

# MEMO

To: Ned Norton  
From: Lauren Phillips, Environment Policy Manager SI  
CC: Josh Brown; Ben Ensor – Hurunui District Landcare Group  
Date: 5 March 2018  
Re: **Overview of the Sheep and Beef Farming Sector within the Hurunui Region**

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## Key Messages

- Agriculture is main economic activity within the Hurunui region. Sheep and beef is the dominant farm type, and a key employer within the district. These factors combined mean that the sheep and beef sector is inextricably linked to the region's viability and economic success.
- Sheep and beef farming systems are highly complex, diverse and varied across the Hurunui region. There is no such thing as a typical sheep and beef farm.
- Sheep and beef farming is not always profitable. The implementation of any significant new on-ground actions must be spread over a number of years to ensure costs extend over good and poor performing years.
- Sheep and beef farmers make management decisions for many reasons, with profitability being only one of the factors taken into account. Other important considerations may include long term farm viability, climate constraints, farm succession etc.
- The sheep and beef sector is an adaptable and resilient sector, continually making efficiency gains in how it produces red meat. Sheep and beef farmers have managed to increase meat production, while decreasing the total number of animals farmed, and while losing their most productive land to other land uses.
- In the Hurunui, winter forage crops are used for both sheep and beef cattle; as well as for dairy support winter grazing on some farms. Decisions on whether or not to grow forage crops are made based on the individual capacity of the farms due to climate; and the long term feasibility in terms of optimal use of the land for feed production.
- Land use flexibility enables farmer adaptability and resilience, and is essential to the long term viability of the sheep and beef industry.

### **Where B+LNZ gets its data from**

- The data used in this memo comes from Beef + Lamb New Zealand's annual Sheep and Beef Farm Survey (the Survey). The Survey provides credible, authoritative, and independent information analysis about the sheep and beef value chain, and farming in particular, to support informed decision-making.
- The Survey is conducted using a random sample of over 500 farms ("farm businesses") each year including 22 from the Hurunui District out of 80 in Canterbury. The information presented has been weighted and is statistically representative of the region. Data for the whole farm business are collected and analysed, and recorded in a computer database, characterising each farm on over 2000 metrics, including:
  - Reconciliations of livestock, wool production and sales, feed, and cash crops;
  - Production, such as meat weights, wool grades, calving and lambing percentages;
  - Inputs, such as fertiliser (including elemental analysis showing nitrogen, phosphorus, potassium, and sulphur applied), animal health, labour, repairs and maintenance, interest, rates; and
  - Full financial analysis of revenue and expenditure, the balance sheet and flow of funds to identify the cash flows in and out of the business.
- The survey has evolved and changed over time, but has been running continuously for 66 years, which makes it the longest running primary sector survey in the world.
- Alongside data compiled for regional and national analysis, the data used in for Hurunui district.

### Agriculture is main economic activity within the Hurunui region

- Hurunui district's economy is based on agriculture, and is more reliant on the agricultural sector than New Zealand's economy is as a whole (see Figure 1).
  - The GDP from agriculture in Hurunui, for the year to March 2015 was \$137 million.
  - 29.5 % of the Hurunui's GDP came from agriculture, for the year to March 2015.
  - 1.7 % of the agriculture's national GDP came from Hurunui, for the year to March 2015.

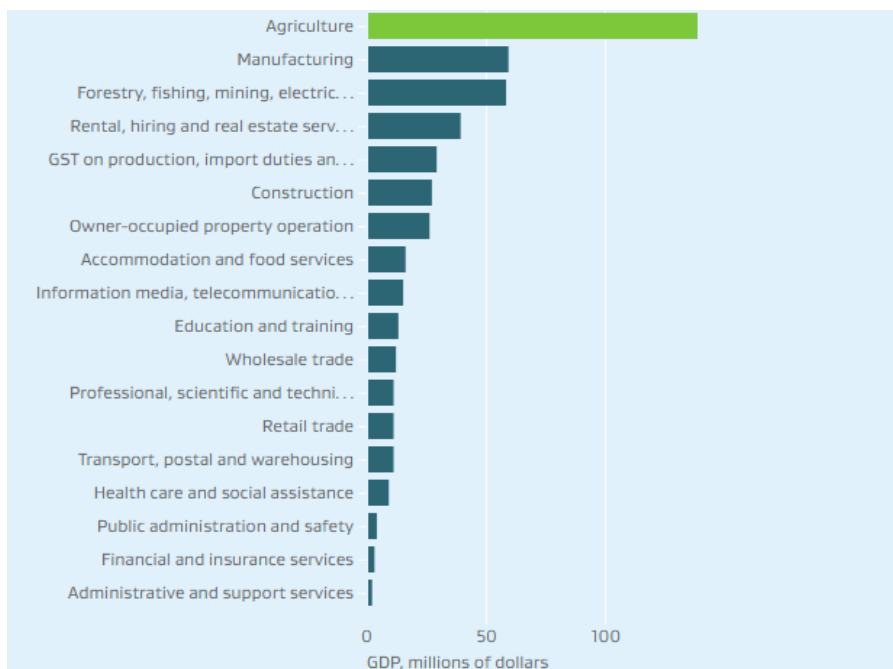


Figure 1: GDP from agriculture in Hurunui, for the year to March 2015. Source MBIE

- The sheep and beef sector is a major employer for both seasonal and permanent/ long term local employment within the region, a trend that is reflected nationally but is particularly relevant to Hurunui. Figure 2 provides an indicative trend based on Southland Region.

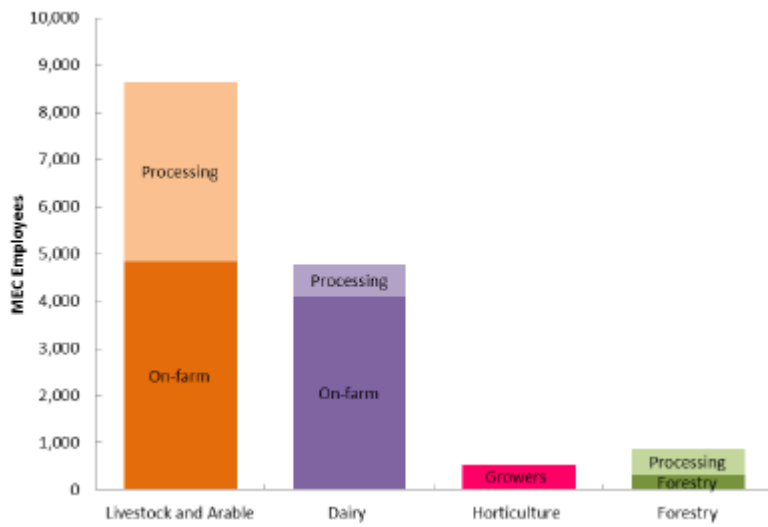


Figure 2: Southland Employment by Industry and Related Manufacturing 2014. Source: Market Economics ANZSIC industry classifications data

- Sheep and beef farms are an integral component of Hurunui’s primary sector, and are the dominant farm type within the region (see Figure 3 and Figure 4).

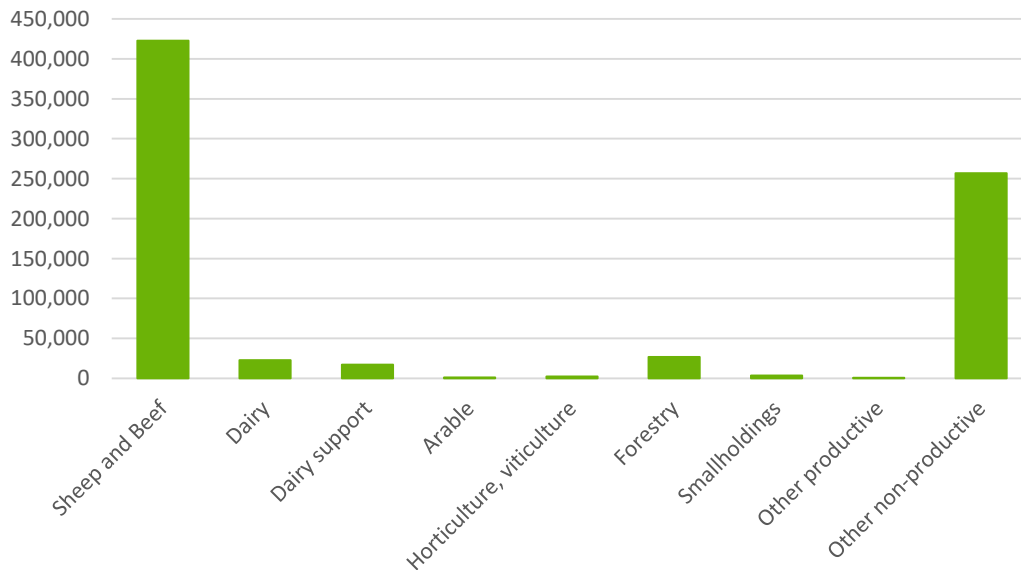


Figure 3: Land use within the Hurunui Region. Source Harris, S. 18 September 2018. Hurunui Zone Current State Economic Assessment

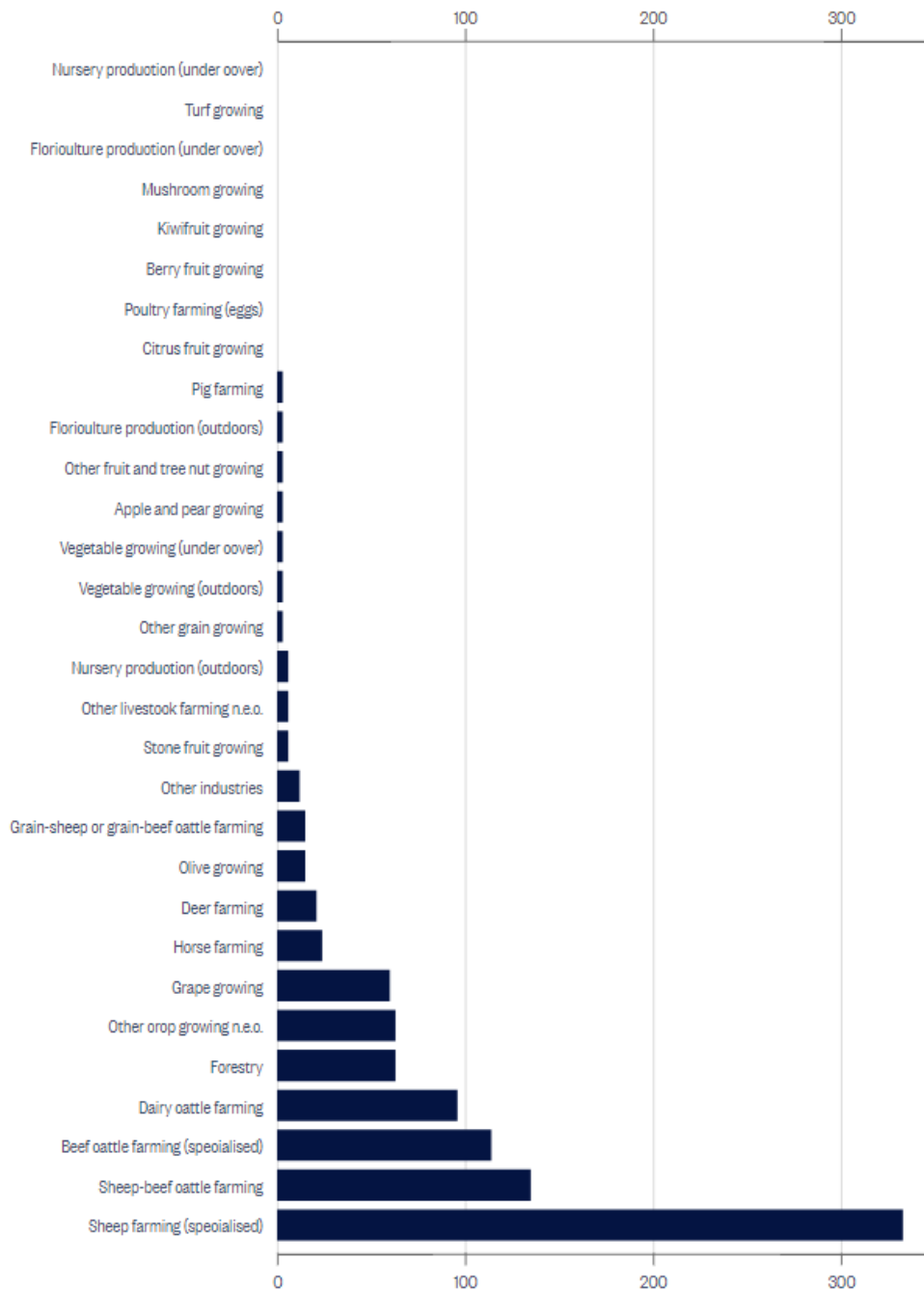


Figure 4: Farm types in the Hurunui District, New Zealand, by industry classification, as at June 2012, number of farms. Source Statistics NZ

- Sheep are the dominant livestock type within the district (see Figure 5)

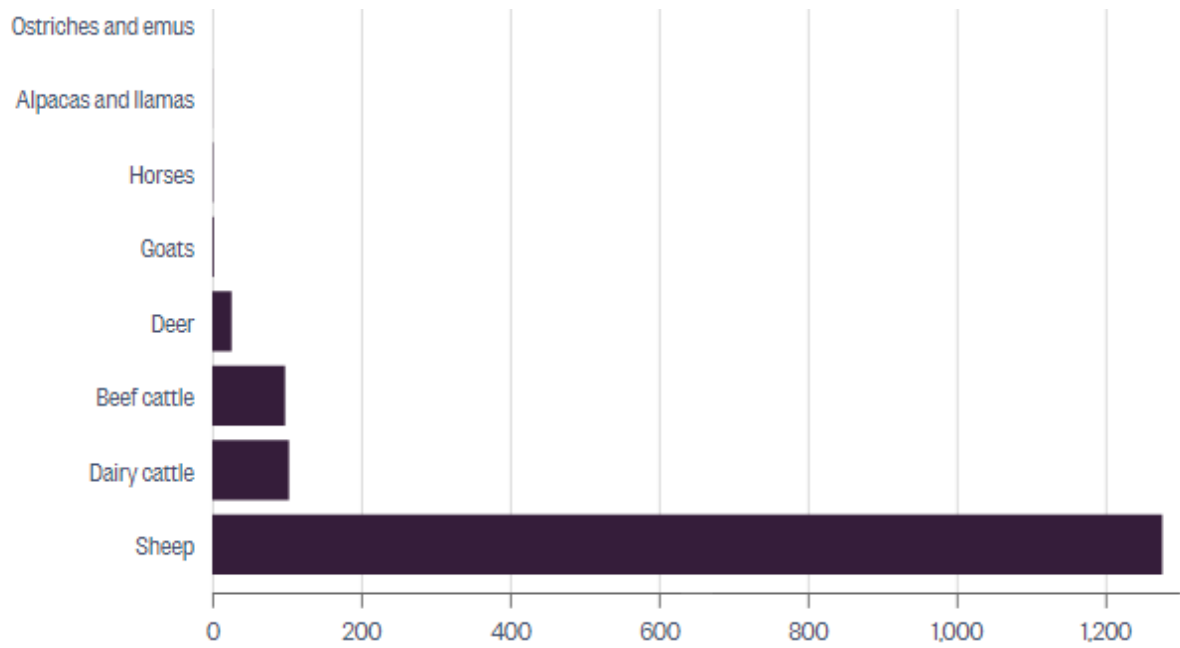


Figure 5: Livestock in the Hurunui District, New Zealand, By Type (excluding confidential data), as at June 2015 - thousands of animals. Source Statistics New Zealand

**Sheep and beef farming systems are highly complex, diverse and varied across the Hurunui region.**

- There are approximately 400 commercial sheep and beef farms within the Hurunui region.<sup>1</sup>
- These farms are highly diverse. Some key points to note about the diversity – even in the averages – between these include:
  - The average area of the Farm Classes<sup>2</sup> ranges from around 310 ha to over 7,300 ha;
  - The average number of livestock ranges from under 800 SU to more than 8,000 SU;
  - Sheep dominate, as shown by the sheep-to-cattle ratio, which ranges from 15:1 to 138:1; and
  - Average fertiliser ranges from 73.7 tonnes applied per year to 642.8 tonnes applied per year.
- Every farm has multiple revenue streams (Figure 6). The diversity reflects individual farms, and thus a sector, that have had to remain both responsive and flexible over time to adapt to the specific opportunities and constraints, which can include topography, aspect, rainfall and other climate factors, soil type and associated fertility, as well as personal factors like family pressures and being able to afford staff.

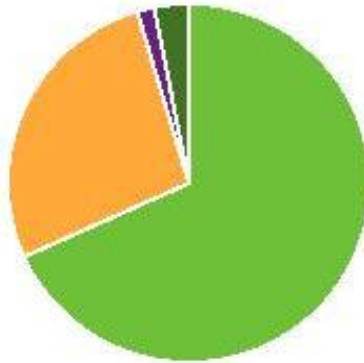


Figure 6: Proportional mix of total revenue streams for commercial sheep and beef farms in Hurunui District (\$/% ha effective)

<sup>1</sup> B+LNZ Economic Service, Sheep and Beef Farm Survey

<sup>2</sup> B+LNZ uses Farm Classes to categorise farm types in our economic reports. For more information about each of the Farm Classes visit <https://beeflambnz.com/data-tools/farm-classes>

- Beyond the general farming operations, sheep and beef farms are also home to diverse vegetation and ecosystems. New Zealand's sheep and beef farms hold one-quarter of the country's native vegetation (2.7million ha), a figure surpassed only by native vegetation on conservation land.



■ Public conservation estate ■ Sheep & beef ■ Dairy ■ Plantation

*Figure 7: Native vegetation across different land uses*

- Furthermore, 47% of QEII covenants are on sheep and beef farms. Last year 60% of new QEII covenants were for protecting indigenous habitats on sheep and beef farms.
- The sector is committed to protecting and enhancing native biodiversity and habitats across farms, including connecting these habitats and undertaking pest management.
- Additionally, sheep and beef farmers are constantly improving their practices and adapting to changing environmental and market conditions.
- With such a diverse and complex sector, one size cannot fit all. No two sheep and beef farms are the same, and business decisions are based on each farm's unique set of circumstances. Flexible land use is key to the sector's success as it allows on-farm decisions that best fit that unique set of circumstances and risks.

### **Sheep and Beef farming is not always profitable**

- Farming is not always profitable. New on-ground actions must spread over a number of years to ensure costs extend over good and poor performing years - See Figure 8.<sup>4</sup>
- Overall, the drystock sector relies on minimal inputs, the farm systems are dependent on rainfall and sunshine to produce pasture or crop on-site for almost 100 percent of livestock diet.
- Farming to the environment and climate means the farm is vulnerable to change and it necessitates keeping or adjusting stock numbers or crops to respond to seasonal challenges. Not having the reliable feed source provided by irrigation means that stocking rates remain comparatively low to buffer against unexpected change.



- Conservative sheep and beef stocking rates on dryland tend towards lower environmental impact as indicated by Figure 9, however they generally deliver annual yields that are then also subject to price fluctuations and market demand.
- Because profits are not always high or guaranteed year to year, new actions that affect systems must be spread over a number of years to ensure costs extend over good and poor performing years so that farmers can actually afford to apply them.

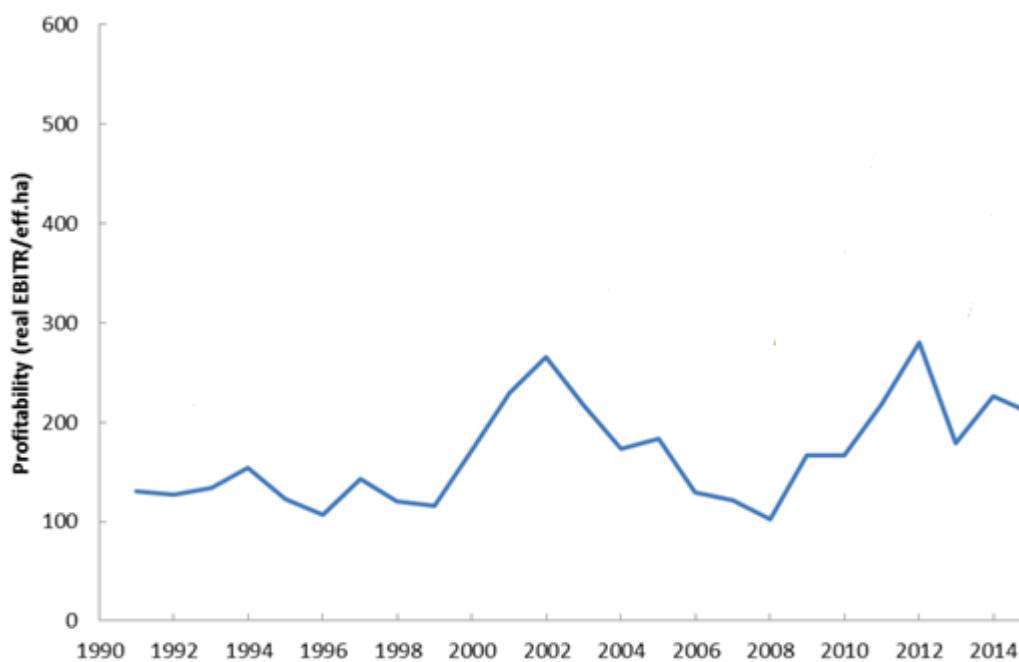


Figure 8: NZ sheep and beef farm profitability over time. Source B+LNZ Economic Service, Farm Survey

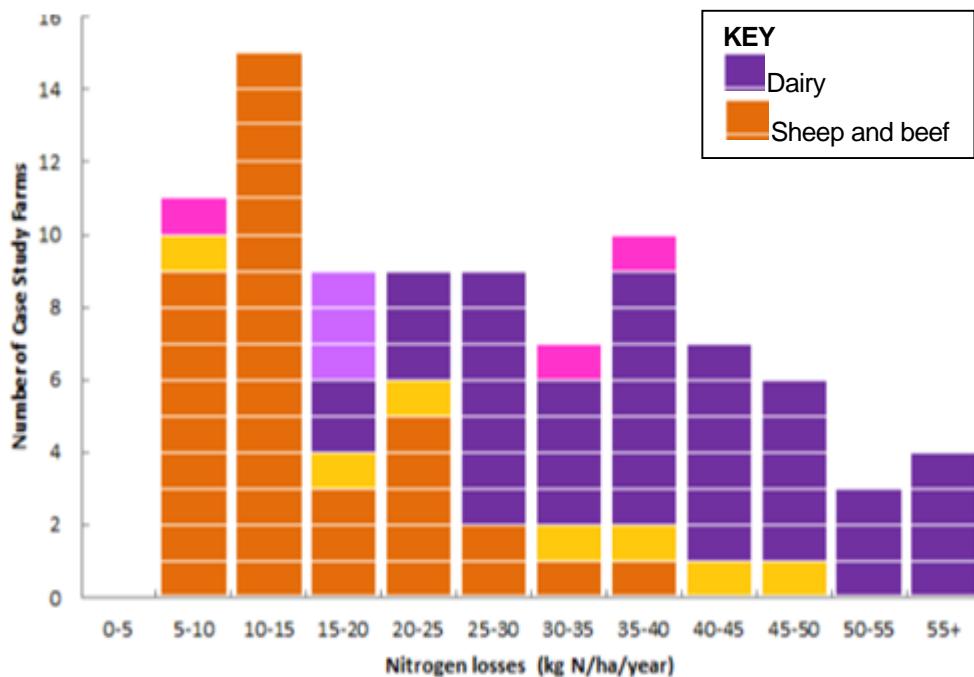


Figure 9: Nitrogen losses by sector for Southland (*The Southland Economic Project: Agriculture and Forestry, 2017, Fig 1*)

### Farmers' decisions are not solely based on profit

- Family and the 'farming way of life' are the two key drivers behind top performing farmer decision making. While profitability is critical, when boiled down, profit allows farmers to provide opportunities for their families, and to live the farming 'way of life' that appeals so deeply to them. These two factors are then followed by a diverse range of other drivers that all form the fabric of farming. The drivers are:
  - Family and way of life;
  - Profitability;
  - Industry Confidence;
  - Challenge of a dynamic environment; and
  - Passion for industry and people.<sup>3</sup>
- Dryland sheep and beef farming have been part of New Zealand's own culture and heritage since the 1800s.
- Farming is part of the farmers' identity and that of the regions they live in, and this informs their world view and their place in it. Many look to pass on the land and 'legacy' – and therefore impart corollary culture, history, and way of life – to future generations.

<sup>3</sup> Elliott, M. K. and Wakelin R. D. N. (2016) Drivers of top performing farmers. Hill Country – Grassland Research and Practice series 16: 25-28.

**The sheep and beef sector is an adaptable and resilient sector, continually making efficiency gains in how it produces red meat**

- Livestock numbers (Figure 10) and effective area (Figure 11) have decreased over time. However, meat production has remained relatively constant (Figure 13)<sup>4</sup>. Decreases in stock numbers have been balanced by increases in productivity, meaning that production (or total yield) has stayed relatively constant.

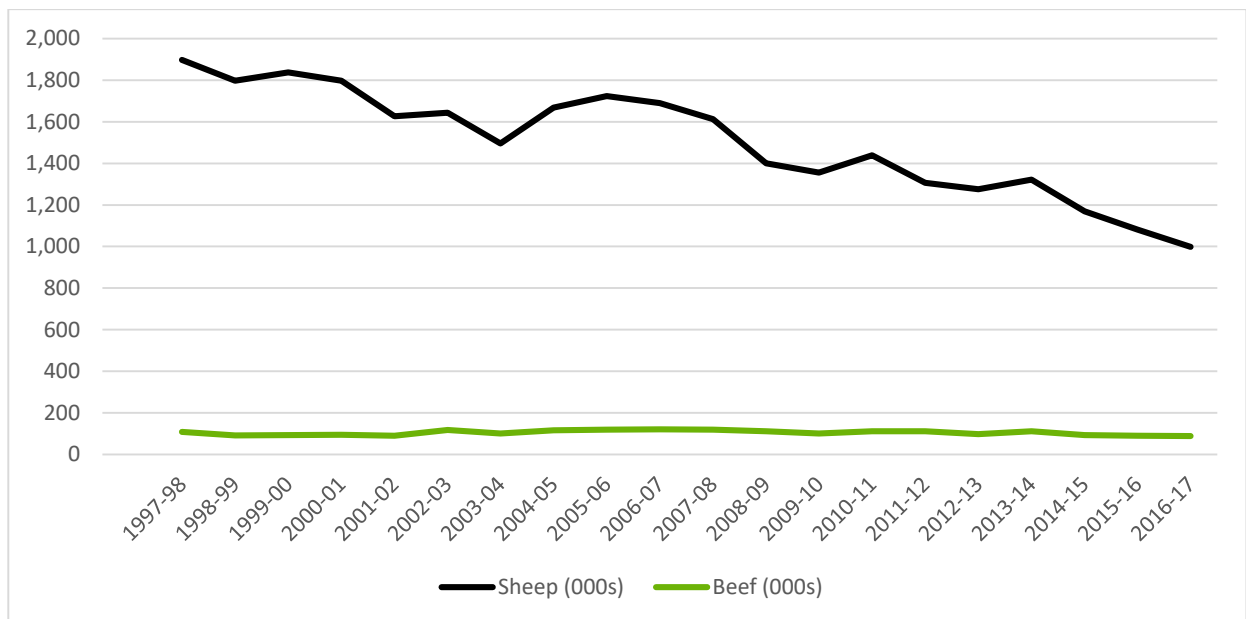


Figure 10: Livestock Numbers over time in Hurunui District. Source B+LNZ Economic Service, Sheep and Beef Farm Survey

<sup>4</sup> Note that profitability data in Figure 8 and the meat export data in Figure 13 are for New Zealand. B+LNZ is analysing survey data to obtain a Hurunui district level picture, but was unable to have this information ready for this report. The trends depicted in the NZ totals, are replicated at the regional scale across New Zealand. B+LNZ expects the Hurunui district to also follow this trend.



Figure 11: Change in effective area as a percent of total farm area over time. Source B+LNZ Economic Service, Sheep and Beef Farm Survey

- Flexibility in their systems has allowed sheep and beef farmers to remain resilient and adaptable, allowing innovation that drives these trends in efficiency gains, using improved genetics, fecundity, and feed selection.
- The national annual lambing percentage has increased by about 25 percentage points (from 98 percent in 1987 to around 123 percent in 2015) (see Figure 12 for indicative rates based on Southland), while the average carcass weight of lambs processed has increased by 4kg to 18kg.
- Fluctuations are caused by price volatility, and seasonal conditions, which impact on productivity.

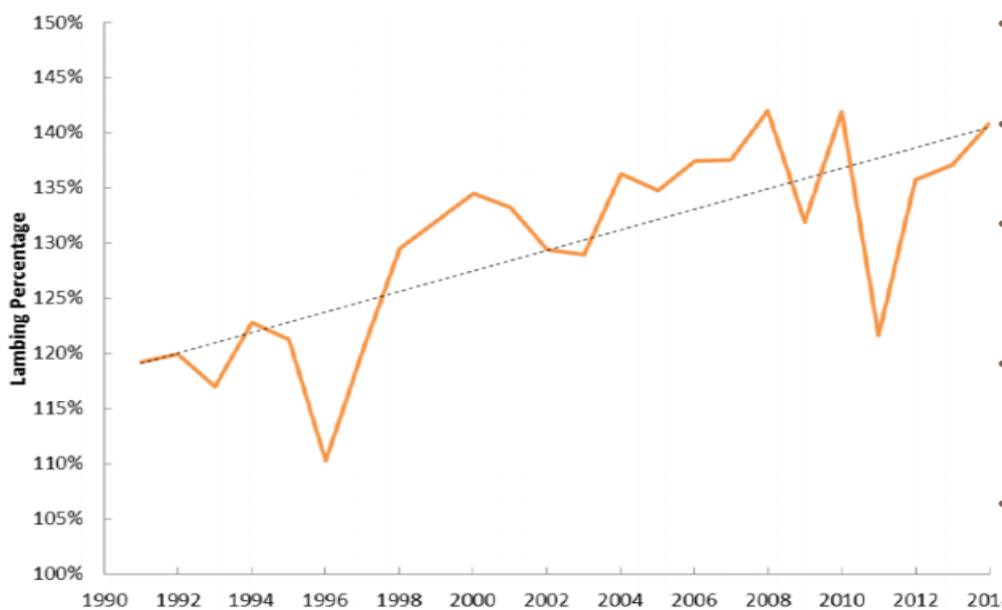


Figure 12: Lambing percentages in Southland between 1990 and 2014. Source B+LNZ Economic Service, Sheep and Beef Farm Survey

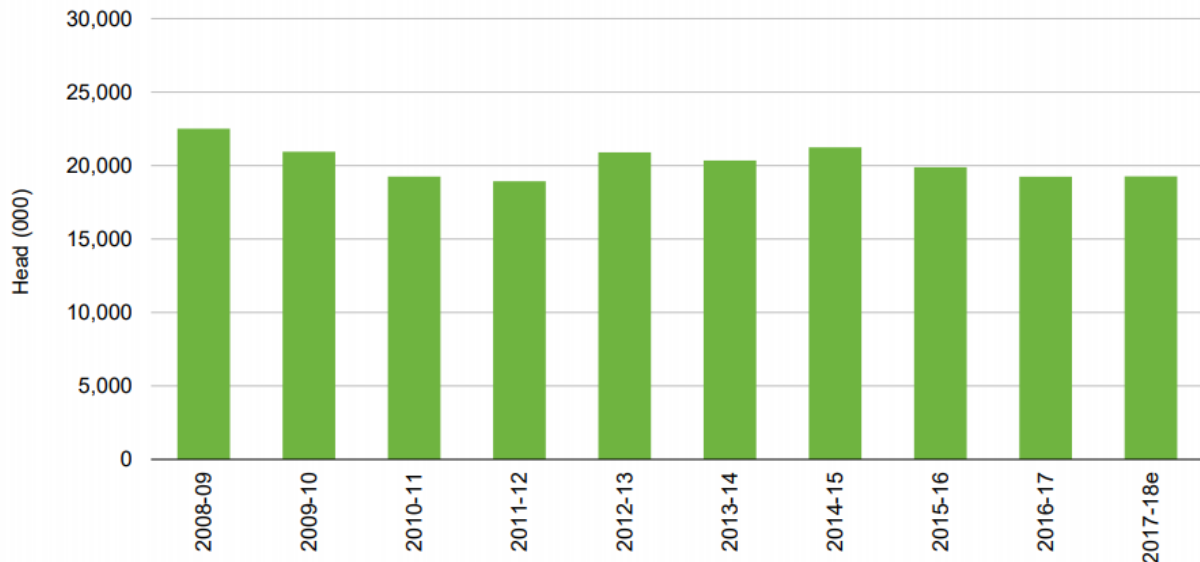


Figure 13: Export lamb slaughter, New Zealand – Year ending September. Source B+LNZ Economic Service, Statistics NZ (e= estimate).

### Winter grazing is limited by physical constraints

- Sheep and beef farmers use winter forage crops where appropriate and physically possible based on the farm's particular circumstances. This is often used to supplement winter feed for their sheep and cattle.
- Many sheep and beef farmers also graze dairy cattle during winter on forage crops on a small proportion of their farm.
- Whether or not a farmer accepts dairy cattle for winter grazing depends on how the weather affects feed and whether or not the farm can support both those cows and the primary livestock over that season (July – June) and the next.
- Figure 14 illustrates the percentage of the land area used for total land used for winter forage crops in the 22 Sheep and Beef Farm Survey farms in Hurunui district.
- For those farms able to support winter forage crops, this can only be done where climate, soil, topography, and staffing resources allow it. The percentages shown in Figure 14 reflect the actual capacity of farms to utilise crops, as climate variability in particular constrain farmers beyond a single season, and the need to be conservative with land and feed discourages extensive investment in crops which might fail due to weather outside of the grazing period at the expense of more reliable pasture.

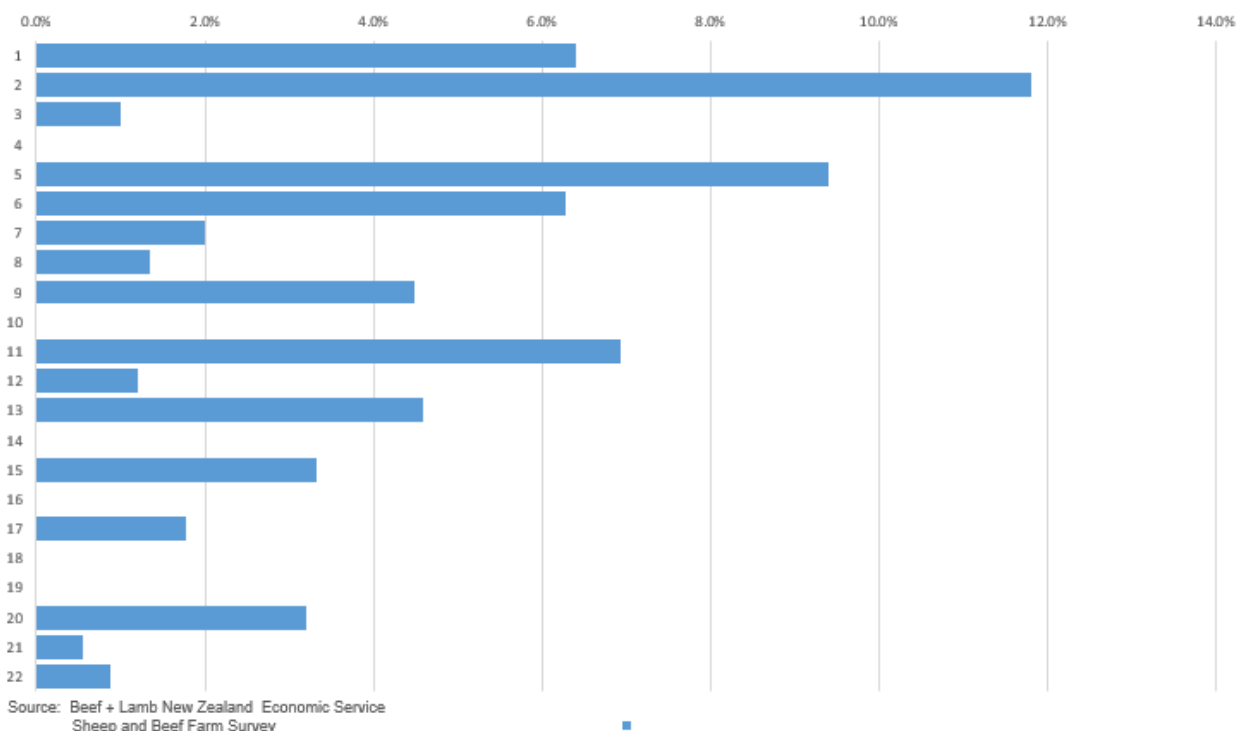


Figure 14: Winter feed area as a percentage of effective area for commercial sheep and beef farms surveyed in Hurunui District for the year 2015-16

- Winter forage crops as a whole tend to constitute a small percentage of the effective area on farms that grow them.
- Unirrigated sheep and beef farms surveyed averaged a winter forage area of 2.7% of the total farm area, with a range from 0% to 15% of the farm.
- The area of winter grazing land averages around 19ha per farm when viewed over a ten-year period from 2006 to 2016 as shown in Figure 15 and Figure 16.

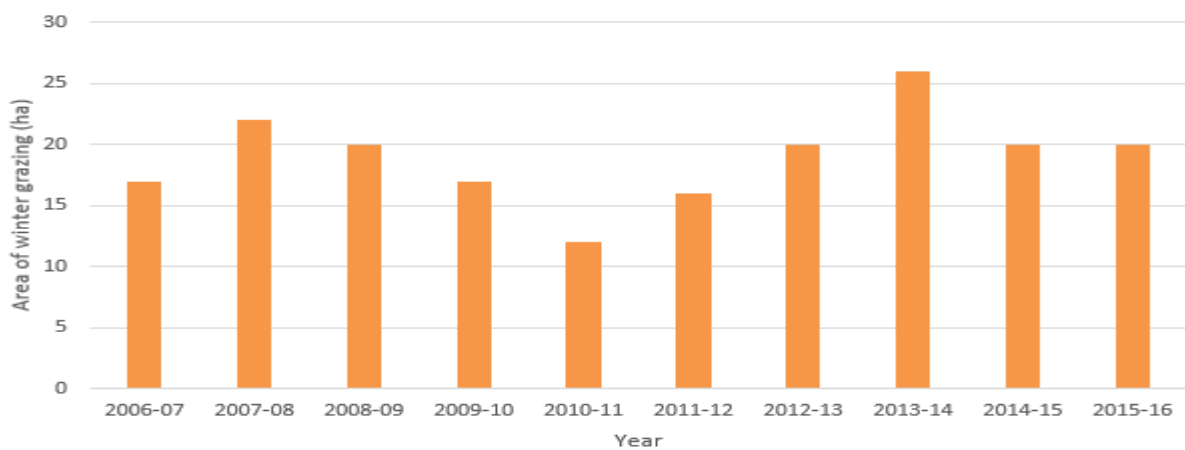


Figure 15 : Area of winter grazing for commercial sheep and beef farms surveyed in Hurunui District



Figure 16: Average area of winter grazing as a percent of effective area

### Summary

- Sheep and beef farmers are key to the fabric of the Hurunui region. They are there for the long haul, and 'family' is a primary reason behind on-farm decisions.
- There is no such thing as a 'typical dryland farm'. Each farming business is as diverse as the landscape and soils being farmed.
- The sector has been working to constantly reduce its environmental footprint over time.
- Winter forage crops are used where it is practically possible to the extent that it is possible, independent of regional planning.
- Profitability is highly variable from year to year. Any new actions tend to be slow, and spread over many years to mitigate the risks associated with being so dependent on the weather.
- To remain a resilient, vibrant and diverse sector, sheep and beef farmers require flexible land use and the ability to optimise their farming business within the environmental limits of their property.