



PRIMARY
FOCUS

REPORT

North and North West Auckland Rural Production

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NORTH AND NORTH WEST AUCKLAND RURAL PRODUCTION

GREENFIELDS STUDY AREA

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1. Introduction

1.1 Background to study

The Auckland Council has commissioned Primary Focus NZ Ltd to undertake a study examining the range and value of rural production activities in four study areas, Warkworth, Silverdale, Whenuapai, Kumeu/Huapai.

The impetus for the study has come from the need for the Auckland Council to accommodate significant urban growth over the next thirty years. It is necessary to understand the value of the range of rural activities in the greenfield areas and the potential impact that accommodating such urban growth may have on Auckland's rural economy.

1.2 Brief

Four Greenfield sites in Warkworth, Silverdale, Whenuapai and Kumeu/Huapai have been identified and are the focus of this study.

The study reports on:

- The range and significance of existing rural production activities in and around the study area.
- The spatially significant groupings of rural industries and rural production activities.
- The economic value of the range of rural production activities and rural industries.
- Commentary on the strength of the cross-sectoral (rural production activities) backward and forward linkages and the significance of these to the Study area.
- Key elements of the rural production systems in the Study area, the role these play in the economy of the Study area and the wider rural and Auckland economy.
- The range of rural production activities using a range of economic indicators.
- High level commentary on different parts of the Study areas with regards to
 - soil type
 - existing uses
 - value per hectare based on current use calculated using a range of indicators

1.3 Extent of Study Area

The four study areas are located across West and North Auckland generating a yield per hectare in turnover from \$5,071 per hectare in the Whenuapai study area to as low as \$1,517 per hectare in the Warkworth study area.

The four study areas comprise a mix of rural production activities ranging from lifestyle areas of below 2ha to economic clusters of nursery plants, flower growing and viticulture.

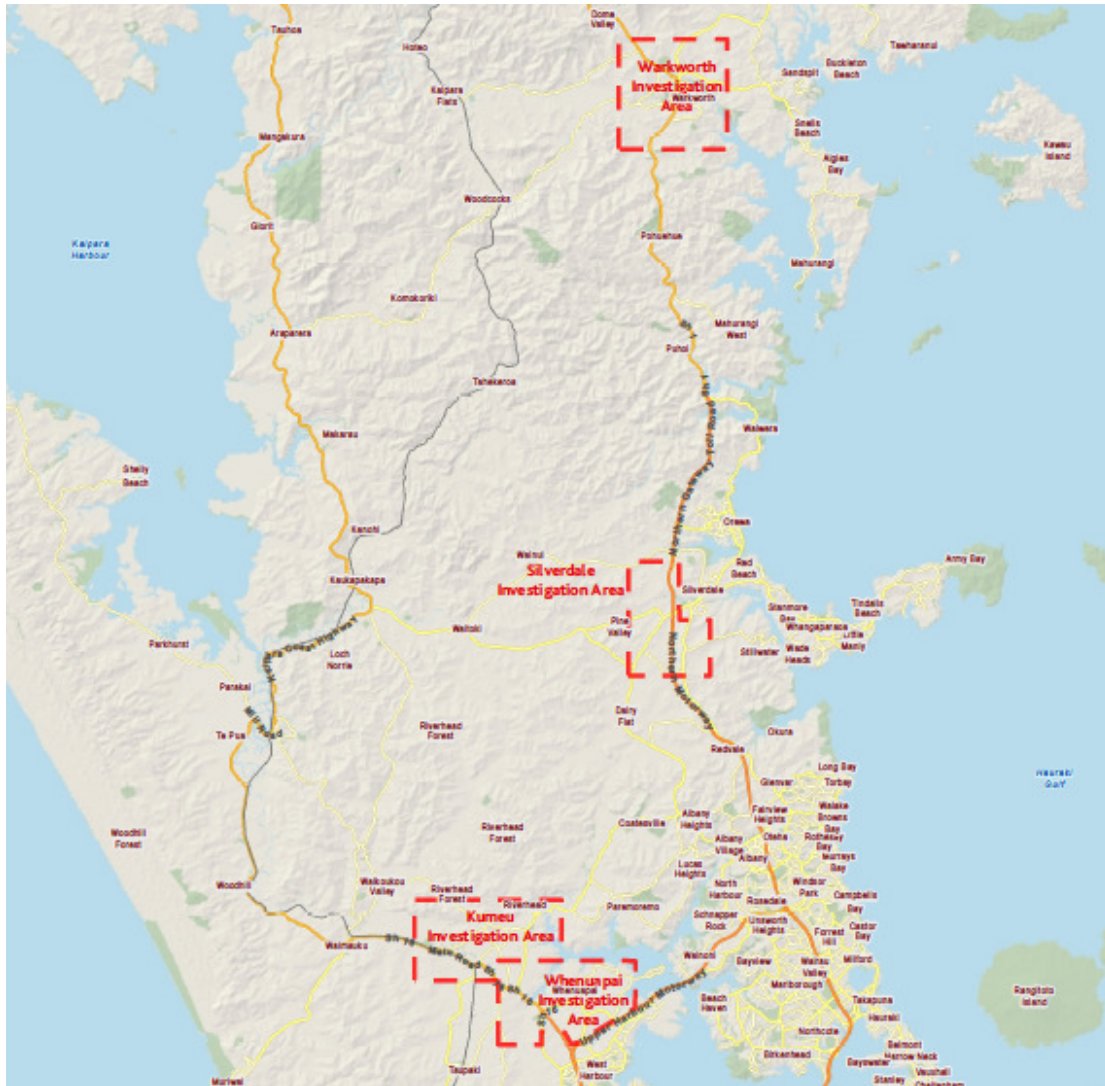


Diagram 1: Four Greenfield Study Areas of Kumeu, Whenuapai, Silverdale and Warkworth¹.

¹ North and West Greenfields Area map, Auckland Council, 11 March 2013

2. Methodology

2.1 Process

The investigations outlined in this report have focused on establishing the value of rural production activities in the study area and general commentary. The process followed when undertaking the project has been:

- Briefing and background discussion with Council Officers
- Review of Agribase data and property valuation data provided by Council
- Review of Statistics NZ data
- Development of a set of 2006-07 regional multipliers (this base year is the most recent available for any region) for Rodney by Geoff Butcher of Butcher Partners Limited
- Detailed site visits and inspections
- Industry interviews with key industries located in the Study area
- Preparation of report and associated mapping

Turnover and FTE rates applied were derived from the Berl 2011 Kel Sanderson, Kelly Dustow "Assessment of The Economic Value of Rural Productive Potential in the Greater Otaki Area Study as per figure 1 below.

	Farming Type	FTE/\$m	Turnover \$/ha
API	BEEKEEPING	7	10,000
ARA	ARABLE CROPPING	5	1,000
BEF	BEEF CATTLE	5	1,000
DAI	DAIRY CATTLE	4.5	4,639
DEE	DEER FARMING	5.7	1,000
DOG	DOGS		1,000
DRY	DAIRY DRY STOCK	4.5	4,639
EMU	EMU FARMING	4.3	1,000
FLO	FLOWERS	7.5	21,000
FOR	FORESTRY	4.3	500
FRU	FRUIT GROWING	7.5	21,000
GOA	GOAT FARMING	5	1,000
GRA	GRAZING OTHER STOCK	5	1,000
HOR	HORSE FARMING BREEDING	5.7	10,000
LIF	LIFESTYLE BLOCK	4.3	500
NAT	NATIVE BUSH		0
NEW	NEW RECORD		0

NOF	NOT FARMED		0
NUR	PLANT NURSERY	7.5	21,000
OAN	OTHER LIVESTOCK	5	1,000
OPL	OTHER PLANTED TYPES	7.5	500
OST	OSTRICH BIRD FARMING	4.3	1,000
OTH	ENTERPRISES NOT COVERED	4	
PIG	PIG FARMING	5	4,000
POU	POULTRY FARMING	5.7	10,000
SHF	SHEEP FARMING	5	1,000
SNB	SHEEP & BEEF	5	1,000
TOU	TOURISM	4	0
UNS	UNSPECIFIED		0
VEG	VEGETABLE GROWING	7.5	21,000
VIT	VITICULTURE	7.5	21,000

Figure 1: Summary of the Turnover and FTE data used for all areas²

Direct Margin has been calculated using the Multipliers for Rodney and Waitakere figures supplied by Butcher and Partners, Christchurch derived from the 2006-07 rural census.

Former Rodney District

Land Use Type	Margin
Horticulture and Fruit Growing	40%
Dry Stock and Cropping	40%
Dairy Cattle Farming	48%
Other Farming	25%

Figure 2 Land use type and associated direct margin – former Rodney district

Former Waitakere District

Land Use Type	Margin
Horticulture and Fruit Growing	40%
Dry Stock and Cropping	40%
Dairy Cattle Farming	100%
Other Farming	25%

Figure 3 Land use type and associated direct margin – former Waitakere district

² Berl 2011 Kel Sanderson, Kelly Dustow "Assessment of The Economic Value of Rural Productive Potential in the Greater Otaki Area Study

The dairy margin of 100% in Figure 3 indicates a 100% return over and above costs. With only 75ha of dairying in the Greenfield Study area in the West, this could be one small efficient farm.

Lifestyle blocks are prevalent throughout the four Greenfield study areas. Because of the diversity of production on lifestyle blocks it was felt that a mid-point figure needed to be chosen due to the extreme range of production values that were found in previous studies. For example: animal grazing returns range from \$38/ha - \$1000/ha and production of plants from \$60/ha - \$35,000/ha.

For small blocks of less than 2 ha it is not uncommon for no production to be gained.

Lifestyle block information was derived from MAF Information paper no. 53, by Robert Sanson, Andrew Cook and John Fairweather, "A Study of Smallholdings and their Owners" December 2004.

A figure of \$500/ha value was chosen and used for all lifestyle block land area contained in the four Greenfield areas. The range of earnings per ha for lifestyle blocks is further discussed in section 8 of this report.

2.2 Limitations to Study

This study has been limited to project brief and access to AgriBase and Stats NZ data.

Agribase data supplied and used for the study is based on data collected from each property over the past 16 years, from 1996 to 2012. Properties have not been interviewed more than once over that time and changes in farm use are likely to have occurred with some of them.

Land areas relating to the Greenfield Study areas have been provided by the Auckland Council. Totals of land areas vary to area boundary due to titles going beyond Greenfield boundaries.

The valuation of the rural production value is not a precise science, it can vary over time, between geographical areas and between farming types. The international commodity prices are still the major driving force for determining the yearly value of rural production. The last 12 months is a good example of how rapid changes can occur.

For the purpose of this study, we have used information from a combination of sources. By applying the same methodology to each of the Greenfield sites we have a basis for comparison and a rural production value at a point in time.

The hectare of each farming type were provided by the Auckland Council based on analysis of Agribase Data pertaining to the Greenfield sites.

The method to value rural production was carried out by taking the land area of various farming types and applying the "typical" turnover per hectare earned from these farming types. This information was obtained from various sources however the Berl Paper Ref 5118, proved very useful due to it's recent study (Sept 2011) and the variety of farming systems which it valued. For farming systems outside the categories described in the Berl study, specific industry information was obtained where available.

A similar process was also used for valuing value added (GDP) and quantifying employment (FTE). Turnover and FTE rates per hectare were applied using the Berl 2011 Kel Sanderson, Kelly Dustow report. As a result seasonal labour fluctuations have not been picked up and FTEs may seem lower than expected. In some cases land use pertaining to intense activities such as processing may have significantly higher FTEs than reported.

In most cases a large percentage of the land in the Greenfield sites is currently classified as Lifestyle Blocks. Previous studies show that production from these can vary particularly

when the blocks are very small (0- 2ha). These are the most common size blocks in each of the four study areas. By applying a standard turnover per hectare to all lifestyle blocks regardless of block size we believe we have over, rather than undervalued the production turnover obtained from Lifestyle blocks.

Lifestyle blocks have all been treated the same. The \$500/ha output would be high for many, however this would be offset by the high spending of many of these blocks.

It was found during the site investigation around that in particular the areas of Kumeu/Huapai and Whenuapai 25% - 33% of lifestyle blocks contained equine animals. This trend follows what was found in the Auckland South Greenfields Study area. The expenditure on equine animals is far in excess of the average output we have allowed for.

In order to be able to compare the Greenfield sites of North, North West and South Auckland, we have used consistent information for calculating out the value of rural production. It is only the area of land for each farming type that has been changed according to the data provided by the Auckland Council. Please note then that the higher production capabilities of higher class land has not been taken into account but rather discussed in the commentary under section 9 and 10 of this report.

The Input Output analysis information is available down to District level. This information was obtained for the Franklin, Waitakere and Rodney districts. However as the study is looking at specific sites in each of the districts and these areas are only small footprints of the total district we have chosen to use the same inputs outputs for each of the Greenfield sites' related district.

In summary the main determinant of the rural production value is the area of land involved in high value farming types per hectare, such as horticulture and to a lesser extent dairying. Much of the land area is already in lifestyle blocks, which in general return lower turnover per hectare returns than some intensive fulltime farming systems. Further work is needed to look at what value is possible and what is required to obtain this from lifestyle blocks, however this is outside the scope of this study.

The multiplier information used is based on the 2006-07 rural census. Calculation of the FTE labour was scaled back by a 12.5% inflation factor. The 12.5% figure for inflation was suggested by Geoff Butcher of Butcher and Partners. The employment tables report results as at 2006-07 prices. The outputs calculated in this report reflect 2011-12 prices. To bring these outputs back to 2006-07, five years deflator at 2.5% general inflation was calculated thus the 12.5% inflation factor was used.

3. Summary

Four greenfield sites have been identified for the Study, Whenuapai, Kumeu/Huapai, Silverdale and Warkworth. Of the four sites, the land area for Whenuapai makes up 20% of the total study area, Kumeu/Huapai makes up 30%, Silverdale makes up 22% and Warkworth makes up 28%.

Whenuapai makes up 34% of the turnover and 12% of FTE's of the total study area, Kumeu/Huapai 40% turnover with 42% of the FTEs, Silverdale 12% turnover with 9% FTEs and Warkworth makes up 14% of turnover and 12% of the FTEs.

Figure 4

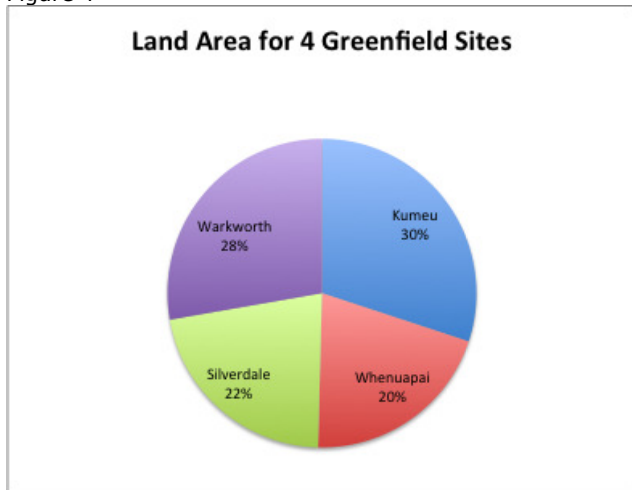


Figure 5



Figure 4: Total land area of 4 greenfield sites % split according to area.

Figure 5: Total FTE of 4 greenfield sites % split according to area.

Figure 6: Total Turnover of 4 greenfield sites % split according to area.

Figure 6

SUMMARY OF 4 GREENFIELD SITES			
		TOTAL TURNOVER	
SITE	HECTARES	(\$000s)	FTE
Kumeu	3659	14613	93
Whenuapai	2473	12542	82
Silverdale	2657	4210	20
Warkworth	3377	5123	27
Total	12166	36488	222

Figure 7 Summary of 4 Greenfield study area sites – actual figures

SUMMARY OF 4 GREENFIELD SITES			
SITE	LAND AREA	\$ TURNOVER OF TOTAL STUDY AREA	FTE OF TOTAL STUDY AREA
Kumeu	30%	40%	42%
Whenuapai	20%	34%	37%
Silverdale	22%	12%	9%
Warkworth	28%	14%	12%

Figure 8 Summary of 4 Greenfield Study area sites by %.

SITE	Turnover per hectare (\$)	FTE per hectare
Kumeu	3,993	0.025
Whenuapai	5,071	0.033
Silverdale	1,584	0.007
Warkworth	1,517	0.008

Figure 9 Table showing turnover per hectare (\$) and no of FTEs per hectare in each of the four Greenfield study areas.

Turnover per hectare (\$) is highest in Whenuapai, with Kumeu following at the 2nd highest at \$3,993 to Silverdale at \$1,584 and Warkworth having the lowest rural production turnover per hectare at \$1,517 per hectare.

Whenuapai and Kumeu also have higher FTEs' per hectare compared with Silverdale and Warkworth.

The dominant rural production sector in the Greenfield study areas is Fruit, Flower growing and Nurseries (includes viticulture). Figure 10 below shows the extent of the industry across the four Greenfield study areas.

FRUIT, FLOWER GROWING, NURSERIES			
SITE	% LAND USE	%TURNOVER	%FTES
Kumeu/Huapai	11%	59%	61%
Whenuapai	15%	64%	65%
Silverdale	1%	9%	15%
Warkworth	2%	21%	26%

Figure 10: Fruit, flower growing, viticulture % of land use, turnover and FTES across the four greenfields study areas.

3.1 Rodney's rural economy

In 2009, Property Economics undertook a Rural Economy and Lifestyle block trend study for the Rodney District Council. High growth sectors for the period 2000 – 2007 identified in the study included:

- Services to agriculture (172 employees)
- Plant nurseries (129 employees)
- Grape Growing (82 employees)

Agricultural land use trends were also monitored as part of the study undertaken by Property Economics. The key trends to note are:

- A decrease in the number of agricultural properties in the rural areas of Rodney from 4,538 to 3,926 equating to a reduction of 100 agricultural properties annually.
- An increase in lifestyle block properties from 6,473 to 8,491, equivalent to 340 additional lifestyle blocks annually.
- Over the 2002 – 2008 period 10,280 hectares of land was removed from agricultural production.
- Over the same period there was an addition of 6,330ha of lifestyle block properties, indicating that the average size of new lifestyle blocks in the rural areas of Rodney are expected to be around 3ha in size.

ANZSIC CATEGORY	KUMEU		RURAL 2*		WARKWORTH	
	2007	Growth	2007	Growth	2007	Growth
Plant nurseries	26	6	34	7	0	-9
Cut Flower & Flower seed growing	36	12	12	6	0	-3
Vegetable growing	30	-48	21	-38	0	0
Grape growing	21	12	6	6	30	24
Apple & Pear growing	30	-12	3	-9	9	9
Kiwi Fruit growing	12	3	0	0	0	0
Berry Fruit growing	100	18	12	9	0	0
Other fruit growing	6	6	9	-9	9	6
Sheep farming	0	-3	3	-3	12	9
Beef cattle farming	3	0	15	12	6	0
Dairy cattle farming	12	3	3	-6	6	-9

Figure 11 ANZSIC 2nd level Agricultural Employment Trends (2007 & 2002 – 2007 growth)³

*Rural 2 comprises part of the Whenuapai area of Greenfields study area

³ Rodney District Rural Economy & Lifestyle Block Trend Study, Property Economics 2009.

Industry interviews and site investigations confirm that the cut flower, flower seed growing and grape growing sectors are an economic cluster in the Whenuapai area. The table above, figure 10 supports this finding with employment growth experienced in each of these sectors in the Kumeu/Huapai and Whenuapai areas.

It is worth noting however that in 2008 the national grape harvest soared to 285,000 tonnes, creating an oversupply eroding grape and land prices, before decreasing to 266,000 tonnes in 2010.⁴ This is consistent with local growers turnover and employment records derived from industry interviews. These show a decline in employment, since the 2007 trends reported by Property Economics.

3.2 Equine Industry

The equine industry in the West Auckland study area in particular Whenuapai comprises mostly lifestyle activity, with some properties offering agistment (horse grazing). It is difficult to qualify the economic contribution these lifestyle equestrian properties generate however according to Alex Matheson, author of the Economic Impact Report on the New Zealand Sporthorse Industry', the average cost of keeping a horse is \$12,456.71 per annum.

4. Whenuapai

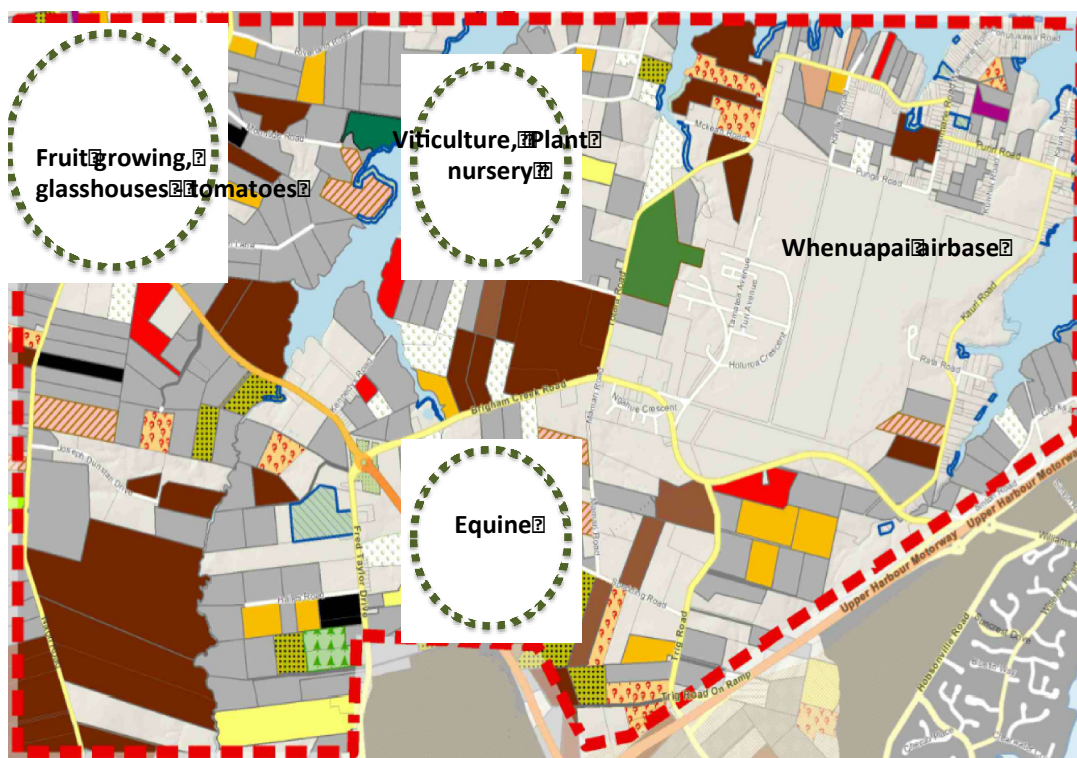


Diagram 2: Whenuapai Study area⁵ showing economic clusters

The Whenuapai study area has two economic clusters areas that focus on viticulture, plants, fruit growing and glasshouses.

⁴ http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10772865

⁵ Auckland Council, Whenuapai Study area according to AgriBase dataset - GIS

4.1 Existing Productive Use

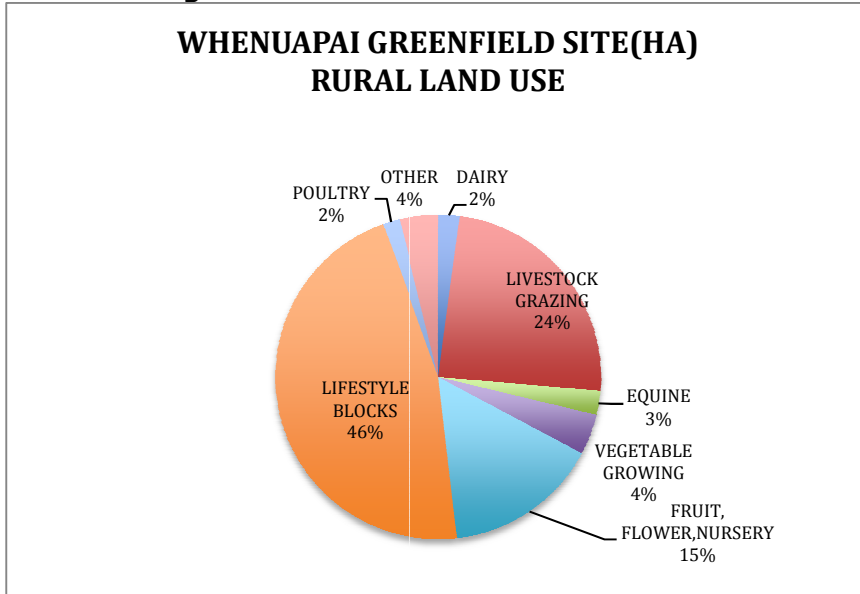


Figure 12 Land use percentage by type in the Whenuapai study area

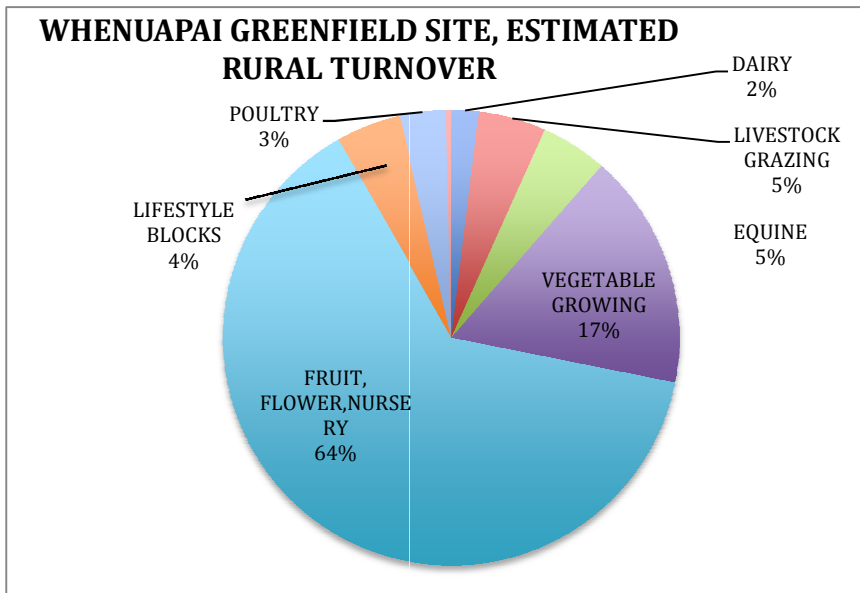


Figure 13 Turnover percentage by land use type for the Whenuapai study area

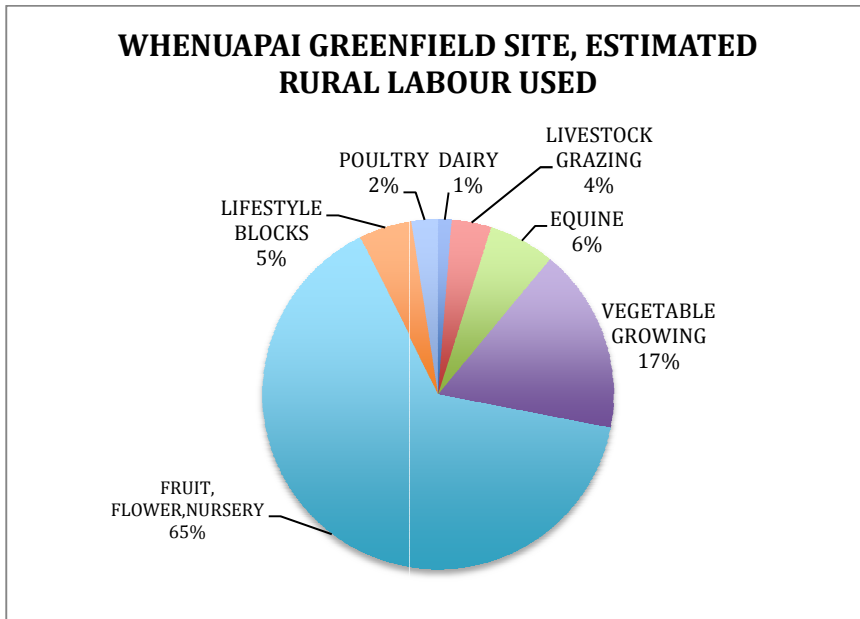


Figure 14 FTE % by land use type for the Whenuapai study area

LAND USE IN WHENUAPAI			
		TURNOVER	
	HECTARES	\$000's	FTE
DAIRY	52	241	1
LIVESTOCK GRAZING	600	600	3
EQUINE	59	590	5
VEGETABLE GROWING	100	2100	14
FRUIT, FLOWER, NURSERY	380	7980	53
LIFESTYLE BLOCKS	1146	573	4
POULTRY	41	410	2
OTHER	95	48	0
TOTAL	2473	12542	82

Figure 15 Measure by land use by hectare, turnover and FTE for the Whenuapai study area

4.2 Significance of the Whenuapai study area to the local economy

In the Whenuapai study area, fruit, flowers and nurseries make up 15% of the land use, have a turnover of 64% and 65% of the total FTEs. Vegetable growing make up 4% of the land use, have a turnover of 17% and 17% of FTEs. Equine make up 3% of the land use, have a turnover of 5% and have 6% of the FTEs in the study area.

In contrast, livestock grazing make up 24% of land use, 5% of turnover and 4% of the FTEs in the study area. Lifestyle blocks make up 46% of the land use, have a turnover of 4% and have 5% of the FTEs.

It is worth noting that a similar trend can be seen in Whenuapai as in Karaka where as many as 33% of lifestyle blocks keep horses as part of their lifestyle activity. The turnover and FTE figures for this lifestyle industry remain unmeasured as it is not possible to determine the number of horses that are located in the study area. As Stats NZ record GST registered horses only, an accurate figure for lifestyle unregistered horses would be difficult to obtain.

The figures in the table measuring land use by hectare, turnover and FTE (Figure 14) clearly depict the fruit, flower and nursery growing industries as the most significant sector in the Whenuapai area. These figures were confirmed by the site investigation undertaken by the authors of this report.

The Whenuapai study area is also home to a supplier of vines for establishing vineyards. This business is particularly unique in that it has facilities for the hot water treatment of root stocks killing harmful bacteria. These facilities can be used by some fruits to combat bacterial viruses and is currently being tested by the industry body. As a result the business is expanding as a research centre that can also be used to combat disease in various plants.

In 2006, the business was producing two million vines per year. Due to the oversupply of wine, the business now produces only 3,000 vines per year. This has resulted in a reduction of staff from 75 to 2. This is consistent with nationwide reports regarding the state of the wine industry during the surplus period. The wine industry in New Zealand is recovering and the business is expected to produce more than 100,000 vines over the next two years. A business such as this, is unique to the Auckland region, draws on its proximity to markets and the length of the Auckland growing season.

5. Kumeu/Huapai



Diagram 3 Kumeu/Huapai study area showing economic clusters

5.1 Existing Productive Land Use

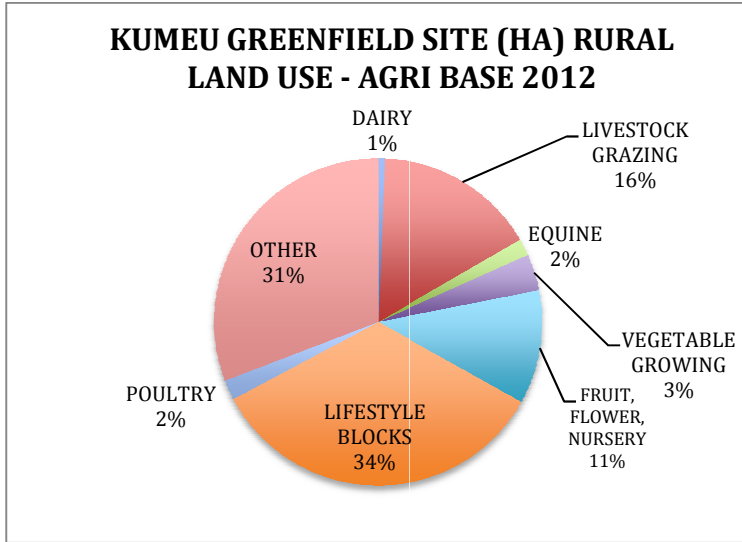


Figure 16 Land use percentage by type in the Kumeu/Huapai study area

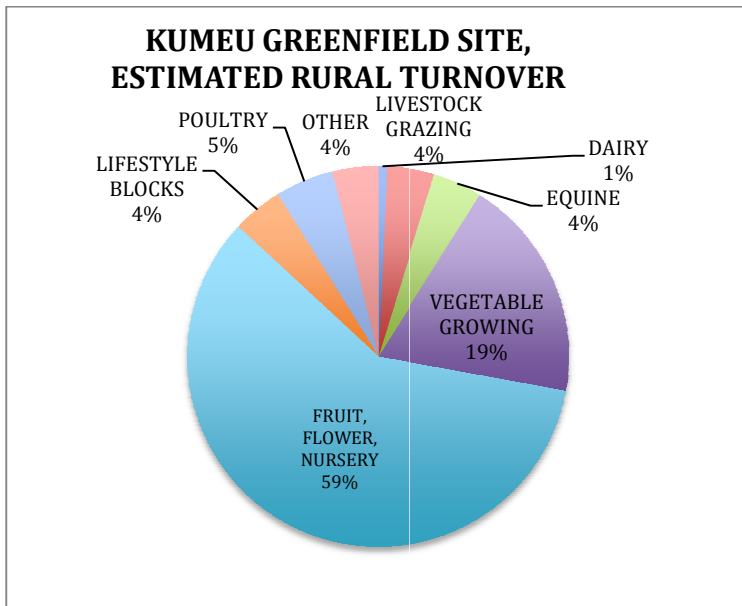


Figure 17 Turnover percentage by land use type for the Kumeu/Huapai study area

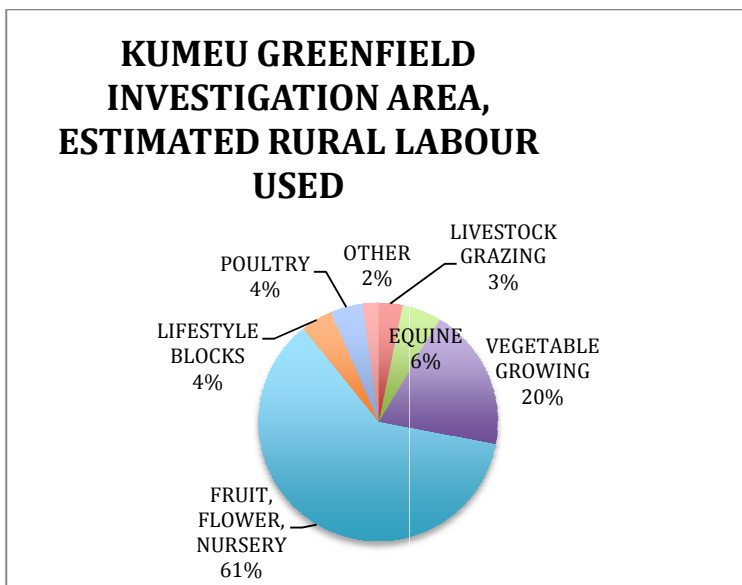


Figure 18 FTE % by land use type for the Kumeu/Huapai study area

LAND USE IN KUMEU			
		TURNOVER	
	HECTARES	\$000's	FTE
DAIRY	23	107	0
LIVESTOCK GRAZING	585	585	3
EQUINE	61	610	5
VEGETABLE GROWING	132	2772	18
FRUIT, FLOWER, NURSERY	411	8631	57
LIFESTYLE BLOCKS	1246	623	4
POULTRY	72	720	4
OTHER	1129	565	2
TOTAL	3659	14613	93

Figure 19 Measure by land use type by hectare, turnover and FTE for the Kumeu/Huapai study area

5.2 Significance of Kumeu/Huapai study area to the local economy

In the Kumeu greenfields study area, fruit, flower, nursery make up 11% of the land use, have a turnover of 59% and 61% of the FTEs in the study area. Vegetable growing make up 3% of the land use, 19% of turnover and 20% of the FTEs. Poultry make up 2% of the land use, 5% of turnover and 4% of the FTEs in study area.

In contrast, livestock grazing make up 16% of the land use, 4% of turnover and 3% of the FTEs. Lifestyle blocks make up 34% of the land use, 4% of turnover and 4% of FTEs.

Kumeu is home to a thriving plant nursery and flower growing economic cluster as depicted in Diagram 3. A cluster of established vineyards and winemaking as well as boutique vineyards are located in the Kumeu study area. These vineyards form part of a tourism cluster, "Kumeu Wine Country"⁶ as depicted in Diagram 4.

The plant nursery and flower growing economic cluster in Kumeu is often referred to as being located in the golden triangle of good soil by local growers.⁷ Gas and water is also easily accessible. One grower produces more than two million roses and 100,000 carnations in this region. Approximately 2 – 3% of this make up international exports. Traditionally exports have been significantly higher, however third world countries have been producing flowers and as a result New Zealand's flower exports have reduced significantly.⁸

⁶ <http://www.kumeuwinecountry.co.nz>

⁷ Theo van Lier, Van Lier Nurseries

⁸ Theo van Lier, Van Lier Nurseries



Diagram 4 Cluster of wineries located in the Kumeu/Huapai and Whenuapai greenfields study area

Destinations such as Kumeu Cellars, Nobilo Wine Group, Coopers Creek and Kumeu River Wines form part of the tourism wine producing cluster located in the Kumeu/Huapai study area. This is a well-established and thriving economic cluster.

6. Silverdale

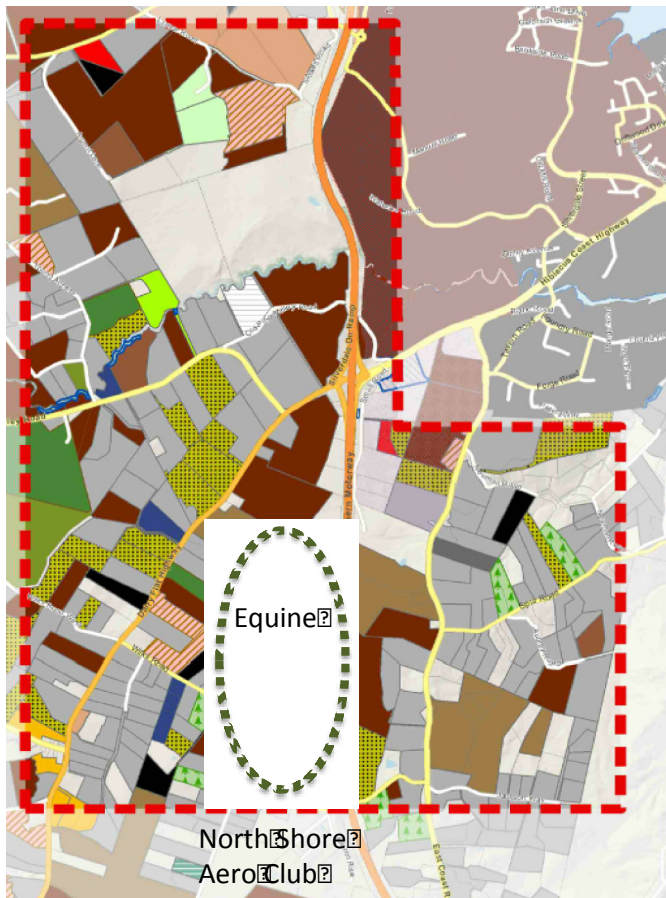


Diagram 5 Silverdale Greenfields Study area showing economic cluster

6.1 Existing Productive Land Use

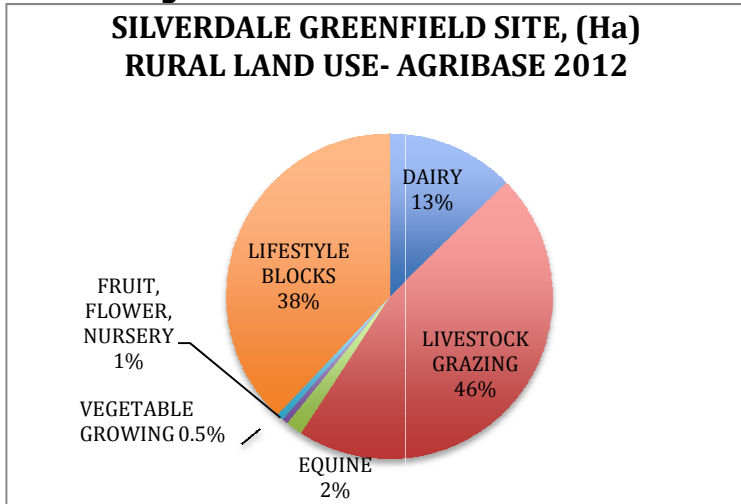
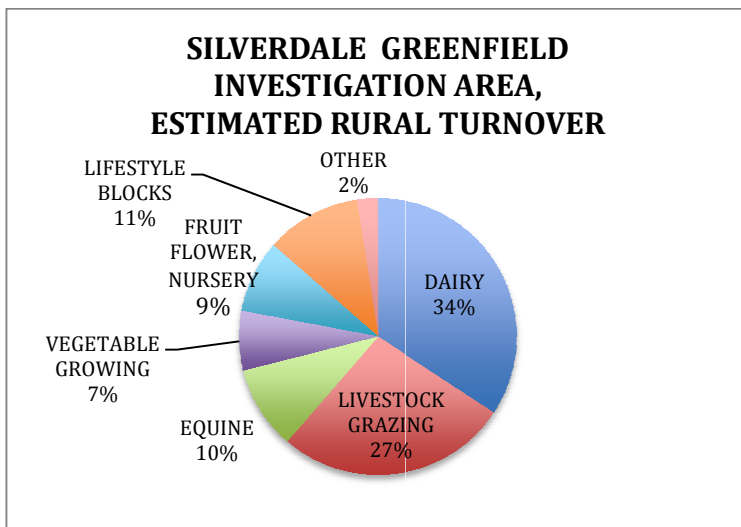


Figure 20 Land use percentage by type in the Silverdale study area



Estimated Rural Turnover % by land use Silverdale area

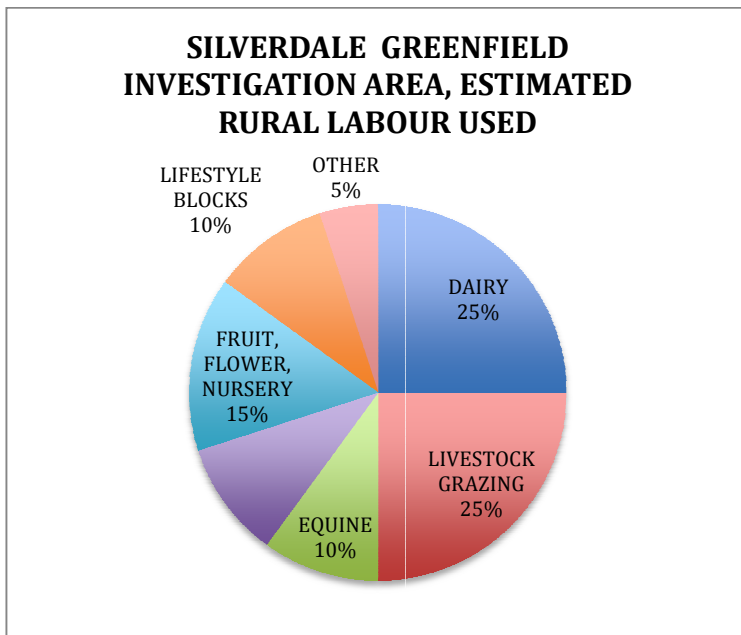


Figure 22 FTE % by land use type for the Silverdale study area

LAND USE IN SILVERDALE STUDY AREA			
		TURNOVER	
	HECTARES	\$000's	FTE
DAIRY	311	1442	5
LIVESTOCK GRAZING	1138	1138	5
EQUINE	41	410	2
VEGETABLE GROWING	14	294	2
FRUIT, FLOWER, NURSERY	17	357	3
LIFESTYLE BLOCKS	931	466	2
POULTRY	0	0	0
OTHER	205	103	1
TOTAL	2657	4210	20

Figure 23 Measure by land use type by hectare, turnover and FTE for the Silverdale study area

6.2 Significance of Silverdale study area to the local economy

In the Silverdale study area, equine makes up 2% of land use, has a turnover of 20% and 10% of the total FTEs. Dairy makes up 13% of land use, has a turnover of 34% and employs 25% of the FTEs in the study area. Fruit, flowers and nursery make up 1% of land use, 9% of turnover and 15% of FTEs. Vegetable growing makes up 0.5% of land use, 7% of turnover and 10% of FTEs.

In contrast, lifestyle blocks make up 38% of land use, 11% of turnover and 10% of FTEs. Livestock grazing make up 46% of rural land use, 27% of turnover and 25% of FTEs.

Whilst the Silverdale study area does not seem to have any significant economic clusters it is worth noting the activities of the North Shore Aero Club located on the boundary of the Silverdale greenfields study area.

The North Shore Aero Club is an established small plane airfield servicing the Auckland market. The club has approximately 500 members with the majority of its members coming from north of Auckland. During the summer, flying time averages about 350 hours per month. The club can accommodate up to 850 members and has previously in the 1970's and 1980's enjoyed such a sizeable membership.

The location of the Aero Club has attracted a cluster of similar activity such as pilot training, scenic flights, crop spraying and the location of North Shore Helicopters established since 1983 with a significant fleet of helicopters.

7. Warkworth



Diagram 6 Warkworth Greenfields Study area

7.1 Existing Productive Land Use

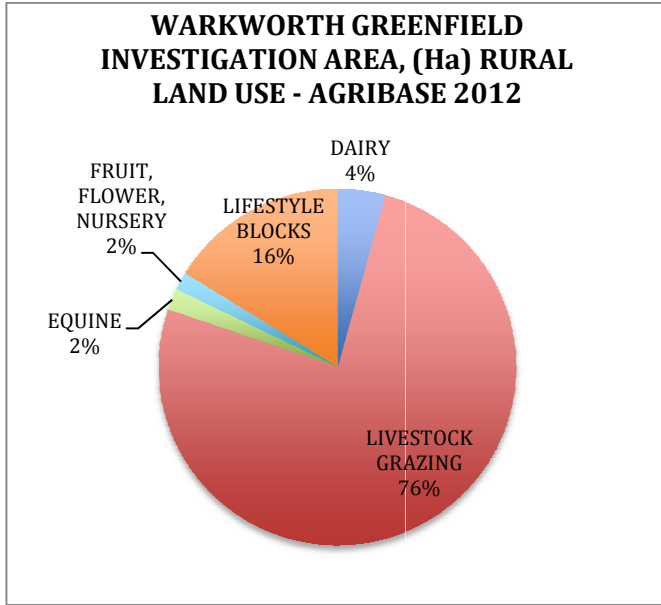


Figure 24 Land use percentage by type in the Warkworth study area

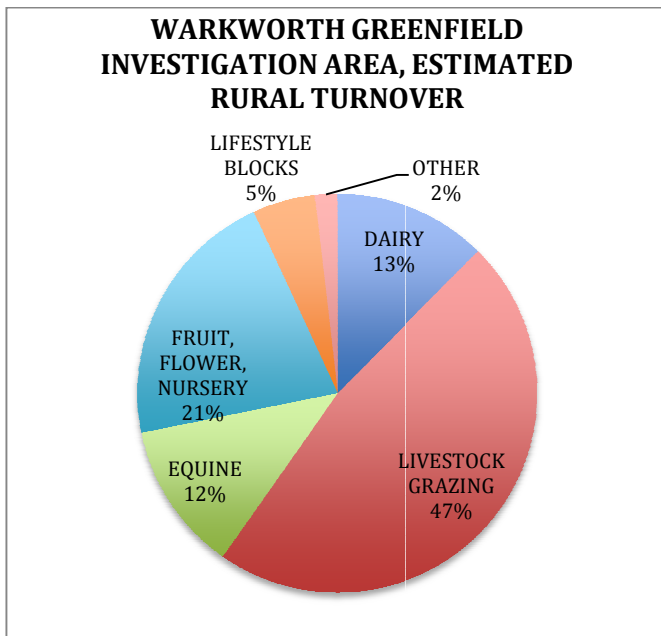


Figure 25 Turnover percentage by land use type for the Warkworth study area

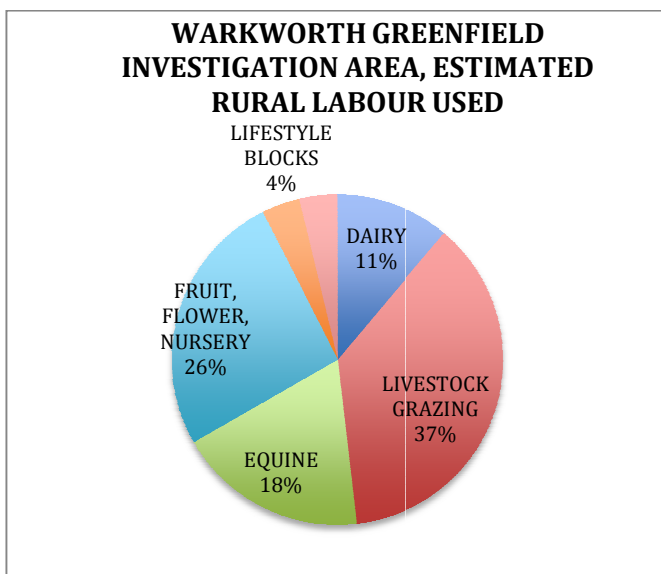


Figure 26 FTE % by land use type for the Warkworth study area

LAND USE IN THE WARKWORTH STUDY AREA			
	HECTARES	TURNOVER	
		\$000's	FTE
DAIRY	137	635	3
LIVESTOCK GRAZING	2424	2424	10
EQUINE	62	620	5
VEGETABLE GROWING	0	0	0
FRUIT, FLOWER, NURSERY	52	1092	7
LIFESTYLE BLOCKS	517	259	1
POULTRY	0	0	0
OTHER	185	93	1
TOTAL	3377	5123	27

Figure 27 Measure by land use type by hectare, turnover and FTE for the Warkworth study area

7.2 Significance of Warkworth study area to the local economy

In the Warkworth study area fruit, flower, nursery (includes viticulture) makes up 2% of the land use, 21% of turnover and employs 26% of the FTEs in the study area. The equine industry makes up 2% of land use, 12% of turnover and 18% of FTEs. Dairy makes up 4% of land use, 13% of turnover and 11% of FTEs.

Lifestyle blocks make 16% of land use, 5% of turnover and 4% of FTEs. Livestock grazing make up 76% of land use, 47% of turnover and 37% of FTEs.

No economic clusters of significance were noted in the Warkworth study area. Ransom Winery, a boutique family owned vineyard is located within the study area. This vineyard is the starting point for the Matakana Wine Trail.

8. Lifestyle blocks

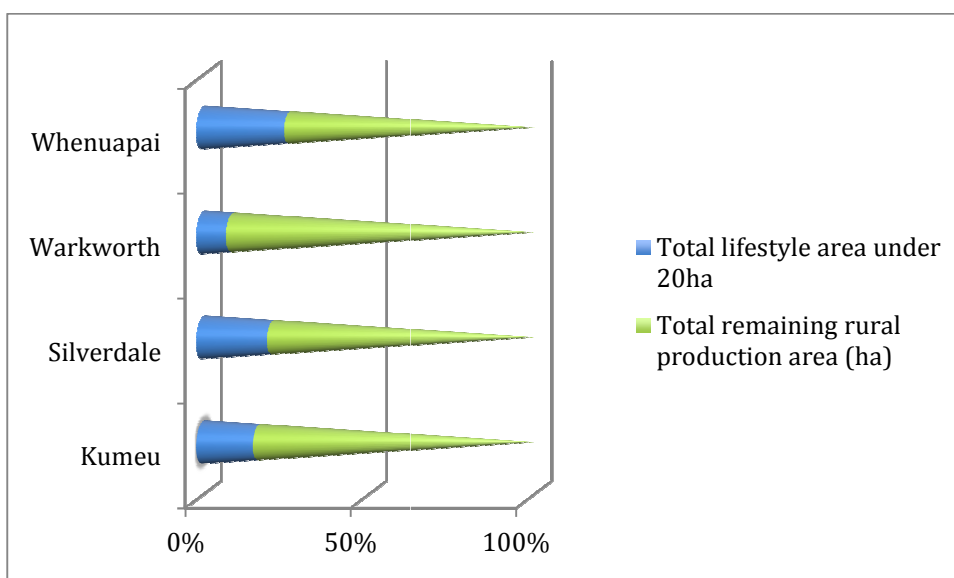


Figure 28 Lifestyle blocks under 20ha as a percentage of the total rural production area per study area

Lifestyle blocks of under 20ha take up the following percentage of rural production land in the study areas⁹:

Kumeu/Huapai 16.73%

Warkworth 8.81%

Silverdale 20.91%

Whenuapai 25.97%

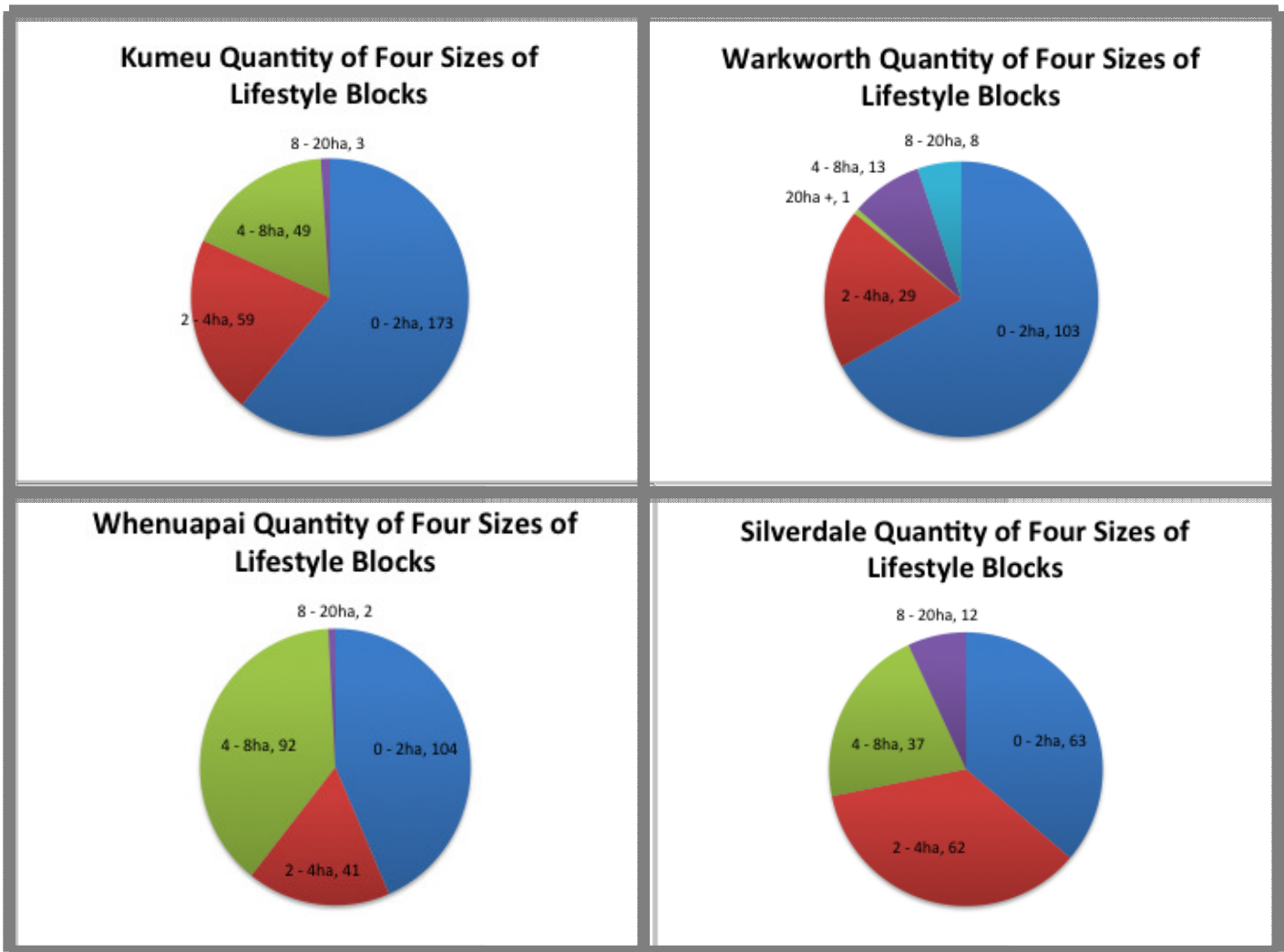


Figure 29 Quantity of lifestyle blocks ranging from 0-2ha to 8-20ha¹⁰

There is insufficient data to extrapolate the productive value of lifestyle blocks in the four study areas. However it is believed that the following land use types would generate earnings per hectare as depicted in the table overleaf. Refer figure 30.

⁹ Auckland Council data

¹⁰ Auckland Council data

Production Potential of Lifestyle Blocks using various types of farming	
Land Use Type (farming type)	Earnings \$/ha
Home Consumption	300
Grazing	400
Sheep & Beef	700
Cropping	700
Horticulture	5,000
Intensive	10,000

Figure 30 Estimated earnings per hectare for Lifestyle blocks by land use type¹¹

It is believed that lifestyle blocks under 4ha are unlikely to be highly productive with the exception of glasshouse activity.

In the study areas lifestyle blocks under 4ha make up the following percentage taking into account lifestyle blocks with a range from 0 – 20ha:

Whenuapai 31.20%

Warkworth 49.53%

Silverdale 45.90%

Kumeu 56.4%

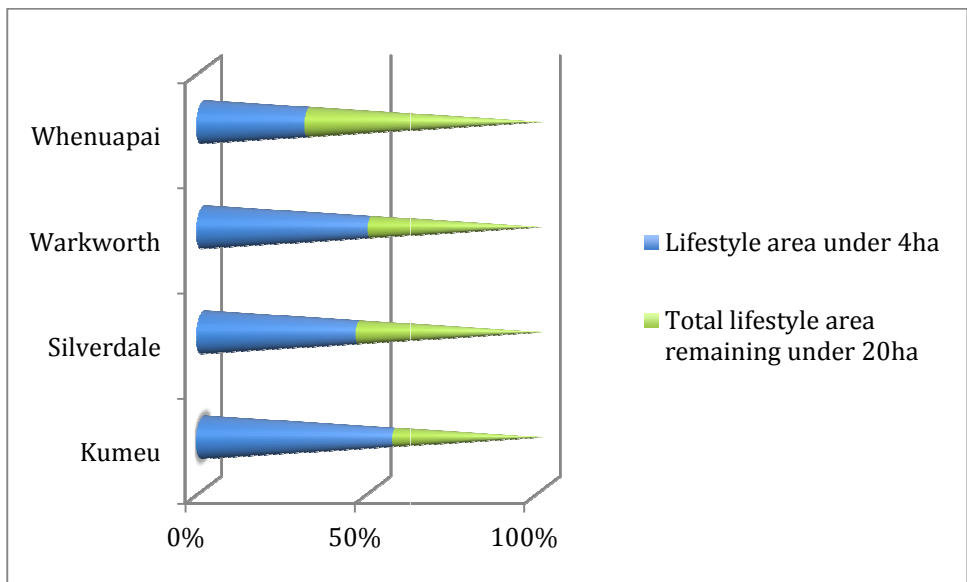


Figure 31 Lifestyle blocks under 4ha as a portion of the total area under 20ha

¹¹ Auckland South Rural Production Greenfields Study – Primary Focus November 2012



Diagram 7 Lot sizes of 0 – 2ha and 2 – 8ha – Warkworth study area¹

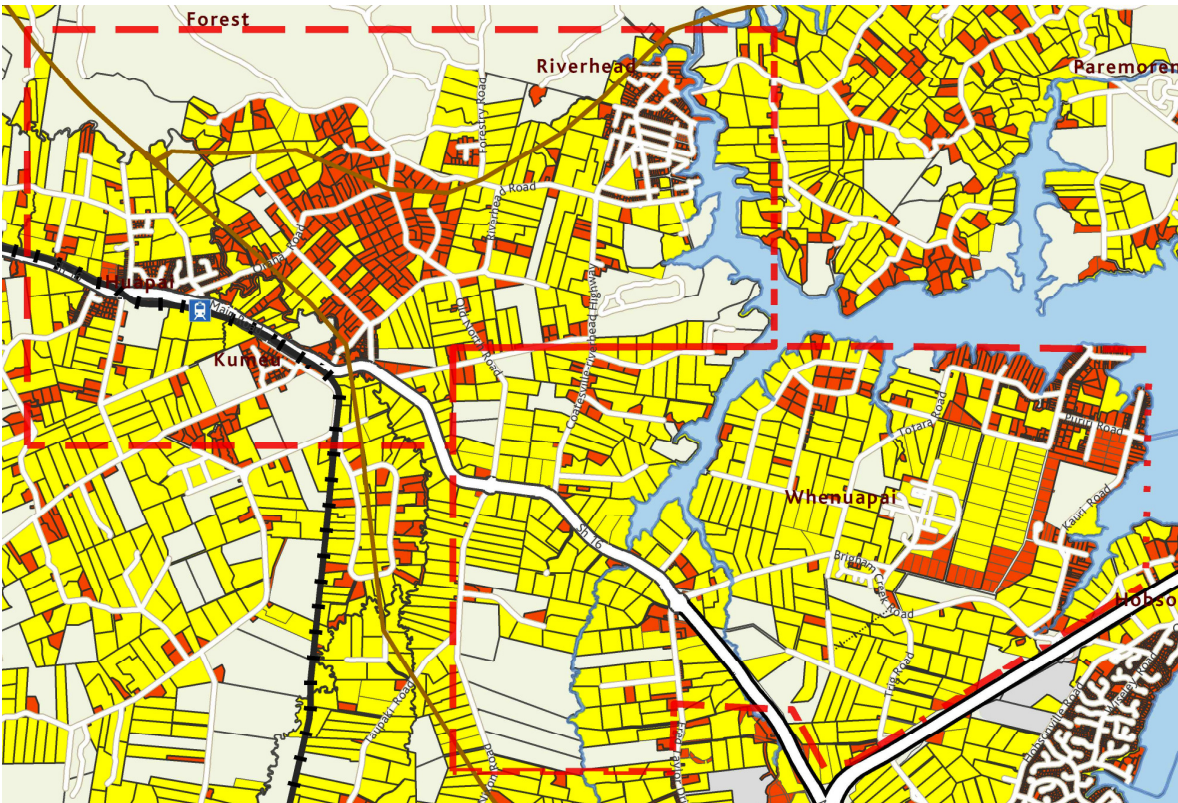


Diagram 8 Lot sizes of 0 – 2 ha and 2 – 8ha Whenuapai and Kumeu study areas¹²

¹² Auckland Council GIS
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Diagram 9 Lot sizes of 0 – 2 ha and 2 – 8 ha Silverdale study area ¹³

Diagram 7 shows the Warkworth study area lot sizes of 0 – 2 ha and 2 – 8 ha. The area is dominated by small blocks close to the main street, residential and industrial area with larger blocks on the outskirts of the town.

Diagram 8 shows the proliferation of lifestyle blocks under 8ha in the Whenuapai and Kumeu/Huapai study areas.

Silverdale lot sizes can be viewed in Diagram 9 and confirm high fragmentation of the study area.

9. Soil classification

The New Zealand Land Use Capability (LUC) Classification is defined as, 'a systematic arrangement of different kinds of land according to those properties that determine its capacity for long term sustained production. Capability is used in the sense of suitability for productive use after taking into account the physical limitations of the land.' LUC Classes 1 – 4 are suitable for arable and vegetable cropping, horticulture (including vineyards and berry fields), pastoral grazing, tree crop or production forestry use.

Class I	Very good multiple-use land. Nearly level, has deep easily worked soils which are well drained but not seriously affected by drought and usually well supplied with plant nutrients and responsive to applied fertilisers. Climate is favourable for growth of wide range of cultivated crops/pasture/forestry. Practically no risk of erosion.
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¹³ Auckland Council GIS

Class II	<p>Good land with slight limitations. Management/conservation practices to overcome these limitations are easy to apply. Land used for cultivated crops/pasture/forestry. Limitations occur singly or combined:</p> <ul style="list-style-type: none"> (a) slight to moderate susceptibility to erosion (b) gentle slopes (c) soils of only moderate depth (d) wetness, existing permanently as a slight limitation after drainage (e) occasional damaging overflow (f) unfavourable structure and difficulty in working (g) slight to moderate salinity (h) slight climatic limitations.
Class III	<p>Moderate limitations restricting choice of plants grown and/or make special conservation practices necessary. May be used for cultivated crops/pasture/forestry. Limitation result from one or more of the following:</p> <ul style="list-style-type: none"> (a) moderate to high susceptibility to erosion or severe effects of past erosion (b) rolling slopes (c) shallow soils (d) wetness or continued waterlogging after drainage (e) frequent damaging overflow (f) low moisture holding capacity (g) moderate salinity (h) moderate climatic limitations (i) low fertility, not easily corrected.
Class IV	<p>Severe limitations to arable use restricting choice of crops grown and/or necessitate intensive conservation treatment and/or very careful management. Land kept in pasture for long periods with cash for cropping should be restricted to, say, once in five years or less frequently. Limiting features occurring alone or in combination:</p> <ul style="list-style-type: none"> (a) high susceptibility to erosion or very severe effects of past erosion (b) strongly rolling slopes (c) very shallow soils (d) excessive wetness with continuing hazard of waterlogging after drainage (e) frequent overflow with severe damage (f) very low moisture holding capacity (g) high salinity (h) severe climatic limitations (i) low fertility very difficult to correct

Figure 32 Land Use Capability Classification – description of classes I - IV¹⁴

¹⁴ <http://www.mpi.govt.nz/>

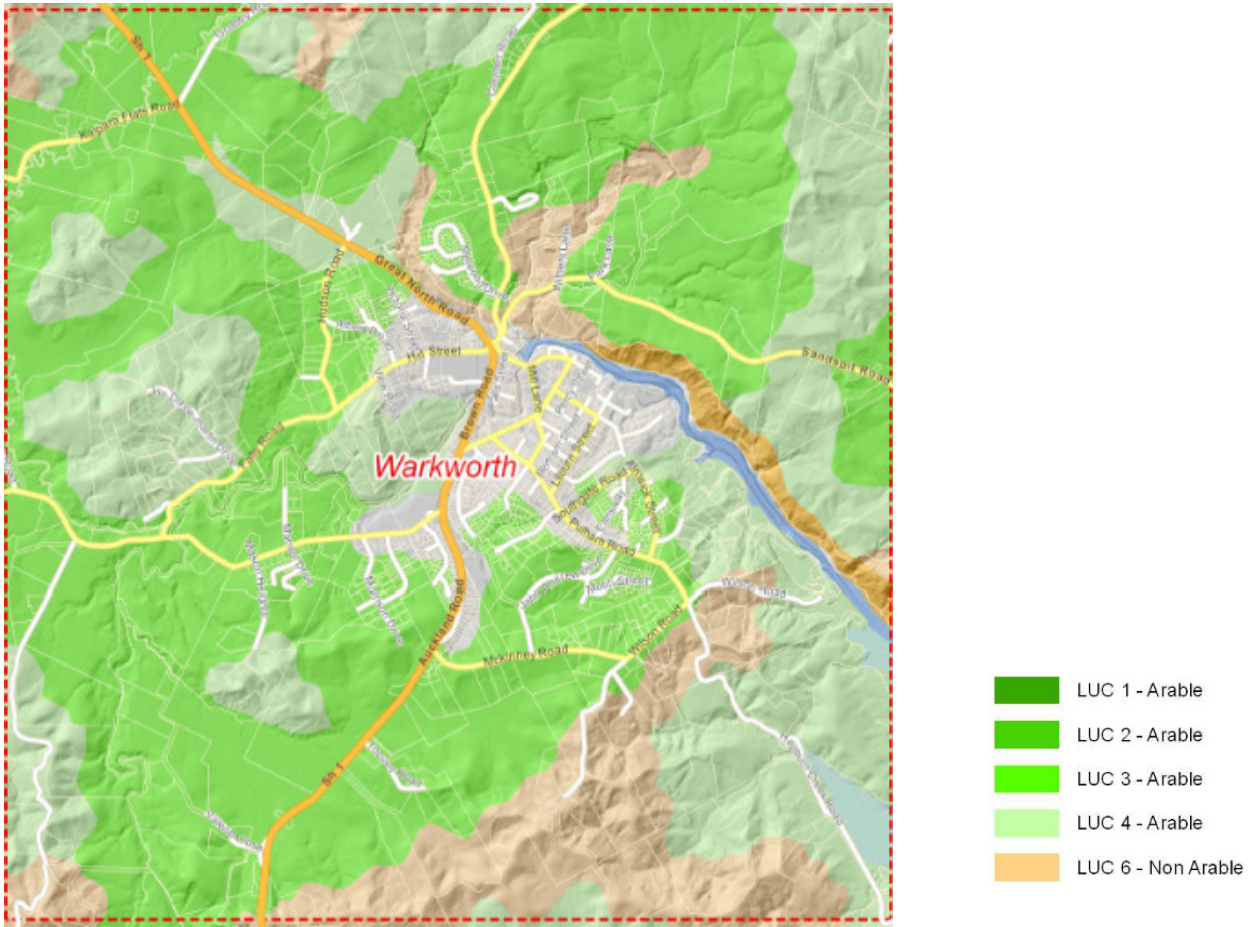


Diagram 10 Land use capability classification map of Warkworth¹⁵

Diagram 10 shows the land use capability classification of the Warkworth Greenfields investigation area. The area is made up of Class III and Class IV soils providing a challenging environment for rural production.

Warkworth generates \$1,517 m/ha in turnover, evidence of a challenging rural production environment and a production environment that may already be compromised.

¹⁵ Excerpt of GIS map supplied by Auckland Council

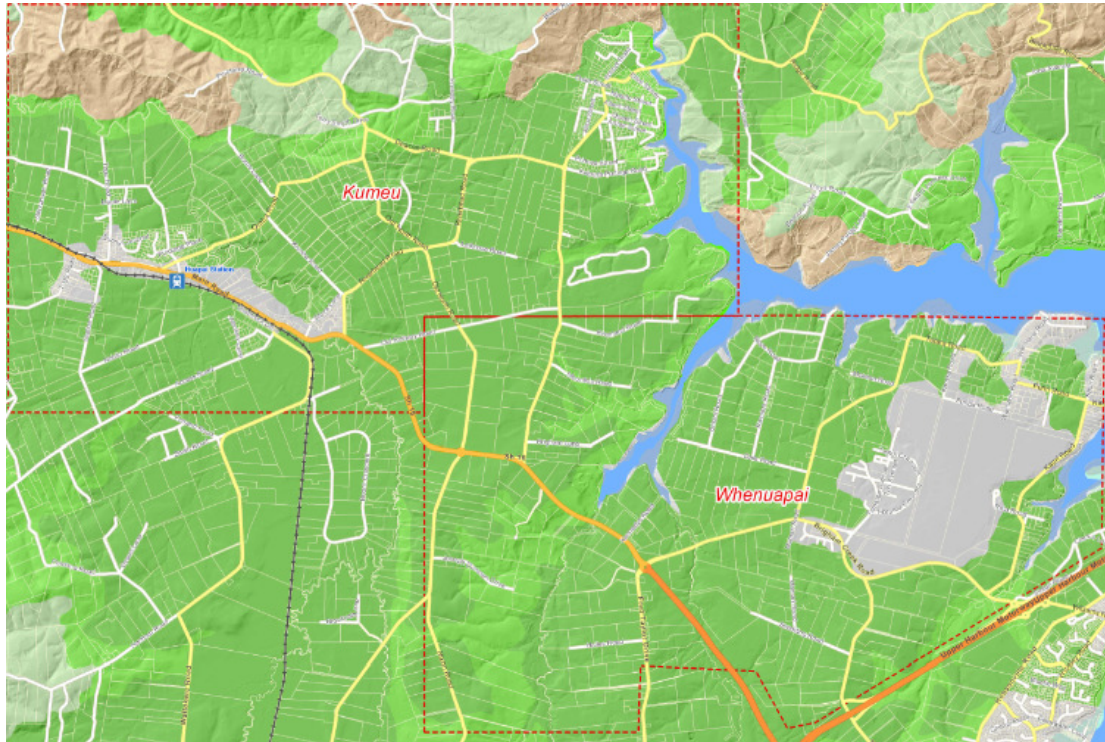


Diagram 11 Land use capability classification map of the Kumeu/Huapai and Whenuapai Greenfields study area.¹⁶

Diagram 11 shows the land use capability classification of the Kumeu/Huapai and Whenuapai Greenfields study area. The area is dominated by Class II soils with some Class III soils along the coastline and a small area of Class IV soils. This area has a reasonable level of rural production and currently yields the highest \$m per hectare of the four study areas. Kumeu generates \$3,993 m/ha and Whenuapai generates \$5,071 m/ha in turnover.

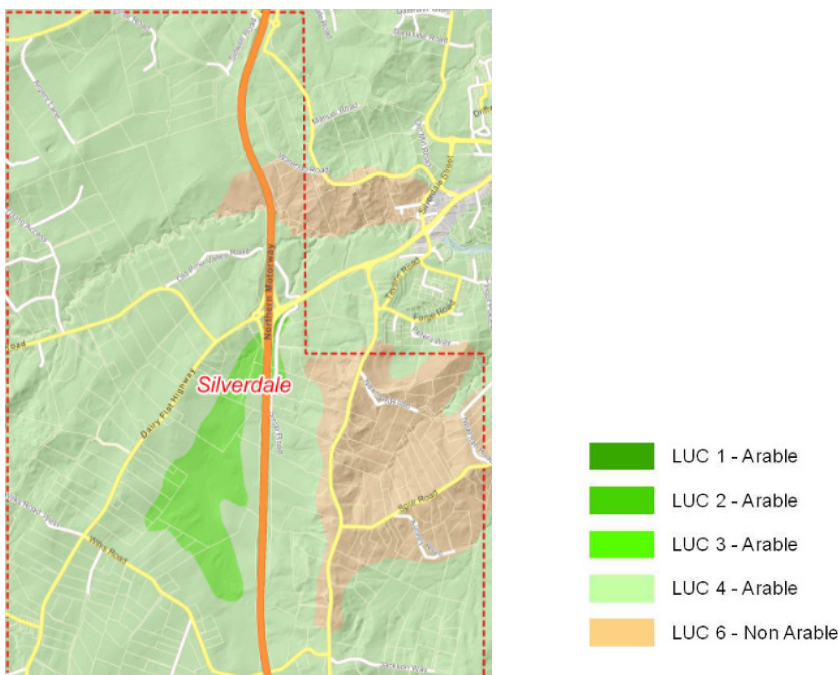


Diagram 12 Land use capability classification map of the Silverdale Greenfields study area.¹⁷

¹⁶ Excerpt of GIS map supplied by Auckland Council

Diagram 12 shows the land use capability classification of the Silverdale Greenfields study area. The area is dominated by Class IV soils with some Class III soils. The Silverdale study area generates \$1,584 m/ha in turnover. Despite its limitations regarding soil type, it generates a higher return per hectare in turnover compared to Warkworth, an area dominated by Class III soils and some Class IV soils.

10. Factors to be considered in regard of land

“Assessments of land and soil value often focus on presence or absence of limitations. The best land is that with no or few limitations.

Current legal consideration of productive land references the opinion of Environment Court Judge Treadwell. A comprehensive list of factors that require consideration was given by Judge Treadwell in *Canterbury Regional Council v Selwyn District Council* [W142/96], and guides much argument and decision in this area.

Treadwell’s range of factors to be considered is much broader than Land Use Capability. It lists a wide range of bio-physical, social and economic factors to be taken into account in recommending or otherwise a particular site for a particular crop or land use.

Productive land, and even more specifically highly productive land, will be fertile and capable of producing abundant yields of plants and other primary products. But more than this, the other factors that together make an agricultural production system viable will also be present.”¹⁸

10.1 Productive use

“Versatile soils are often considered as those most productive however it is worth considering the following views. Chapman defines "versatile soil/land" as the ability of land to support production and management of a wide range of crops. It is mainly assessed in terms of soil and land physical characteristics, which have few limitations, such as poor drainage or slope instability. The assessments assume that soil nutrients are not a limiting factor.

This definition mixes soil and land, and as already noted the two terms are not interchangeable. For land to be productive in an agricultural sense, it needs productive soil, but also all the other factors of successful production including such things as proximity to services and transport. The Treadwell list is relevant and is considered further in this section.

Extending the wider definition of productive land along the lines of Treadwell, versatile land will have a range of soil, climate, water resources, transport and industrial services, labour, and other resources, and absence of conflicts, that make it suitable for the production of a wide range of agricultural and horticultural products.

A sole focus on soil means that all landowners with so-called ‘versatile soils’ are locked into a type of production system that may be neither possible, reasonable or economic.

While a particular soil may be capable of producing food, there are many factors that also need to be available for the land to be used for productive capacity.”

¹⁷ Excerpt of GIS map supplied by Auckland Council

¹⁸ Versatile Soils – Productive Land Report, Hawkes Bay Regional Council, 14 June 2011, Dan Bloomer, Page Bloomer Associates Ltd.

Keenan argues: "Urbanisation has no significant effect on the soil resource – rather it has effects on the productive capability of the land in question. The production system is what required protection, not the soil."

"The case in W142/96 Canterbury Regional Council v Selwyn District Council related to an unsuccessful appeal by Canterbury Regional Council against a suggested change to the [then] Selwyn Transitional District Plan from 5ha of farmland to permit residential development adjacent to Lincoln township.

In the decision on this matter, Environment Court Judge Treadwell stated:

The factors, which I take into account in recommending or otherwise a particular site for a particular crop, are as follows:

- Soil texture
- Soil structure
- Soil water holding capacity
- Soil organic matter stability
- Site's slope
- Site's drainage
- Temperature of the site
- Aspect of the site
- Storm water movements
- Flood plain matters
- Wind exposure
- Shelter planted
- Availability of irrigation water
- Transport, both ease and distance
- Effect of the use on neighbours
- Effects of the neighbours on the use
- Access from the road
- Proximity to airport
- Proximity to port
- Supply of labour
- Quality of that labour
- Previous cropping history
- Relevant contamination
- Sunlight hours
- Electricity
- District Plan

- Economic and resale factors

This list demonstrates the real relevance of the soil on its own. Obviously one can have an extremely good soil, which would be disqualified for a farming use by one of several of the factors above.¹⁹

11. Input Output analysis

The Input Output analysis uses multipliers derived from inter-industry input-output tables. These input-output tables were developed by Butcher and Partners – a recognised source for regional input-output tables and multipliers.

		KUMEU	WHENUAPAI	SILVERDALE	WARKWORTH	TOTAL NORTH AND WEST
GROSS OUTPUT (DIRECT TURNOVER)		\$14,415,497	\$12,574,562	\$4,168,778	\$5,139,543	\$36,298,380
VALUE ADDED (GDP) MARGIN		5,767,931	\$5,095,949	\$1,633,865	\$1,934,770	\$14,432,515
DIRECT, INDIRECT & INDUCED EFFECTS		10,317,403	\$9,093,257	\$2,938,257	\$3,636,267	\$25,985,184
EMPLOYMENT IMPACT	FTE	103	91	23	31	248
FTE ADJ FOR 12.5%	FTE	90	80	20	27	217

Figure 33 Input Output table developed by Butcher and Partners

Comments;

1. Gross output of **the industry** is made up of the sum of
 - i. Salaries and wages
 - ii. Income from self employment
 - iii. Depreciation
 - iv. Profits
 - v. Indirect taxes less subsidies
 - vi. Purchase of goods
 - vii. Purchase of services
2. Value added multipliers measure the increase in output generated along **the production chain**.
3. Direct, indirect and induced effects. The industry purchases materials and services from the supplier firms, who in turn make further purchases from their suppliers. This generates an indirect effect. The induced effects occur when persons employed in the direct environment and in firms supplying services earn income which after tax is deducted, is then spent on consumption and or savings. Hence, for any amount spent in an area (direct effect), the actual output generated from that spend is greater once the flow on activity generated (indirect and induced effects) is taken into account.

¹⁹ Versatile Soils – Productive Land Report, Hawkes Bay Regional Council, 14 June 2011, Dan Bloomer, Page Bloomer Associates Ltd.

4. Employment Impact multipliers are based on every \$1 million spent in an industry for one year. It provides a measure of total labour demand associated with gross output.

12. Future potential of rural production in the Study areas

Rural production in the study areas is centred on nursery plants, fruit growing, flowers and viticulture. The mix of combining rural production and tourism has created a boutique, niche sense of country to the study areas of Whenuapai and Kumeu/Huapai and this is leveraged and marketed as such by local tour operators.

The plant nurseries, viticulture and glasshouses evident in the study areas are already located in amongst a densely populated lifestyle area. These industries co-exist with their rural urban community with we believe, limited reverse sensitivity issues.

Whilst the rural production values of the study areas of Kumeu/Huapai and Whenuapai may seem high when compared with Silverdale and Warkworth, they are essentially low production figures when compared with study areas identified in the Franklin district, south of Auckland. However what has not been estimated, as it is not possible to quantify such a figure, is the tourism benefit of the Kumeu/Huapai and Whenuapai study areas.

In the case of the study areas of Kumeu/Huapai and Whenuapai consideration of the convergence of rural production and tourism should be given when considering future urban development.

Whilst the Silverdale study area may have a greater land area than Whenuapai and thus be the third largest study area, its rural production value is the lowest at 12% turnover of the four study areas and 9% of the FTEs of the total study area. It is also dominated by Class IV soils and its production system has essentially already been compromised. Reports from local growers in the Silverdale area, show low returns and high costs. Future potential of rural production in the Silverdale study area is believed to be limited.

Warkworth study area is dominated by encroaching urban development, class III and IV soils and limited access to larger markets, factors contributing to a breakdown of the production system. Whilst some niche country activity occurs such as viticulture, equine and promotion of locally grown produce to locals, it is unlikely that the study area of Warkworth would generate high rural production values in the future.

It is worth noting the rural economies of the former Rodney and Waitakere districts and the value of produce consumed locally and exported out of the district and comparing these figures to those obtained for the former Franklin District, south of Auckland. Such analysis supports the discussion around rural production values in this report as well as the evidence obtained from industry interviews and site investigations.

The Input Output table overleaf, figure 33 shows that \$66m of Rodney's rural outputs are consumed locally and that \$137m of its rural production is exported out of the district.

The Input Output table, figure 34 shows that \$17m of Waitakere's rural outputs are consumed locally and that \$40m of its rural production is exported out of the district.

The Franklin District's rural production exported out of the district is worth more than \$315m and more than \$90m of its rural outputs are consumed locally. These figures are evidence of a thriving rural economy south of Auckland and a marginal rural economy north and west of Auckland.

Despite north and west Auckland study areas experiencing marginal returns in terms of its rural production value, it remains an essential component of the rural production mix for the Auckland region given the role these areas play in the production of nursery plants, viticulture, flowers and fruit growing. The production system in the study areas where these clusters are evident clearly remains intact.

RODNEY RURAL INPUT-OUTPUT TABLE, YE MAR 2007			
INDUSTRY	OUTPUTS CONSUMED IN WAITAKERE (\$M)	EXPORTS TO OTHER REGIONS & EXPORTS (\$M)	TOTAL (\$M)
HORTICULTURE AND FRUIT GROWING	22,697	59,083	81,780
LIVESTOCK AND CROPPING FARMING	13,927	41,080	55,007
DAIRY AND CATTLE FARMING	24,080	27,873	51,953
OTHER FARMING	5,383	9,816	15,199
TOTAL	66,087	137,852	203,939

Figure 34 Former Rodney district Input – Output Table YE March 2007²⁰

WAITAKERE RURAL INPUT-OUTPUT TABLE, YE MAR 2007			
INDUSTRY	OUTPUTS CONSUMED IN WAITAKERE (\$m)	EXPORTS TO OTHER REGIONS & EXPORTS (\$m)	TOTAL (\$m)
HORTICULTURE AND FRUIT GROWING	14,103	37,400	51,503
LIVESTOCK AND CROPPING FARMING	760	653	1,413
DAIRY AND CATTLE FARMING	0	0	0
OTHER FARMING	1,984	2,026	4,010
TOTAL	16,847	40,079	56,926

Figure 35 Former Waitekere district Input – Output Table YE March 2007²¹

²⁰ Butcher and Partners

²¹ Butcher and Partners

COMPARATIVE ANALYSIS INPUT - OUTPUT TABLE : WAITAKERE, RODNEY AND FRANKLIN						
	OUTPUTS CONSUMED LOCALLY (M)			EXPORTS TO OTHER REGIONS & EXPORTS (\$M)		
INDUSTRY	WAITAKERE	RODNEY	FRANKLIN	WAITAKERE	RODNEY	FRANKLIN
HORTICULTURE AND FRUIT GROWING	14,103	22,697	6,680	37,400	59,083	164,166
LIVESTOCK AND CROPPING FARMING	760	13,927	54,194	653	41,080	10,379
DAIRY AND CATTLE FARMING	21,680	24,080	21,680	0	27,873	82,400
OTHER FARMING	1,984	5,383	7,802	2,026	9,816	58,480
TOTAL	38,527	66,087	90,356	40,079	137,852	315,425

Figure 36 Comparative analysis of the former Waitakere, Rodney and Franklin Districts Input – Output table.²²

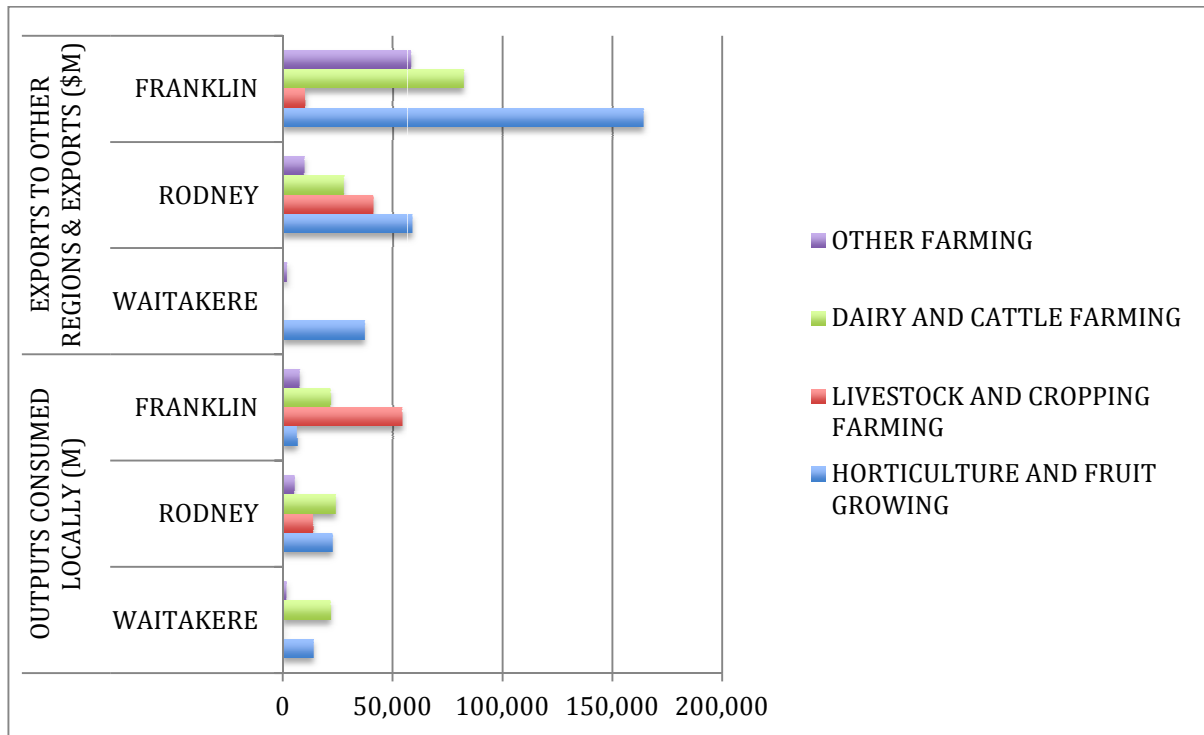


Figure 37 Comparative analysis graph of the Input-Output table for the former Waitakere, Rodney and Franklin districts.

²² Butcher and Partners

13. Conclusion

The Kumeu/Huapai and Whenuapai Study areas are the most productive of the four study areas in terms of rural production turnover and FTE's. Kumeu/Huapai generate \$3,993 per hectare in turnover and Whenuapai generates \$5,071 per hectare in rural production turnover compared to the Silverdale study area generating \$1,584 per hectare and the Warkworth study area which generates \$1,517 per hectare.

Lifestyle blocks under 4 hectares dominate the four study areas, making up 31.20% of the total lifestyle area under 20 hectares in the Whenuapai study area, 49.53% in the Warkworth study area, 45.90% in the Silverdale study area and 56.4% in the Kumeu study area.

The Warkworth study area is made up of Class III and Class IV soils, making rural production in this study area challenging as is evidenced by its rural production turnover and FTEs. The area is also dominated by encroaching urban development and has limited access to larger markets, factors contributing to a breakdown of the production system. Whilst some niche country activity occurs such as viticulture, equine and promotion of locally grown produce to locals, it is unlikely that the study area of Warkworth would generate high rural production values in the future.

Class IV soils dominate the Silverdale area. Despite this the Silverdale area generates a slightly higher turnover per hectare than the Warkworth study area. However reports from local growers in the Silverdale area, show low returns and high costs. Future potential of rural production in the Silverdale study area is believed to be limited with a production system that has already been compromised.

The Kumeu/Huapai and Whenuapai study areas are dominated by Class II soils. There are economic clusters of nursery plants, flowers, fruit growing and viticulture in these two study areas. These clusters are supported by other niche food lifestyle activities such as olives, strawberries, tomatoes and market gardens.

Whilst the rural production values of the study areas of Kumeu/Huapai and Whenuapai may seem high when compared with Silverdale and Warkworth, they are essentially low production figures when compared with study areas identified in the Franklin district, south of Auckland. However what has not been estimated, as it is not possible to quantify such a figure, is the tourism benefit of the Kumeu/Huapai and Whenuapai study areas.

It is clear that the production system in parts of the Kumeu/Huapai and Whenuapai study areas continue to function well despite the intensity of lifestyle development.

In the case of these two study areas consideration of the convergence of rural production and tourism should be given when considering future urban development.

Glossary of Economic Terms

Employment

Employment is work done by employees and self-employed persons, and is measured in Full-Time-Equivalent jobs (FTEs). A person working part time all year is deemed to be equivalent to 0.5 FTEs. Where work is seasonal, the conversion to FTEs is based on 12 months work per year. So a seasonal worker working full time for six months per year is 0.5 FTEs, and a part time seasonal worker working ten hours per week for 4 months is 0.1 FTEs.

Output

Output is the value of sales by a business. In the case of wholesale and retail trade it is the total value of turnover (and not simply gross margins)²³.

Value Added

Value added includes household income (wages and salaries and self-employed income), and returns to capital (including interest, depreciation and profits). It also includes all taxes. Put another way, Value Added is equal to Output less costs other than wages, salaries, depreciation and interest. From an accounting perspective it is equivalent to EBITDA plus Wages & salaries.

Household Income

Household income is the gross earned income of households. It includes the income of self-employed persons. There is sometimes considerable uncertainty as to the proportion of business income, which goes to households, especially for small businesses. In assessing this proportion, dividends and interest payments have been excluded. When estimating indirect economic impacts, one needs to know the increase in household income, which occurs in the region.

Direct Economic Impacts

The direct impact is the output and employment of the business itself (in this case the farm). The direct employment is of people who work on the farm. The direct output is the value of farm gate sales. The direct value added is the value added on the farm. It is equivalent to operating surplus, before interest or tax, plus wages, salaries and drawings.

Indirect Economic Impacts

The indirect impact arises from increased spending by farms as they buy additional inputs so that they can increase production to meet plant demands. This indirect effect can be envisaged as an expanding ripple effect. For example, the farm buys fertiliser, the fertiliser factory has to employ more staff and buy more electricity, so the electricity industry expands. The electricity industry has to employ more staff and buy more fuel, so the fuel company increases its output. And so on. All the increased employment, output and value added (apart from that at the farm) are the indirect effect.

Note that indirect effects only include "upstream" effects (via buying more inputs), but do not include any stimulated development downstream, such as processing vegetables.

²³ Care has to be taken in combining retail sales figures with employment per \$million of output from input-output tables. In these tables, output is generally defined as gross margin. By contrast, business statistics usually refer to employment per \$million of turnover.

Induced Economic Impact

The induced impact is the result of increased household income being spent, and leading to a further ripple effect of increased employment, output and income.

Flow on Effects / Upstream Impacts

The sum of indirect and induced effects is sometimes termed the flow on effects, or upstream impacts.

Down Stream Impacts

Impacts which are not driven by an activity's demand for extra inputs, but which might arise as a result of a particular activity, are sometimes called the "Downstream impacts". The obvious example in the farming industry is the processing sector, where there is whole new set of direct and flow on effects. These effects are not included in the initial farm impacts, which focus only on the supply of inputs.

Total Economic Impacts

The total Type I impact is the sum of the direct and indirect impacts, and a Type II impact is the sum of direct, indirect and induced impacts.

Multipliers

A Type I multiplier is the ratio of (direct + indirect) impacts to direct impacts, and a type II multiplier is the ratio of (direct + indirect + induced) impacts to direct impacts. The Type II multipliers include the impact of household spending and hence will always be greater than a Type I multiplier. Both multipliers will always be greater than 1. Note that downstream effects (whether positive or negative) are not included in the multiplier, and must be calculated separately.

ABOUT THE AUTHORS:

David Powell

David has a degree in Agriculture Commerce and Economics. He is an experienced business operator with a strong analytical bias. Initially David carried out research and marketing for some of New Zealand's key manufacturers. Industries included, steel plumbing, building products and various engineering and materials handling disciplines.

In 1998 David established his own business in the fields of engineering (water and waste water) and farming. David has been involved in rural development for the past two years, focusing in particular on undertaking extensive analysis work of the Auckland and Waikato rural economies.

David is a director of Primary Focus Ltd and Aburn Industries Ltd.

Astrid Lambert

Astrid has been involved in economic development for more than ten years, seven of those in a leadership position. Prior to this, she was a Senior Planner, Economic Development for the Manukau City Council. Astrid has played a key role in the development and implementation of economic development projects in the Auckland and Waikato rural economies. She has overseen industry assessments, economic impact studies, cross-sectoral analysis, sector strategy development and is sought after for her knowledge of the rural economy.

Astrid is a member of the Institute of Directors. She is a director of Primary Focus NZ Ltd, Chair of the Puhinui Trust, a board member of NZ Sporthorse Incorporated, and is also a member of the Auckland Council's Rural Advisory Panel.

REFERENCES

Multiplier Analysis for Waitakere, Rodney and Franklin District - Butcher and Partners, Christchurch

Rural Economic values

- Business and Economic Research Ltd - ref 5118
- DairyNZ Statistics 2010 – 11
- Fresh Facts HortNZ
- Beef and Lamb Economic Service
- Sheep and Beef Farm Survey

Lifestyle Block Productivity - MAF Information Paper No: 53

Rodney District Rural Economy & Lifestyle Block Trend Study, Property Economics 2009

AssureQuality (2012) Agribase Database Version 2012, Assure Quality, Wellington.

Versatile Soils – Productive Land Report, Hawkes Bay Regional Council, 14 June 2011, Dan Bloomer, Page Bloomer Associates Ltd.

Economic Impact Report on the New Zealand Sporthorse Industry, Alex Matheson, University of Waikato

Auckland South Rural Production Greenfields Study, Primary Focus, November 2012

Websites:

www.nzherald.co.nz

www.kumeuwinecountry.co.nz

www.thefarmbutchery.co.nz

www.mpi.govt.nz

Interviews

Corbans

Van Lier Nurseries

North Shore Aero Club

Zheng Lu Holdings

Warkworth A & P Society

Site Investigations

Kumeu/Huapai

Whenupai

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