recreation services
 Gambling activities
 Repair and maintenance
 Personal services; domestic household staff
 Religious services; civil, professional, and other interest groups

61 IO categories

Specialised food retailing
 Other retailing
 Other retailing
 Other retailing
 Other retailing
 Accommodation
 Food and beverage services
 Road transport
 Rail transport
 Other transport
 Air and space transport
 Postal and courier services
 Transport support services
 Warehousing and storage services
 Information media and technology
 Information media and technology
 Information media and technology
 Information media and technology
 Information media and technology
 Financial and insurance services
 Financial and insurance services
 Financial and insurance services
 Financial and insurance services
 Financial and insurance services
 Rental, hiring and real estate
 Rental, hiring and real estate
 Rental, hiring and real estate
 Rental, hiring and real estate
 Owner-occupied property operation
 Scientific, architectural, and engineering services
 Legal and accounting services
 Advertising, market research, and management services
 Veterinary and other professional services
 Computer system design and related services
 Administrative services
 Administrative services
 Administrative services
 Public administration and defence
 Public administration and defence
 Public administration and defence
 Public administration and defence
 Education and training
 Education and training
 Education and training
 Education and training
 Health care and social assistance
 Health care and social assistance
 Health care and social assistance
 Arts and recreation services
 Arts and recreation services
 Arts and recreation services
 Repair and maintenance
 Other services
 Other services