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## RURAL ENVIRONMENTAL ECONOMIC ANALYSIS - UPDATE

Far North District Council

August 2020

## REPORT INFORMATION AND QUALITY CONTROL

<b>Prepared for:</b>	Tammy Wooster Strategic Planning and Policy Far North District Council
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<b>Authors:</b>	Megan Dever Planning and Policy Consultant	
	Natalie Hampson Associate Director – Market Economics	
<b>Reviewer and Approved for Release:</b>	Nigel Bryce Principal Planning and Policy Consultant	

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<b>DISCLAIMER .....</b>	<b>VI</b>
<b>2020 REPORT UPDATE NOTICE .....</b>	<b>VI</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>X</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 FAR NORTH DISTRICT RURAL ECONOMIC TRENDS .....</b>	<b>2</b>
2.1 Economic Growth – Past and Present .....	2
2.1.1 District Level Trends .....	2
2.1.2 District Level Trends by Sector .....	3
2.2 Rural Environment .....	5
2.2.1 Rural Environment Definition .....	5
2.3 Economic Growth – Future .....	9
2.3.1 Economic Futures Model .....	9
2.3.2 District Level Growth .....	9
2.3.3 District Level Growth by Sector .....	9
<b>3 PLACING PRIMARY SECTOR PRODUCTION ON THE GROUND .....</b>	<b>13</b>
3.1 Approach .....	13
3.2 Maori Owned Land - Overview .....	15
3.3 Highly Versatile Soils – Overview .....	19
3.4 Water Resources – Overview .....	23
3.5 Horticulture and Fruit Growing .....	35
3.5.1 Industry Overview .....	35
3.5.2 Key Statistics .....	36
3.6 Sheep, Beef Cattle and Grain Farming .....	48
3.6.1 Industry Overview .....	48
3.6.2 Key Statistics .....	50
3.7 Dairy Farming .....	60
3.7.1 Industry Overview .....	60
3.7.2 Key Statistics .....	62
3.8 Poultry, Deer and Other Livestock Farming (excluding Apiculture) .....	71
3.8.1 Industry Overview .....	71
3.8.2 Key Statistics .....	74
3.9 Forestry and Logging .....	84
3.9.1 Industry Overview .....	84
3.9.2 Key Statistics .....	86
3.10 Apiculture .....	94
3.10.1 Industry Overview .....	94
3.10.2 Key Statistics .....	95
<b>4 ECONOMIC VIABILITY OF PRIMARY PRODUCTION .....</b>	<b>98</b>
4.1 Economic Viability and Parcel Size .....	98
4.1.1 Estimated Distribution of Primary Production Property Sizes .....	98
4.1.2 Understanding Economic Viability in the Primary Production Sector .....	102
4.1.3 Approach and Limitations .....	102
4.1.4 Results and Discussion .....	103
4.2 Modelling the Economic Impact of Changing Land Use Scenarios .....	104
4.2.1 Residential Land Consumption .....	104
4.2.2 Approach .....	105
4.2.3 Results .....	106
4.2.4 Conclusions .....	109
<b>5 RURAL-RESIDENTIAL AND RURAL-LIFESTYLE CONTEXT .....</b>	<b>110</b>
5.1 Statutory and Literature Review .....	110
5.1.1 Statutory review .....	110

5.1.2	Literature review .....	117
5.1.3	Examples of other Council approaches to rural residential and rural lifestyle development.....	121
5.2	'Rural Residential and Rural Lifestyle' and 'Rural Production' Interface Methodology.....	121
5.3	Definition of Rural Residential and Rural Lifestyle Development .....	122
5.4	Audit of Rural Zones.....	123
5.4.1	Rural Production Zone .....	126
5.4.2	General Coastal Zone .....	127
5.4.3	Rural Living Zone .....	128
5.4.4	Coastal Living Zone.....	129
5.4.5	Waimate North Zone.....	130
5.4.6	Minerals Zone .....	131
5.4.7	South Kerikeri Inlet Zone.....	132
5.4.8	Spatial Audit of Rural Zones.....	133
<b>6</b>	<b>SUPPLY AND DEMAND FOR RURAL-RESIDENTIAL / LIFESTYLE DEVELOPMENT .....</b>	<b>154</b>
6.1	Social and Economic Profile .....	154
6.1.1	Approach.....	154
6.1.2	Key Results .....	156
6.1.3	Conclusions .....	159
6.2	Analysis of Current Capacity and Constraints on Supply .....	160
6.2.1	Approach and Limitations .....	160
6.2.2	Analysis Results.....	162
6.2.3	Development Constraints in the Far North.....	167
6.2.4	Review of Subdivision Consents.....	173
6.2.5	Summary, Constraints and Demand Implications.....	174
6.3	Analysis of Demand.....	175
6.3.1	Approach and Assumptions .....	175
6.3.2	Results.....	176
6.3.3	Comparing Demand Growth and Capacity – Sufficiency of Theoretical Plan Enabled Capacity.....	178
<b>7</b>	<b>IDENTIFYING AND ANALYSING DEVELOPMENT PRINCIPLES .....</b>	<b>180</b>

## List of Tables

Table 1:	Land Based Primary Production Employment & Business Growth by Sector in Far North District 2006-2016 .	4
Table 2:	Summary of Rural Environment Land Area by Zone and Zone Group .....	6
Table 3:	Total Projected Growth in Far North District 2016-2043 by Economic Indicator .....	9
Table 4:	Projected Employment Growth in Far North District 2016-2043 – Top Ten Sectors .....	10
Table 5:	Projected Top Ten Employment Sectors 2043 in Far North District .....	11
Table 6:	Projected Land Based Primary Production Growth in Far North District 2016-2043.....	12
Table 7:	Summary of Maori Owned Land in Far North District by Estimated Operative Zone .....	15
Table 8:	Land Use Composition of Maori Owned Land by Primary Production Sector in Far North District.....	18
Table 9:	Summary of Highly Versatile Soils (1-3) by Estimated Operative Zone in Far North District.....	20
Table 10:	Land Use Composition of Highly Versatile Soils by Primary Production Sector in Far North District .....	23
Table 11:	Summary of Water Resources by Zone in Far North District .....	24
Table 12:	Land Use Composition of Kerikeri Irrigation North Region by Primary Production Sector in Far North District .....	26
Table 13:	Land Use Composition of Kerikeri Irrigation South Region by Primary Production Sector in Far North District .....	29
Table 14:	Land Use (Parcel) Composition of Aupouri Aquifer by Primary Production Sector in Far North District.....	33
Table 15:	Summary Analysis of the Horticultural and Fruit Growing Sector 2016 .....	39
Table 16:	Summary Analysis of the Horticultural and Fruit Growing Sector 2016 by Soils .....	44
Table 17:	Summary Analysis of the Horticultural and Fruit Growing Sector 2016 by Water Resource.....	46
Table 18:	Summary Analysis of the Sheep, Beef Cattle and Grain Farming Sector 2016 .....	52

Table 19: Summary Analysis of the Sheep, Beef Cattle and Grain Farming Sector 2016 by Soils .....	56
Table 20: Summary Analysis of the Sheep, Beef Cattle and Grain Farming Sector 2016 by Water Resource .....	58
Table 21: Summary Analysis of the Dairy Farming Sector 2016 .....	63
Table 22: Summary Analysis of the Dairy Farming Sector 2016 by Soils .....	67
Table 23: Summary Analysis of the Dairy Farming Sector 2016 by Water Resource .....	68
Table 24: Summary Analysis of the Other Livestock Farming (Excluding Apiculture) Sector 2016 .....	76
Table 25: Summary Analysis of the Other Livestock Farming (Excluding Apiculture) Sector 2016 by Soils .....	81
Table 26: Summary Analysis of the Other Livestock Farming (Excl. Apiculture) Sector 2016 by Water Resource .....	82
Table 27: Summary Analysis of the Forestry and Logging Sector 2016 .....	87
Table 28: Summary Analysis of the Forestry and Logging Sector 2016 by Soils .....	91
Table 29: Summary Analysis of the Forestry and Logging Sector 2016 by Water Resource .....	93
Table 30: Employment and Business Growth 2000-2016 – Beekeeping Industry .....	96
Table 31: Estimated Annual Return (\$) by Primary Production Property Size (ha) .....	103
Table 32: Horticultural & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years .....	106
Table 33: Sheep and Beef & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years..	107
Table 34: Dairy Farming & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years .....	108
Table 35: Other Livestock Farming & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years.....	108
Table 36: Forestry & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years.....	108
Table 37: Matrix of Total Far North District Property Parcels by Size Bracket and Estimated Operative Zone (2017/2018) .....	125
Table 38: Matrix of Total Far North District Property Parcels by Size Bracket and Year of Title Issue (2017/2018) ...	126
Table 39: Summary of Property Parcels by Size and Title Date in Rural Production Zone 2017/18 .....	127
Table 40: Summary of Property Parcels by Size and Title Date in General Coastal Zone 2017/18 .....	128
Table 41: Summary of Property Parcels by Size and Title Date in Rural Living Zone 2017/18 .....	129
Table 42: Summary of Property Parcels by Size and Title Date in Coastal Living Zone 2017/18 .....	130
Table 43: Summary of Property Parcels by Size and Title Date in Waimate North Zone 2017/18 .....	131
Table 44: Summary of Property Parcels by Size and Title Date in Minerals Zone 2017/18 .....	132
Table 45: Summary of Property Parcels by Size and Title Date in South Kerikeri Inlet Zone 2017/18 .....	133
Table 46: Summary of Geographic Sampling Underpinning the Social and Economic Profile Analysis.....	154
Table 47: Far North District 2013 Estimated Household Count by Ward and Property Type.....	176
Table 48: Far North District Estimated Household Growth 2013 – 2043 by Ward and Property Type (Medium) .....	177

## List of Figures

Figure 1: Total Employment and Business Growth in Far North District 2000-2016 .....	2
Figure 2: Land Based Primary Production Employment & Business Growth in Far North District 2000-2016 .....	4
Figure 3: Map of Rural Environment Zones .....	7
Figure 4: Map of Total Rural Environment Extent .....	8
Figure 5: Map of Maori Owned Land Parcels by Type in Far North District .....	16
Figure 6: Distribution of Far North District Maori Owned Land (Excluding Settlement Land) by Size Bracket 2017/18	17
Figure 7: District Map of Highly Versatile Soils (LUC 1-3) .....	21
Figure 8: Map of Far North District Water Resources – Aquifers, Bores and Kerikeri Irrigation North and South Regions .....	25
Figure 9: Map of Kerikeri Irrigation North Region – Summary of Current Land Uses (LINZ Codes) by Parcel .....	28
Figure 10: Map of Kerikeri Irrigation South Region – Summary of Current Land Uses (LINZ Codes) by Parcel .....	31
Figure 11: Map of Aupouri Aquifer – Summary of Current Land Uses (LINZ Codes) by Parcel.....	34
Figure 12: Horticulture and Fruit Growing Sector Businesses 2016 by Industry .....	37
Figure 13: Employment by Estimated Horticultural Property Parcels and Indicative Land Use Image, 2016 .....	40
Figure 14: Estimated Horticultural Gross Output per Hectare 2016 .....	41
Figure 15: Estimated Horticultural Value Added per Hectare 2016 .....	42
Figure 16: Analysis of Average Horticultural Parcel Size by Versatile Soils and Aquifer Locations.....	47
Figure 17: Analysis of Average Horticultural Employment per Ha by Versatile Soils and Aquifer Locations .....	48
Figure 18: Sheep, Beef Cattle and Grain Growing Sector Businesses 2016 by Industry .....	51
Figure 19: Employment by Estimated Sheep & Beef Farming Parcels and Indicative Land Use Pattern, 2016 .....	53

Figure 20: Estimated Sheep, Beef Cattle and Grain Farming Gross Output per Hectare 2016.....	54
Figure 21: Estimated Sheep, Beef Cattle and Grain Farming Value Added per Hectare 2016.....	55
Figure 22: Analysis of Average Sheep & Beef Employment per Ha by Versatile Soils and Aquifer Locations .....	59
Figure 23: Employment by Estimated Dairy Farming Property Parcels, 2016 and Indicative Land Use Pattern .....	64
Figure 24: Estimated Dairy Farming Gross Output per Hectare 2016 .....	65
Figure 25: Estimated Dairy Farming Value Added per Hectare 2016 .....	66
Figure 26: Analysis of Average Dairy Sector Employment per Ha by Versatile Soils and Aquifer Locations .....	70
Figure 27: Poultry, Deer and Other Livestock Farming (Excl. Apiculture) Sector Businesses 2016 by Industry .....	74
Figure 28: Employment by Estimated Other Livestock Farming (Excluding Apiculture) Property Parcels, 2016 .....	77
Figure 29: Estimated Other Livestock Farming (Excl. Apiculture) Gross Output per Hectare 2016.....	78
Figure 30: Estimated Other Livestock Farming (Excl. Apiculture) Value Added per Hectare 2016.....	79
Figure 31: Analysis of Average Other Livestock Employment per Ha by Versatile Soils and Aquifer Locations.....	83
Figure 32: Forestry and Logging Sector Businesses 2016 by Industry .....	86
Figure 33: Employment by Estimated Forestry and Logging Parcels and Indicative Land Use Patterns, 2016 .....	90
Figure 34: Horticultural & Market Garden Property Size and Estimated Gross Output Distribution (2016).....	99
Figure 35: Dairy Farming Property Size and Estimated Gross Output Distribution (2016).....	99
Figure 36: Sheep, Beef and Grain Property Size and Estimated Gross Output Distribution (2016).....	100
Figure 37: Other Livestock (Excluding Apiary) Property Size and Estimated Gross Output Distribution (2016) .....	101
Figure 38: Forestry Property Size and Estimated Gross Output Distribution (2016).....	101
Figure 39: Base Productivity and Post Tax Returns/Ha – Averages Applied.....	102
Figure 40: Distribution of Property Parcels by Size Bracket in the Rural Production Zone 2017/18 .....	127
Figure 41: Distribution of Property Parcels by Size Bracket in the General Coastal Zone 2017/18.....	128
Figure 42: Distribution of Property Parcels by Size Bracket in the Rural Living Zone 2017/18 .....	129
Figure 43: Distribution of Property Parcels by Size Bracket in the Coastal Living Zone 2017/18 .....	130
Figure 44: Distribution of Property Parcels by Size Bracket in the Waimate North Zone 2017/18 .....	131
Figure 45: Distribution of Property Parcels by Size Bracket in the Minerals Zone 2017/18.....	132
Figure 46: Distribution of Property Parcels by Size Bracket in the South Kerikeri Inlet Zone 2017/18 .....	133
Figure 47: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Haruru .....	136
Figure 48: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones - Haruru .....	137
Figure 49: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Waimate North and Surrounds.....	138
Figure 50: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Waimate North and Surrounds .....	139
Figure 51: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Kerikeri South .....	141
Figure 52: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Kerikeri South.....	142
Figure 53: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Kerikeri Inlet .....	143
Figure 54: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Kerikeri Inlet .....	144
Figure 55: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Waipapa .....	145
Figure 56: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones - Waipapa .....	146
Figure 57: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Kaikohe.....	148
Figure 58: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones - Kaikohe.....	149
Figure 59: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Kaitaia.....	150
Figure 60: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Kaitaia.....	151
Figure 61: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Ahipara .....	152
Figure 62: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Ahipara .....	153
Figure 63: Rural and Urban Comparison of Age Group Profile in the Far North District, 2013 .....	156
Figure 64: Rural and Urban Comparison of Personal Income Profile in Far North District, 2013.....	157
Figure 65: Rural and Urban Comparison of Occupation Profile in Far North District, 2013 .....	158
Figure 66: Rural and Urban Comparison of Family Type Profile in Far North District, 2013 .....	158
Figure 67: Rural and Urban Comparison of Number of Bedrooms Profile in the Far North District, 2013 .....	159
Figure 68: Maximum Theoretical Subdivision Potential in the Rural Living Zone by Location .....	162
Figure 69: Maximum Theoretical Subdivision Potential in the Coastal Living Zone by Location.....	164
Figure 70: Maximum Theoretical Subdivision Potential in the Rural Living and Coastal Living Zones by Ward.....	165
Figure 71: Maximum Theoretical Subdivision Potential for Rural Lifestyle Lots (Various Zones) by Ward .....	167
Figure 72: River Flood Hazard Zones - Kaitaia (Source: Northland Regional Council) .....	168
Figure 73: River Flood Hazard Zones - Kerikeri (Source: Northland Regional Council).....	169

Figure 74: Civil Defence - Tsunami Evacuation Zones - Kerikeri (Source: Northland Regional Council) ..... 170

Figure 75: Map of Outstanding Natural Landscapes (Source: Northland Regional Council) ..... 171

Figure 76: Archaeological Sites (Source: NZAA) ..... 172

Figure 77: Far North District Estimated Household Growth 2013 – 2043 by Ward and Property Type (Medium) .... 177

Figure 78: Far North District Estimated Current and Long-Term Household Structure by Ward (Medium Growth).. 178

Figure 79: Maximum Theoretical Lot Potential in the Rural Production Zone – 8ha in Irrigation/Aquifer Areas ..... 182

Figure 80: Testing of Recommended Density in the Rural Living Zone - Capacity Comparisons ..... 183

**List of Appendices**

Appendix A: Historical Employment and Business Growth by 48 Sectors

Appendix B: Further Detail on the Economic Futures Model

Appendix C: Economic Projections by 48 Sectors

Appendix D: Population Projections Underpinning Economic Futures Mode

Appendix E: Approach for Reconciling Business and Employment to Properties

Appendix F: Map of Soil Classes 1-4 in Far North District

Appendix G: Horticultural Sector – Key Growing Area Catchments and Analysis

Appendix H: Social and Economic Profile – Case Study Area Definition

Appendix I: District Plan Examples of Rural Residential/Lifestyle Zone

## DISCLAIMER

This report has been prepared by Market Economics and 4Sight Consulting Limited for the Far North District Council. The report is intended to help inform high-level Resource Management Act (RMA) policy development for the district as a whole. The analysis, findings and maps in this report are not intended to be used by the Council or any other party on a site-specific basis. Data limitations are set out throughout this report.

## 2020 REPORT UPDATE NOTICE

This report was prepared for Far North District Council in September 2018. Due to the time Council needed to prepare a draft Proposed District Plan, the report is only being published now in 2020. Given the time that has elapsed, the base year of the analysis - 2016 - is not as current as it could be. However, updating the report to 2018 or 2019 data was not considered practical or cost effective and it is the advice of the authors that such an exercise would not alter the conclusions and recommendations of the report. In lieu of a full update, we have extracted some more (readily available) recent data and comment below on the implications of that data on specific aspects of the report.

The Far North District had a total of 7,803 businesses and 24,543 employees in 2019, up by nearly 340 and 2,750 respectively since the 2016 figure previously reported<sup>1</sup>. This indicates growth of 5% in the number of businesses and 13% in the number of employees in the 2016-19 period. The district's share of regional businesses was 36% in 2019, down from 37% in 2016. The district's share of regional employment stayed at 2016 levels, 33%. This shows that the district's role within the region has not materially changed and it is growing in line with regional growth.

The report identifies a growth trend in employment between 2014 and 2016<sup>2</sup> and more recent data has shown that this trend continued until 2018, with a significant smoothing in 2019. The total business count has continued to fluctuate slightly but remains generally stable compared to employment change.

Appendix A of the report assesses past economic growth by sector in the district up to 2016. There has been some changes in recent years with some sectors that were growing slowly or even declining, showing rapid growth since 2016, generally driven by increased household demand.

Between 2016-19, the five sectors that grew the most in terms of business counts were (in descending order) Construction, Professional/Scientific/Technical/Administrative and Support Services, Retail trade, Personal and Other Services and Healthcare and Social Assistance. The last three of these sectors were also in the top five growth sectors in the period 2006-2016. The other two strong growth sectors in the decade leading up to 2016 were the Finance and Rental/Hiring/Real Estate sectors, but since 2016, both have experienced a decrease in total business units (-10% and -5% respectively). Conversely, while Construction and Retail businesses had been falling up to 2016, they have had rapid growth since 2016.

In employment terms only the Professional/Scientific/Technical/Administrative and the Wholesale Trade sectors have remained amongst the top five growth sectors during 2006-2016 and in the period 2016-2019. The Agricultural and Fishing Services, Central Government/Defence/Public Administration and Healthcare sectors have been bumped from the top five growth sectors and replaced by Construction, Accommodation and Food Services and Personal Services – all of which had been in decline up to 2016 but have since shown rapid growth.

Structurally though, the economy still looks similar. The ten largest employment sectors continue to account for 42% of total district employment in 2019. The 10 largest sectors in the latest data were the same as in 2016 (with some shifts in ranking), except for the Rental, Hiring and Real Estate Services sector which was replaced by the Personal and Other Services sector.

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<sup>1</sup> Refer Section 2.1.1.

<sup>2</sup> Refer Figure 1.



Recent data shows that the steady decline of combined land based primary production sector businesses in the district previously reported up to 2016<sup>3</sup> has continued through to 2019. The slow recovery in employment experienced between 2010 and 2016 across this sector climbed further in 2018 but was stable to 2019. Since 2016 the land based primary production sector decreased another 13% in business terms (-249 2016-19) but increased 7% in employment terms (+182 2016-19). The Far North District land based primary production sector now employs 2,769 people<sup>4</sup> (approaching levels previously seen in 2008), within 1,688 businesses (2019). It makes up 21% of total businesses in the district (down 5 percentage points compared to the share in 2016). In contrast, this sector accounted for 13% of total district employment in 2019, about 1 percentage point more than its share in 2016.

Overall, when employment grows and businesses decrease, it suggests that activity is being consolidated into fewer larger firms, and/or changes at the industry level within the sector. The Horticulture and Fruit growing industry in the Far North has started to expand while other primary production sectors contract (Table A). The horticulture industry accounts for a slightly greater share of total businesses and employees within the land based primary production sector in 2019 compared to the 2016 shares reported<sup>5</sup>: now 16% of businesses instead of 14% (despite no actual increase in horticultural businesses in that period<sup>6</sup>) and 33% of employment instead of 29% (driven by a 19% increase in employment since 2016). In 2019, the average number of workers per horticulture business was 3.3, approximately 0.5 workers more than in 2016.

*Table A: Land Based Primary Production Employment & Business Growth in FND 2016-2019 (Update to Table 1)*

Industry	Businesses				Employment				Average MECs Per Business 2019
	Businesses 2019	Share (%)	Growth 2016-2019	Growth 2016-2019 %	MECs 2019	Share (%)	Growth 2016-2019	Growth 2016-2019 %	
Horticulture and fruit growing	273	16%	0.1	0.00	912	33%	149	19%	3.3
Sheep, beef cattle and grain farming	783	46%	153	-16%	744	27%	104	-12%	1.0
Dairy cattle farming	260	15%	65	-20%	630	23%	21	-3%	2.4
Poultry, deer and other livestock farming	137	8%	14	11%	232	8%	80	52%	1.7
Beekeeping	84	5%	65	344%	206	7%	167	419%	2.4
Poultry, deer and other livestock farming	53	3%	51	-49%	25	1%	87	-77%	0.5
Forestry and logging	235	14%	46	-16%	252	9%	79	46%	1.1
<b>Total Land Based Primary Production</b>	<b>1,688</b>	<b>100%</b>	<b>-249</b>	<b>-13%</b>	<b>2,769</b>	<b>100%</b>	<b>182</b>	<b>7%</b>	<b>1.6</b>

Source: Statistics New Zealand Business Directory, M.E. MEC = Modified Employee Count (includes employees and estimated working proprietors)

The Sheep and Beef industry and Poultry, Deer and Other Livestock industry in the Far North has continued to reduce in both business and employment counts (Table A). The same applies to the smaller Dairy Farming industry (although the decline has slowed in recent years compared to the decade leading up to 2016). The beekeeping industry continued growing rapidly between 2016-2019. The numbers of businesses increased by 65 (344%) and 167 additional people were working in the industry (419%) by 2019 compared to 2016.

The analysis contained in sections 3 and 4 of this report rely on a 2016 snap-shot of economic activity and land area. While we have been able to examine the impact of more recent employment and business data at a high level, updating the land area (properties and parcels) indicatively associated with different land based primary production activity is not within the scope of this cover note. As such, we cannot comment with any certainty on whether the results in those report sections would be materially different using 2019 data compared to 2016 data. We are however of the view that while the numbers may change slightly if comprehensively updated, the conclusions of sections 4.1 (economic viability of different land based primary production property sizes) and 4.2 (economic impact of changing land use scenarios) are likely to remain relevant for the purpose of informing Council for the District Plan Review.

Section 2.3 of the report projects future economic growth in the district by sector based on a 'business as usual' scenario. The modelling relied on a 2016 base year, including medium population growth projections for the district available at the time. While more current population projections are still not available from StatisticsNZ, comparing

<sup>3</sup> Refer Table 1 and Figure 2.

<sup>4</sup> Snap-shot as at February.

<sup>5</sup> Refer Table 1.

<sup>6</sup> I.e. the increase in share has been caused by the decrease in other industries.

Census 2018 population (65,240) with the previously projected 2018 population (61,990) shows that already over those 2 years, growth has been 5% higher than expected.

Population growth is a key driver of 'household final demand' in the Economic Futures Model (EFM) used in the report to project employment, gross output and value added, particularly for those sectors that serve households. It follows that if population growth is underrepresented in the EFM then employment growth is also too conservative in the short-term. At a total district level, the EFM projected a total of 22,560 employees in the Far North District for 2018. The actual 2018 employment for the district was 24,450 MECs (8% higher than modelled). This change is not explained by population growth alone and suggests that other inputs to the EFM such as tourism growth and gross fixed capital formation rates have also proven conservative in the short-term.

By comparison, the projected 2018 employment for the combined land based primary production sector is only conservative by 2% when compared with actual employment in 2018. Within the land based primary production sectors, an evaluation of 2018 EFM employment projections with actual 2018 employment suggests that horticultural, forestry and other livestock farming (but primarily apiculture) growth has been slightly underestimated in the short-term and sheep and beef and dairy farming growth has been overestimated (and perhaps the EFM 'business as usual' scenario is not accurately reflecting the direction being taken by those two industries in the Far North)<sup>7</sup>.

Any conservative outcomes for employment flow through to conservative estimates for projected gross output and value added in the short-term by sector. However, there is less certainty on the medium and long-term future and the degree to which the 2016 base-year EFM projections for many sectors may or may-not prove to be indicative over those time periods. This will depend on whether the recent growth rate being experienced in the Far North (particularly in terms of population) continues or not. StatisticsNZ 2018 projections released later in 2020 may provide further insight on this issue.

As mentioned above, much of this report relies on analysis that is a snap-shot of 2016 data. The economic (employment, gross output and value added) projections stand on their own, so while the short-term outlook may be conservative according to recent data, there are little or no implications for the wider findings and conclusions of this report. Care is however needed in relying on the EFM projections themselves in light of these checks against more recent data.

M.E has examined 2018 Census data to see what changes can be observed in the Socio-Economic Profile of rural, rural residential, rural lifestyle and residential households compared to Census 2013 data (section 6.1 of the report). Overall, there are minor changes to the relative profiles for some variables, but not all and we conclude that the findings of section 6.1 are still representative.

There are potential report implications associated with modelling what appears to be conservative population (and therefore household) demand projections (at least in the short-term) in section 6.3.3 of the report. This section compares demand growth between 2013 and 2043 (under a medium growth projection, section 6.3.2) with estimated theoretical plan enabled capacity for rural residential and rural lifestyle development across various zones. However, because the analysis compares only the long-term sufficiency, and we do not yet have alternate growth projections based on the 2018 Census from StatisticsNZ to confirm if the long-term outlook for households will be higher than previously projected, there is insufficient information to confirm any effect on the reliability of reported findings. M.E recommends that a cautious approach is taken regarding the findings of section 6.3.3. If household growth across the district continues at the rate of recent years, then any capacity for further subdivision and development will be consumed sooner than otherwise estimated. Where specific areas to watch have been flagged (because of strong demand and limited remaining capacity), even greater attention is warranted to monitor change and address demand in those locations.

While limited in scope, this brief review of more recent data has shown stronger than expected household growth and also moderately strong growth in horticultural employment (and by inference, horticultural production and gross output). To the extent that a portion of household growth will seek rural residential and rural lifestyle properties (as it has in the past in particular areas of the district) then a faster growth rate implies even greater pressure for subdivision and land use change in areas potentially suited by primary production, and in particular horticulture. While

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<sup>7</sup> Care is therefore recommended with regard to the findings of Table 6 of this report.

demand for horticultural land could capitalise on the decline of sheep and beef or dairy farming land (where soils and water resources are favourable to this conversion), the tension between horticultural and housing growth is likely to be rising. Better management of where and how rural residential and rural lifestyle development occurs in future is needed to avoid a situation where growth of housing in the rural environment is at the expense of the productive capacity of the rural land resource.

## EXECUTIVE SUMMARY

This report considers the implications of rural residential and rural lifestyle intensification within the Far North District and the economic implications of this on the District's rural environment.

For the purpose of this study the rural environment has been defined as the combination of existing operative district plan zones/sub-zones<sup>8</sup> and while rural environment is broader than just the zones included in the Rural Environment section of the Operative Far North District Plan 2009 (District Plan), the scope of rural environment set out in this research is specifically targeted to overlay with rural residential and rural lifestyle development occurring within these zones.

While the Far North District Council (Council) has promoted a Rural Living and Coastal Living Zone for rural residential and rural lifestyle development, it is not exclusive to these areas, with rural residential intensification occurring within the District's Rural Production Zone, promoted through reasonably permissive planning regimes.

For the purposes of this report, and based on a literature review, nationally rural residential lots range between 0.3 – 2ha, however in the context of the Far North District, rural residential type lots have been identified to have a lower lots size that reaches as low as 0.2ha. Lots of between 2 - 8ha are considered 'rural lifestyle'. Outside of these lot ranges, lots are considered rural or residential.

Both the Rural Living Zone and Coastal Living Zone of the District Plan reflect controlled development standards that fall within the range of rural residential lot sizes discussed above (0.2ha to 2ha), although a narrower range of 0.3-0.8ha), while the Coastal Living Zone also reflects rural lifestyle lot size (4ha). As set out in this report, our analysis has identified that demand for rural residential and rural lifestyle development is not confined to the Rural Living, Coastal Living and other zones such as the Waimate North Zone and Kerikeri Inlet Zone and equivalent development intensification has been occurring in the Rural Production Zone, which is predominantly a working productive rural zone.

The report identifies that the current policy framework of the District Plan is not effective in addressing the loss of highly versatile soils and does not appear to be a constraint to avoiding further rural residential or lifestyle intensification in the Rural Production Zone. This is particularly important given that the significant majority (85%) of highly versatile soils are located in the Rural Production Zone, although this is dominated (74%) by class 3 soils.

Further, approximately 72% of horticultural production in the Far North District rural environment occurs on highly versatile soils (by area), equating to 86% of estimated horticultural gross output<sup>9</sup>, compared with 58% of Dairy production (61% of estimated gross output) and 42% of Sheep and Beef production (50% of estimated gross output). This means loss of those soils to rural residential or lifestyle intensification impacts upon the horticultural sector much harder than other sectors, as the alternative soil types are less suitable for horticultural production (although plentiful water supply can help counter that).

The report identifies that highly versatile soils are concentrated around Kerikeri and Waipapa and across to the south west (through Waimate and Kaikohe) to the edge of the Mataraua Forest) and also around Waiharahara, Awanui, Kaitaia and Ahipara further to the north. A number of these areas have been and are subject to ongoing development pressure from rural residential and rural lifestyle intensification.

The District Plan currently provides for a grandfathering rule framework linked to existence of titles that existed at or prior to 28 April 2000, when the District Plan was made operative. The subdivision standards linked to this grandfathering clause provide for a range of densities and activity statuses. An audit of the District's rural zones in terms of the mix of parcel sizes that have been given title to-date reflects that during the period of 2001-2007 there was significant subdivision activity, and this is likely to have been significantly influenced by the enabling nature of the subdivision standards under the District Plan. In terms of subdivision demand trends, in the Rural Production Zone between 2000 and 2007, 28% of all titles created were between 1ha and 4ha. There has been moderately more 1,000-

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<sup>8</sup> Rural Production, Rural Living, Minerals, General Coastal, Coastal Living, Waimate North, South Kerikeri Inlet, Zone, South Kerikeri Inlet Zone Sensitive Area.

<sup>9</sup> Refer analysis contained in Section 4.

3,000sqm lots created per annum between 2008-2018 compared to the 2000-2007 period (an average of 27 per annum compared to 22 per annum).

A survey of local real estate and survey professionals, who were primarily based in Kerikeri, identified an ongoing demand for rural residential sites (site with generous lawn and gardens) as opposed to more rural lifestyle blocks (that can accommodate some small-scale farming) in this area. This is further reflected in there being demand from landowners of rural lifestyle properties seeking further subdivision to smaller rural residential properties and correlates with the subdivision demand trends experienced in the Rural Production Zone between 2008 – 2018. However, outside of Kerikeri, there is still a strong demand for rural lifestyle development opportunities.

At a higher order statutory planning instrument level, presently, the lack of appropriate protection to safeguarding the Far North District’s highly versatile soils is considered counter to the policy direction of the Operative Northland Regional Policy Statement 2016, which places emphasises on protecting the “viability” of land and activities important for Northland’s economy. Given this, the fragmentation of highly versatile soils and associated horticultural production they support, by rural residential and rural lifestyle intensification is seen as a critical issue for the Far North District.

Highly versatile and productive soils are rare, covering approximately 9% of Northlands total area, yet they sustain the highest levels of primary production value added contribution to the economy. In the Far North District there are a range of primary production sectors that are reliant upon highly versatile soils. The report provides an analysis of how various sectors utilise highly versatile soils (or otherwise)<sup>10</sup>. In total, there are an estimated 64,436ha of class 1-3 soils in Far North District<sup>11</sup>. Land Use Capability (LUC) Classes 1 to 4 are suitable for arable and vegetable cropping, horticulture (Including vineyards and berry fields), pastoral grazing, tree crop or production forestry use, although the focus within the report is on classes 1-3<sup>12</sup>. The loss of these soils will obviously have a greater impact in the short and long term than the consumption of less productive land.

Based on an analysis of current property parcels that are wholly or partially included in the area of highly versatile soils, primary production activities comprising horticulture, farming and forestry make up just 25% of those parcels. Further, in terms of the land area of those parcels located on highly versatile soils (230,625ha of parcel area)<sup>13</sup>, parcels linked to primary production activities account for 71% of the total (162,973ha of parcel area). However, and somewhat surprisingly, horticulture and fruit growing properties make up just 1% of the total area of properties located on highly versatile soils, whereas Sheep, Beef Cattle and Grain Farming properties make up 47% of the total area, Dairy Farming properties make up 12% of the total area, and Forestry and Logging properties make up 13% of the total area. This is driven by the relatively small size of horticultural properties and the land extensive nature of traditional farming and forestry.

By comparison, non-primary production land uses make up approximately 29% of the parcel area covering highly versatile soils. This means that 67,651ha of property is occupying highly versatile soil land that is unlikely to be utilising its productive capacity for economic gain, although 4% is classified as vacant or idle primary production land so for that land at least, the opportunity is not lost. Of the non-productive land uses, 10% comprises Lifestyle – Single Unit and Lifestyle – Vacant properties, 7% is passive outdoor area and approximately 4% is used for residential or community activity<sup>14</sup>.

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<sup>10</sup> NRC has defined around 118,388ha as being versatile soils (a subset of LUC Classes 1-3), equivalent to 9% of Northland’s land area. The total area of LUC 1-3 soils is 127,500ha (9.6% of the region’s land area). Source: NRC, February 2012.

<sup>11</sup> Based on a GIS shapefile supplied by FNDC.

<sup>12</sup> For a more detailed description of classes 1-3, see Lynn, IH, Manderson, AK, Harmsworth, GR, Eyles, GO, Douglas, GB, Mackay, AD, Newsome PJF. 2009. Land Use Capability Handbook - a New Zealand handbook for the classification of land 3rd Ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science 163pp.

<sup>13</sup> Compared to an actual area of high-class soils of 204,357ha, thus confirming that some parcels have only a portion of their area with high-class soils.

<sup>14</sup> Lifestyle – Single Unit accounts for approximately 5% of the total area of properties located on versatile soils, and lifestyle – Vacant properties for approximately 5% of the total.

The report has identified that the median sized horticultural and market garden property (which may comprise one or more lots) is 7ha and the average across all unique rateable properties in this sector is 17ha. The average horticultural property (parcel) size with highly versatile soils is considerably smaller than those horticultural parcels without highly versatile soils, with 8.6ha on average across all zones compared to 25.9ha respectively. This implies that smaller horticultural properties are more economically viable when they have the benefit of highly versatile soils.

To reflect the importance of highly versatile soils to the Far North District, the gross output of primary production sectors on highly versatile soils in the Far North is estimated at \$293.7m (2016). These primary production properties contribute \$107.8m of value added to the Far North economy (6% of total district value added in 2016). In 2016, land based primary production sectors (which cover farming, horticulture and forestry) employed 2,587 people, spread across 1,937 businesses in Far North District. The land based primary production sector accounts for 26% of total district businesses and 12% of total employment (2016). The largest component of this sector, sheep/beef cattle and grain growing, makes up 48% of the businesses and 33% of the employment. By comparison, horticulture and fruit growing makes up 14% of businesses and 29% of employment (and employs on average 2.8 workers per business)<sup>15</sup>.

While these primary production sectors are important to the Far North District, over the last ten years there has been a net decrease in land based primary production businesses of -446 (a decrease of 19%), with employment decreasing by approximately 466 jobs (-15%) over this same 10-year period. There has been some stabilisation of business and employment counts in the last three years (when looking at the primary production sector as a whole), but this is attributable almost entirely to strong recent growth in apiculture which has offset continued losses in the other more land dependent sectors.

Under a 'business as usual' scenario, the economic outlook for Far North's primary production sector is however positive – with a long-term average annual increase in employment of 1.5% overall (2016 – 2043), or total growth of 41% (just over 1,000 jobs). All sectors are projected to experience some employment growth, but the above average growth rates are expected in forestry, diary and apiculture. Due to expected increases in productivity and commodity prices/exports, gross output and value added generated by the primary production is projected to rise at a faster rate than employment (83% and 79% respectively between 2016 and 2043). This equates to an increase in value added (akin to GDP) of \$43m by 2023 and \$161m by 2043 from the primary production sectors combined.

Given the recent declines but the potential for modest projected growth, the continued loss and fragmentation of highly versatile soils, and productive land generally to non-productive land uses is seen as further constraining these primary production sectors and putting potential future growth at risk, in particular horticulture and fruit growing businesses that are reliant upon access to high quality versatile soils.

The irrigation of productive land, particularly around Kerikeri, constitutes an infrastructural element of significant value that would be virtually irreplaceable in today's market and has been identified as a finite resource<sup>16</sup>. The Kerikeri Irrigation North Region spans a land area of 3,854ha and the Kerikeri Irrigation South Region spans a land area of 1,947ha<sup>17</sup>. This is a combined total of 5,801ha, almost exclusively within the Rural Production Zone.

An analysis of how each sector is located relative to the extent of the Kerikeri Irrigation North and South Regions and the district's aquifers (grouped as the Aupouri Peninsula aquifer and other aquifers), or otherwise<sup>18</sup> is assessed. In terms of the land area of those parcels located wholly or partly in the Kerikeri Irrigation North and South Regions combined (10,522ha)<sup>19</sup>, parcels linked to primary production activities account for 67% of the total (6,997ha of parcel area). Horticulture and fruit growing properties make up 12% of the total area of properties located in the combined

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<sup>15</sup> This may not capture the seasonal workforce of the horticultural sector, as it reflects paid employees and working proprietors as at February each year.

<sup>16</sup> As has been found by the Environment Court in Decision No 2016 NZEnvC 047.

<sup>17</sup> Based on the map files supplied by Council.

<sup>18</sup> Note, there is a degree of overlap between the Kerikeri Irrigation North and South Region and aquifers, so a property can be tagged for both.

<sup>19</sup> Compared to an actual land area of Kerikeri Irrigation North and South Regions combined of 5,801ha, thus confirming that some parcels have only a portion of their area within the irrigation region boundaries.

Irrigation Regions, whereas a small number of larger sheep and beef farming properties make up 23% of the total area and similarly dairy farming properties make up 25% of the total area. This reflects opportunities for greater expansion of horticultural uses into this area through the conversion of sheep and beef farms in particular. Collectively, the gross output of primary production sectors in the combined Irrigation Regions in the Far North is estimated at \$46.2m.

Non-primary productive land uses make up 33% of the property area covered by the combined Irrigation Regions. This means that 3,524ha of property is occupying the Irrigation Regions that may not be utilising its productive capacity for wider economic gain. Further, rural residential and lifestyle intensification of this area will further erode the opportunities for the productive potential of this area to be realised.

The report concludes that it is imperative that the productive capacity of highly versatile soils, and particularly in aquifer areas (including the Kerikeri Irrigation North and South Regions) are protected and this is especially the case for horticultural production occurring on highly versatile soils that are supported in aquifer areas. The direct, indirect and downstream effects of horticultural production on these soils contribute strongly to diversity of employment and economic activity that the Far North District economy requires in order to be resilient to future shocks.

*So what are the key drivers associated with rural residential and rural lifestyle intensification of the Rural Environment?*

Our analysis has identified that the demand for rural residential and rural lifestyle properties is driven by a combination of a reasonably permissive planning regime coupled with strong growth in demand for this type of rural living opportunity, which is driven by a key segment of the population.

In socio-economic terms, rural residential and rural lifestyle households have some characteristics common to urban residential communities and/or rural communities but can be distinguished and the analysis indicates that they are a distinct market/segment of the district population and household structure. As such the future growth of rural residential/lifestyle properties cannot be ignored. An obvious feature that distinguishes rural living and rural lifestyle communities is their preference for land area/section size. The larger lifestyle blocks, which would be a less efficient residential land use in the Rural Living zone when smaller lots are anticipated, are often further from urban areas and provide the opportunity for small scale farming or horticultural activity, but this is not always the case.

In terms of demand, there appears to have been a strong demand pattern for new rural residential and rural lifestyle properties in the Rural Production Zone, which has been enabled by subdivision provisions within the District Plan and in particular the existing grandfathering clause where the subdivision is created from a site that existed at or prior to 28 April 2000. The analysis of subdivision lot sizes within the Rural Production Zone identifies that the zone is characterised by a mix of very large properties and small-moderate properties (which broadly fall within a scale akin to rural residential or rural lifestyle lots). Of the size brackets considered, the second most common lot size after the 20+ha bracket, is the 2-4ha size. There has also been strong demand for properties in the 1-2ha. Combined, the 4,000-8,000sqm range has also been popular.

This enabling rule framework is also coupled with household growth in the rural residential and rural lifestyle households. Anticipated future growth sees the District grow from around 23,720 households in the 2013 Census to 27,350 by 2043. In 2013 almost half the households (49%) were classified as being on more traditional rural or rural village properties (11,600 out of the 23,720) and just over a third (34%) were classified as being on urban residential properties (7,980 out of 23,720). The balance, 18% were estimated to be rural residential or lifestyle households.

The analysis of projected demand for additional households, has identified growth of 1,490 households or 41% expected to be rural lifestyle, 1,120 households are expected to be added to the towns as residential (31%) and almost 1,000 (920 or 25%) are expected to be classified as rural residential. As a consequence, the analysis suggests that there will be continued demand for dwellings/lots in the Rural Living and Coastal Living zones and growing pressure for lifestyle block subdivisions in the Rural Production and General Coastal Zone over time, as well as Waimate North and Kerikeri Inlet Zone.

*So how can rural residential and rural lifestyle intensification be more effectively managed?*

When comparing projected demand growth for rural residential properties with capacity at the ward level, the existing Rural Living and Coastal Living Zones show significant surplus capacity based on theoretical and unconstrained potential subdivision down to minimum lot sizes (however potential lot yields may be overstated, so some caution is required). The ability to enable greater capacity within the Rural Living Zone, in particular, coupled with tightening

subdivision rules in the Rural Production Zone, may be an effective approach in responding to this unconstrained rural residential and rural lifestyle development intensification.

Below is the calculated yield of maximum theoretical potential in the Rural Living Zone if minimum lot sizes were reduced to 2,000m<sup>2</sup> (applying the same assumptions and conditions in this report). Over the total district, this yield is compared with lot sizes already provided for in the Rural Living Zone as follows:

- 4000m<sup>2</sup> – 3,885 additional lots.
- 3000m<sup>2</sup> – 5,416 additional lots.
- 2000m<sup>2</sup> – 7,195 additional lots.

In terms of providing for additional capacity for rural residential development, lowering the minimum lot size to 2,000m<sup>2</sup> in the Rural Living Zone, provides for close to double the capacity relative to the 4,000m<sup>2</sup> minimum under the Operative District Plan. Importantly, while the figures don't allow for provision of road area, landscaping etc which might be more applicable in some zone areas than others (i.e. ones that have had little development to date), what is evident is that enabling more development capacity may be an effective response to meeting future demand for rural residential intensification in the Far North District without encroaching further into the Rural Production Zone.

In terms of adopting a more effective rule framework for the rural environment, we recommend deleting the current grandfathering clauses in the District Plan. We also question the effectiveness of the existing 20ha minimum site area supporting the Rural Production Zone. Our evaluation of viability of minimum lot sizes in the Rural Production Zone has identified that there is a threshold beyond which land is no longer large enough to viably support a range of primary productive uses (particularly for new owners that may have taken on debt to purchase the property). In the context of the Rural Production Zone this would occur for all primary productive land uses where subdivision densities are reduced below 40ha, however we acknowledge that there are a number of smaller established horticultural land parcels that are likely to support viable primary productive uses (particularly in aquifer/irrigation areas).

We consider that the existing operative minimum 20ha lot size in the Rural Production Zone is not expected to sustain an economically viable farming property (unless there are other sources of income not captured) and there does not appear to be a valid resource management reason for sustaining the minimum lot size at 20ha. We consider that 40ha be used as the basis for minimum lot size in the Rural Production Zone to better support and maintain viable primary production properties.

Our analysis has identified that there is significant additional capacity for expansion of primary productive uses within the District's aquifer areas and Kerikeri Irrigation North and South Regions and we recommend achieving this by promoting a minimum lot size that is targeted at a viable horticulture lot size. We recommend that a minimum lot size of 8ha be provided for within the Rural Production Zone where the majority (more than half) of the lot area sits within one of the district's aquifer areas and or Kerikeri Irrigation North and South Regions. We consider it essential for the Plan to discourage subdivision below 8ha in these areas and suggest a non-complying activity status to do so.

There has been a strong demand for rural lifestyle development in the Far North District. Twenty one percent of all parcels in the rural environment are between 1ha and 4ha in size (6,075 parcels). This is greater than the share of parcels that are 20ha or larger (5,547 parcels, 19%). The General Coastal Zone also reflects demand for rural lifestyle lots. Of the size brackets considered in the analysis, the second most common lot size after the 20+ha bracket, is the 4-6ha size. The Coastal Living Zone profile differs slightly from the Rural Living Zone in that there is evidence of rural lifestyle blocks (circa 1-4ha). This may suggest less pressure (demand) to maximise the density of this land compared to the more popular Rural Living Zone areas which are closer to urban centres. The Waimate North Zone is only small but is currently characterised by a mix of moderately large properties (8ha or greater) and small-moderate sized properties (which broadly fall within a scale akin to rural lifestyle lots). Of the size brackets considered, the most common lot size is the 2-4ha size. There has also been moderate supply to-date of properties in the 8-12ha. We consider it may be appropriate to create a Rural Lifestyle Zone where such development has already occurred in the Rural Production Zone, outside the Kerikeri Irrigation Regions (and aquifers) and where highly versatile soils are avoided.

A large area of Rural Living Zone is provided in Hururu, although has yet to see any development. The report has not examined any potential reasons for this. However, it is noted that this land is in single ownership and there is a structure plan in place. Meanwhile, there has been subdivision activity that has created rural residential and rural



lifestyle properties not far down the road (inland) in the Rural Production Zone. Further demand for these lifestyle blocks may see this pattern continue, particularly on the south side of Puketona Road. It is noted that such expansion would not be at the expense of highly versatile soils. Another area of interest is north of the Waitangi River and west of Haruru Falls Road, around Wakelins Road. There are a number of rural lifestyle lots created in this area, with those along the Waitangi River also located on class 3 soils. This area has been subdivided in the past 10 years and is an area that would appear to attract further subdivision, and this is particularly the case given that it is within the Kerikeri High School enrolment zone and in close proximity to Haruru and Paihia.

In summary, we recommend the following lot sizes<sup>20</sup> be used as a guide to manage the protection of productive potential, and in doing so, protection of highly versatile soils, whilst providing for rural residential and rural lifestyle development opportunities in the Far North.

Zone	Recommended Lot Sizes	Recommended Activity Status
Rural Production Zone	>=40ha <40ha	Controlled Activity Discretionary
Rural Production Zone (where the majority (more than half) of the lot area sits within one of the district's aquifer areas and/or the Kerikeri Irrigation North and South Regions)	>=8ha <8ha	Restricted Discretionary Activity Non-Complying Activity
Rural Lifestyle Zone (new zone proposed) <sup>21</sup>	>=2ha <2ha	Restricted Discretionary Non-Complying Activity
Rural Residential Zone (utilise existing Rural Living Zone)	<2000m <sup>2</sup>	Non-Complying Activity

The recommendations of this report need to be supported with a strong objective, policy and rule framework (including appropriate matters of control or discretion) to protect highly versatile soils, in order to give effect to the Northland Regional Policy Statement. Further, the recommendations for minimum lot sizes above should not be considered in isolation. These changes may have impacts on other provisions within the existing zones or other sections of the plan, and potentially change development opportunities that exist under the current District Plan.

We envisage the recommendations of this report will be explored further (through issues and option responses and through any s32 evaluation report supporting a future District Plan Review) in terms of developing a holistic approach to managing activities in the rural environment to protect highly versatile soils.

<sup>20</sup> In the context of any future District Plan review. These are not site-specific recommendations.

<sup>21</sup> We note there may be an ability to utilise capacity within the Coastal Living and Waimate North zones, however lot sizes may need to be different in these areas to acknowledge the characteristics these locations seek to protect. This new zone could be located in areas where this type of development has historically occurred in the rural environment but should be outside areas identified as having highly versatile soils and the Kerikeri Irrigation North and South Region and aquifers.

## 1 INTRODUCTION

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4Sight Consulting Limited (4Sight) and Market Economics (M.E) have been engaged by the Far North District Council (FNDC or Council) to undertake a “Rural Environment Economic Analysis” research project. This research is to inform a review of the Far North District Plan (District Plan), while enabling the Council to give effect to the higher order policy framework under the Operative Northland Regional Policy Statement 2016.

It is understood that the research in this report will assist in informing the s32 evaluation report and rationale for the District Plan review that is currently occurring as required by the Resource Management Act 1991 (RMA). This report focuses on a review of the primary production sector in the Far North District, existing rural zonings (production and living), existing coastal zones (general and living), subdivision standards and lots sizes and how these contribute to the Far North’s economy, along with the impacts of growth pressure (in particular residential) and impacts on versatile soils across the District. This report also sets out a specific analysis of Maori land in relation to these matters.

It is intended that the findings of this research can be utilised by Council to make informed decisions around policy, zoning and future growth direction for townships and the District overall.

The research presented in this report has been primarily a desk-top study, informed by some targeted primary research.

Our research findings are set out as follows:

- **Chapter 1** provides an introduction to the research.
- **Chapter 2** details the economic trends in the Far North district, including analysis of past, present and future economic growth.
- **Chapter 3** places the primary sector production on the ground and includes specific analysis of horticulture and fruit growing; dairy farming; sheep, beef cattle and grain farming, other livestock farming; forestry and logging; and apiculture.
- **Chapter 4** assesses the economic viability of primary production and includes an assessment of economic viability relative to different parcel sizes and modelling of the economic impact of changing land use scenarios.
- **Chapter 5** sets out the rural residential and rural lifestyle context through a statutory and literature review, the development of a rural residential/lifestyle and rural production interface methodology, development of rural residential and lifestyle definitions, and an audit of subdivision patterns in rural zones.
- **Chapter 6** provides an analysis of the supply of and demand for rural residential and rural lifestyle development in the Far North. This includes the development of a social and economic profile of these markets for the district, analysis of current plan enabled capacity<sup>22</sup> and constraints on supply, and an analysis of demand (including comparing demand growth and capacity – the sufficiency of theoretical plan enabled capacity).
- **Chapter 7** identifies and analyses development principles and sets out the key conclusions and recommendations of this research.

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<sup>22</sup> The study does not consider the commercial feasibility of plan enabled capacity.

## 2 FAR NORTH DISTRICT RURAL ECONOMIC TRENDS

The section details the economic trends in the Far North district, including analysis of past, present and future economic growth.

### 2.1 Economic Growth – Past and Present

#### 2.1.1 District Level Trends

In 2016, the Far North District contained approximately 7,467 businesses, employing approximately 21,800 people<sup>23</sup>. This accounts for 37% of all Northland Region businesses and 33% of all regional employment. The regional share of businesses has been relatively consistent since 2000, while the District’s share of regional employment has decreased slightly (from 35-36% in the early 2000s).

Figure 1 shows how business and employment counts have varied annually between 2000 and 2016. Slow but steady growth was evident leading up to the global financial crisis, after which there were persistent but gradual declines to 2013. Employment has returned to a growth trend between 2014 and 2016 but is still some way off the 2008 peak (23,590).



Figure 1: Total Employment and Business Growth in Far North District 2000-2016

The net change in employment since 2006 (i.e. over the past 10 years), has been -1,485 (a decrease of 6%). There are also 285 fewer businesses in 2016 compared to 2006 (a decrease of 4%).

<sup>23</sup> Employment measure includes employee count and estimated working proprietors (M.E).

### 2.1.2 District Level Trends by Sector

**Appendix A:** contains a summary of business and employment growth by 48 economic sectors between 2006 and 2016. The largest growth sectors in business terms have been Finance, Rental/Hiring/Real Estate, Personal and Other Services, Professional/Scientific/Technical /Administrative and Support Services, Health Care and Social Assistance.

Not all of these sectors have translated into strong employment growth. The largest growth sectors in employment terms have been Health Care and Social Services, Central Government/Defence/Public Safety, Professional/Scientific/Technical /Administrative and Support Services, Agriculture/Forestry and Fishing Support Services, Education and Training and Wholesale Trade.

**Appendix B:** contains analysis of 2016 location quotients (LQ) for Far North district relative to the region and total New Zealand. Location quotients are useful for identifying the sectors in which an area has specialised or has a core focus. This is often in response to the resources available in an area (including climate, geography and infrastructure) but may also reflect industry clusters that have established/agglomerated over time and may be in response to a greater local need relative to other locations. Values greater than 1 represent a greater role of that sector locally than experienced elsewhere.

Moderate to large sectors where Far North District employment is 20% greater than the regional average share (i.e. regional specialisation) include:

- Horticulture and Fruit growing, Sheep/Beef Cattle and Grain Farming, Poultry/Deer and Other Livestock Farming, Fishing and Aquaculture, Agriculture/Forestry and Fishing Support Services, Meat and Meat Product Manufacturing, Other Food Manufacturing, Accommodation and Food Services, Rental/Hiring and Real Estate Services and Local Government Administration. The sector with the highest regional LQ is Fishing and Aquaculture (2.25). The Far North accounts for 74% of regional employment in this sector.

Moderate to large sectors where Far North District employment is 20% greater than the national average share (i.e. national specialisation) include:

- All of the same sectors that are significant regionally with the exception of Meat and Meat Product Manufacturing and Other Food Manufacturing and with the inclusion of Education and Training, Electricity Generation and Supply, Wood Product Manufacturing, Dairy Farming and Forestry and Logging. The Fishing and Aquaculture sector has a LQ of 4.36 when compared with the national average.

#### Land Based Primary Production Sectors

In 2016, land based primary production sectors (which cover farming, horticulture and forestry)<sup>24</sup> employed 2,587 people, spread across 1,937 businesses in Far North District. The land based primary production sector accounts for 26% of total district businesses and 12% of total employment (2016). Table 1 shows the breakdown of activity by sector. Sheep/Beef Cattle and Grain Growing makes up 48% of the businesses and 33% of the employment. By comparison, Horticulture and Fruit Growing makes up 14% of businesses and 29% of employment (and employs on average 2.8 workers per business)<sup>25</sup>.

Apiculture (beekeeping) is captured within the Poultry/Deer and Other Livestock Farming Sector. In 2016 it made up just under half the businesses in the Poultry/Deer and Other Livestock Farming Sector but three quarters of employment. This relates only to those business whose main (primary) activity is beekeeping<sup>26</sup>. In reality, many businesses across the other land based primary production sectors are expected to be involved in beekeeping/honey production as a secondary activity<sup>27</sup>. For example, orchards or farms that have their own hives and sell honey via farm

<sup>24</sup> Land based is specified to distinguish fishing and aquaculture – which form part of the primary sector.

<sup>25</sup> This may not capture the seasonal workforce of the horticultural sector, as it reflects paid employees and working proprietors as at February each year.

<sup>26</sup> I.e. that is how they are registered from an industrial classification perspective with IRD.

<sup>27</sup> All primary producers have the potential to earn revenue from secondary activities, such as farmers that have forestry blocks or dairy farmers that also have dry stock units. There is however no data available that would allow employment in the primary production sector to be examined at this level of detail.

gate sales or to a wholesaler or earn revenue from leasing land to hive owners. The apiculture sector is discussed later in the report.

Table 1: Land Based Primary Production Employment & Business Growth by Sector in Far North District 2006-2016

Sector	Businesses				Employment				Average MECs Per Business 2016
	Businesses 2016	Share (%)	Growth 2006-2016	Growth 2006-2016 %	MECs 2016	Share (%)	Growth 2006-2016	Growth 2006-2016 %	
Horticulture and fruit growing	273	14%	- 135	-33%	763	29%	- 68	-8%	2.8
Sheep, beef cattle and grain farming	936	48%	- 181	-16%	848	33%	- 297	-26%	0.9
Dairy cattle farming	324	17%	- 156	-32%	651	25%	- 134	-17%	2.0
Poultry, deer and other livestock farming	123	6%	5	4%	152	6%	51	51%	1.2
<i>Beekeeping</i>	60	3%	41	214%	115	4%	75	189%	1.9
<i>Poultry, deer and other livestock farming</i>	64	3%	- 35	-36%	37	1%	- 24	-39%	0.6
Forestry and logging	280	14%	20	8%	173	7%	- 20	-10%	0.6
<b>Total Land Based Primary Production</b>	<b>1,937</b>	<b>100%</b>	<b>- 446</b>	<b>-19%</b>	<b>2,587</b>	<b>100%</b>	<b>- 466</b>	<b>-15%</b>	<b>1.3</b>

Source: Statistics New Zealand Business Directory, M.E. MEC = Modified Employee Count (includes employees and estimated working proprietors)

In addition to the land based primary production sectors shown in Table 1, there is a support sector that services agriculture, fishing and forestry activities. This sector employed 515 workers in 136 businesses in 2016.

Figure 2 shows how total land based primary production business and employment counts have varied annually between 2000 and 2016 across the total district. The global financial crisis has not had a marked influence. The sector has shown steady decline in business and employment counts from 2002 until 2010. At that time, employment began to recover while the business count continued to drop till 2014-2015 where it has plateaued. These same trends are evident at the regional level.

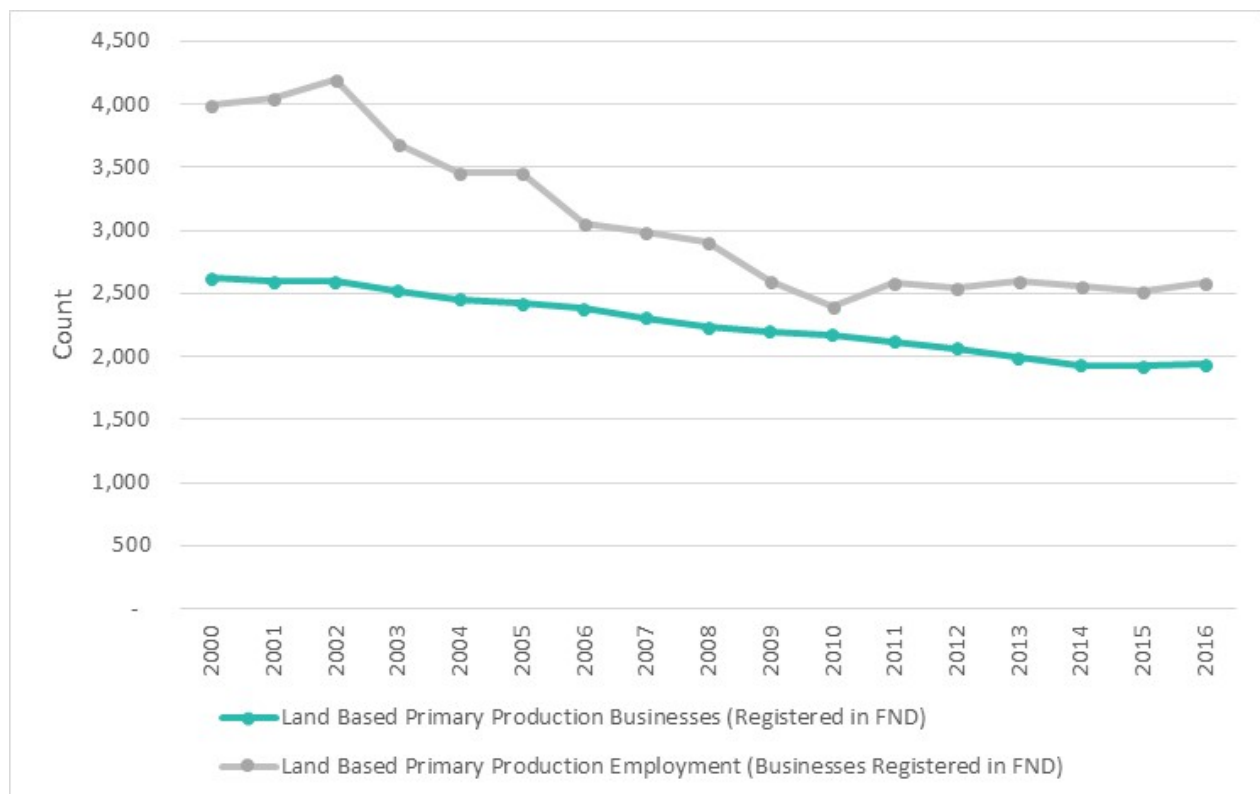


Figure 2: Land Based Primary Production Employment & Business Growth in Far North District 2000-2016

Over the last ten years (Table 1), the net decrease in land based primary production businesses is -446 (a decrease of 19%). Employment has decreased by approximately 466 jobs (-15%). The Sheep/Beef Cattle and Grain Farming sector has accounted for the largest share of the decrease in that period (-181 businesses and approximately -300 jobs). This

is a percentage loss for that sector of -16% and -26% respectively. Dairy Farming has also decreased strongly (-156 business and -134 jobs), followed by Horticulture and Fruit Growing (-135 businesses and -68 jobs) (Table 1).

However, not all sectors are in decline. Beekeeping businesses have increased by 214% in the last ten years (+41 businesses to reach a total of 60 in 2016). Employment in the Beekeeping sector has increased by nearly 190% (+75 jobs). The number of Forestry and Logging businesses has also increased by 20 (+8%) although employment has dropped slightly at the same time (-20 workers or -10%). Further discussion on what has contributed to these sector trends is included in sections 3.5-3.10.

## 2.2 Rural Environment

### 2.2.1 Rural Environment Definition

The rural environment has been defined, for the purpose of this study, as the combination of the following operative District Plan zones/sub-zones (and shown in Figure 3):

- Rural Production;
- Rural Living;
- Minerals;
- General Coastal;
- Coastal Living;
- Waimate North;
- South Kerikeri Inlet Zone; and
- South Kerikeri Inlet Zone Sensitive Area.

This rural environment is broader than just the zones included in the Rural Environment section of the District Plan. Lakes, rivers, roads, rail, conservation areas and the recreational activities zones are treated as special zones, even though some occur in the rural areas of the district. It was also decided to classify Moturoa Island, Carrington Estate and Kauri Cliffs as special zones as they combine a mix of conservation, urban and recreation uses, so are not typically rural. The balance of the district is defined as the Urban Environment (and includes residential, commercial and industrial land uses)<sup>28</sup>. The Coastal Marine Area is totally excluded.

A summary of the rural and urban areas is shown in Figure 4. The rural environment covers a total of 527,773ha – 78.6% of the district’s land area. The combined urban environment equates to an estimated 3,319ha (less than 1% of district area) and combined special zones equate to an estimated 140,554ha (20.9% of district area<sup>29</sup>).

Table 2 provides a breakdown by rural zone. The Rural Production Zone makes up nearly 460,000ha – 86.9% of the total combined rural environment and 68.3% of the total district. The General Coastal Zone is the next largest but is small by comparison to the Rural Production Zone. It’s 61,448ha accounts for 11.6% of the rural environment and just 9.1% of the district. Other rural zones make up less than 1% each of the rural environment and comprise small localised pockets of land.

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<sup>28</sup> The full list of operative zones included in “urban” area Coastal Residential, Russell Township, Horticultural Processing, Orongo Bay Special Purpose, Point Veronica, Quail Ridge Country Club, Commercial, Industrial, Residential.

<sup>29</sup> In the combined special zones, the Conservation zone accounts for 86.4% of the land area, Roads account for 8.4% and Lakes and Rivers account for 3.7%. The balance of special zones make up 1.6% of the combined special zone land area.

Table 2: Summary of Rural Environment Land Area by Zone and Zone Group

Operative Zone/Sub-Zone	Area (ha)	Share of District Area	Share of Rural Area
Coastal Living	3,152	0.5%	0.6%
General Coastal	61,448	9.1%	11.6%
Minerals	1,016	0.2%	0.2%
Rural Living	2,630	0.4%	0.5%
Rural Production	458,834	68.3%	86.9%
South Kerikeri Inlet Zone	133	0.02%	0.03%
South Kerikeri Inlet Zone Sensitive Area	81	0.01%	0.02%
Waimate North	479	0.1%	0.1%
<b>Total Rural Environment *</b>	<b>527,773</b>	<b>78.6%</b>	<b>100.0%</b>
Special Zone Area *	140,554	20.9%	
Urban Environment *	3,319	0.5%	
<b>Total Far North District</b>	<b>671,647</b>	<b>100.0%</b>	

Source: FNDC. \* M.E defined aggregations. Excludes Coastal Marine Zone.

Area calculated in GIS. M.E has removed some areas of overlap between zones as supplied by Council. Roads, lakes and rivers included in Special along with Conservation and other special use zones.

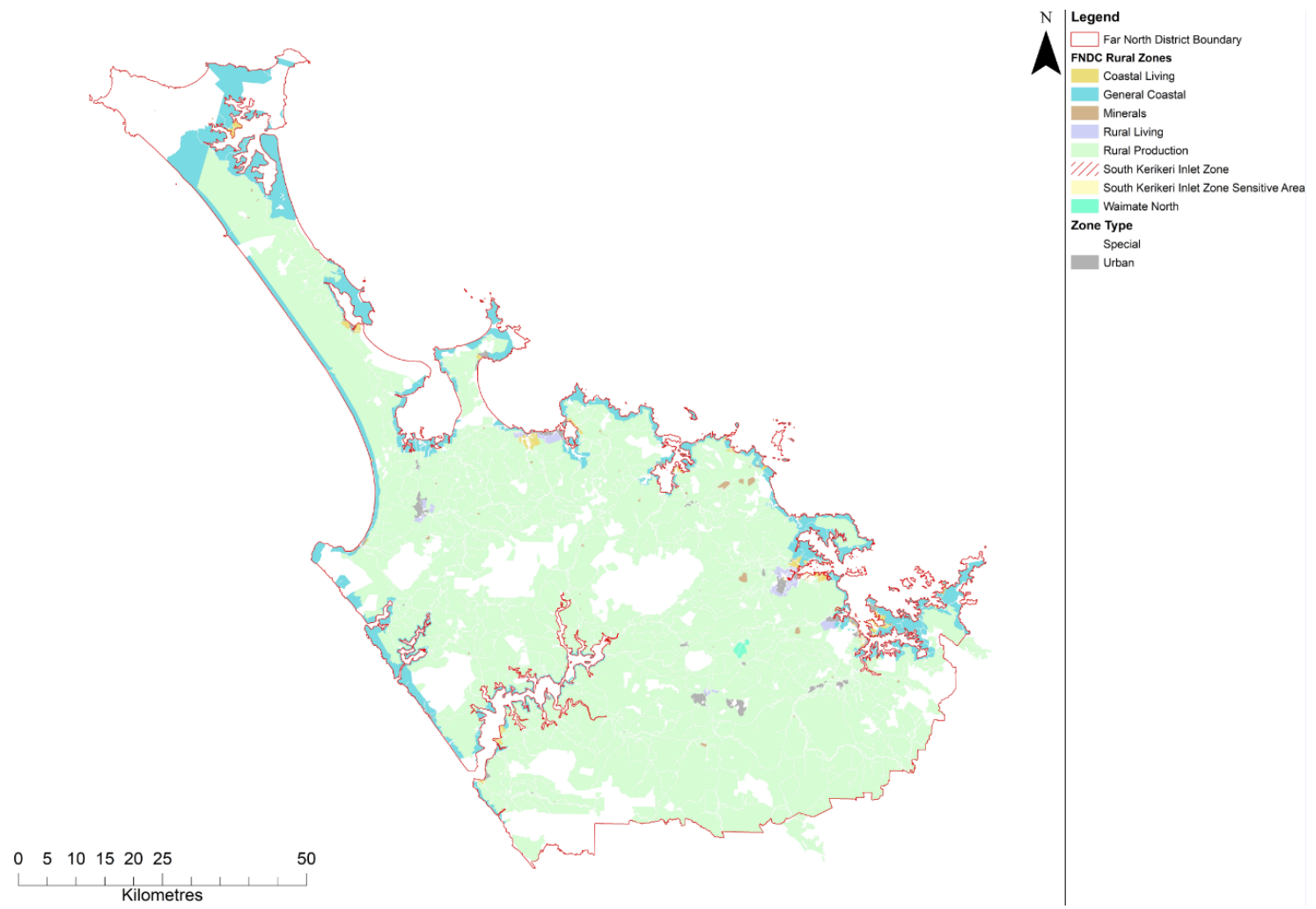


Figure 3: Map of Rural Environment Zones



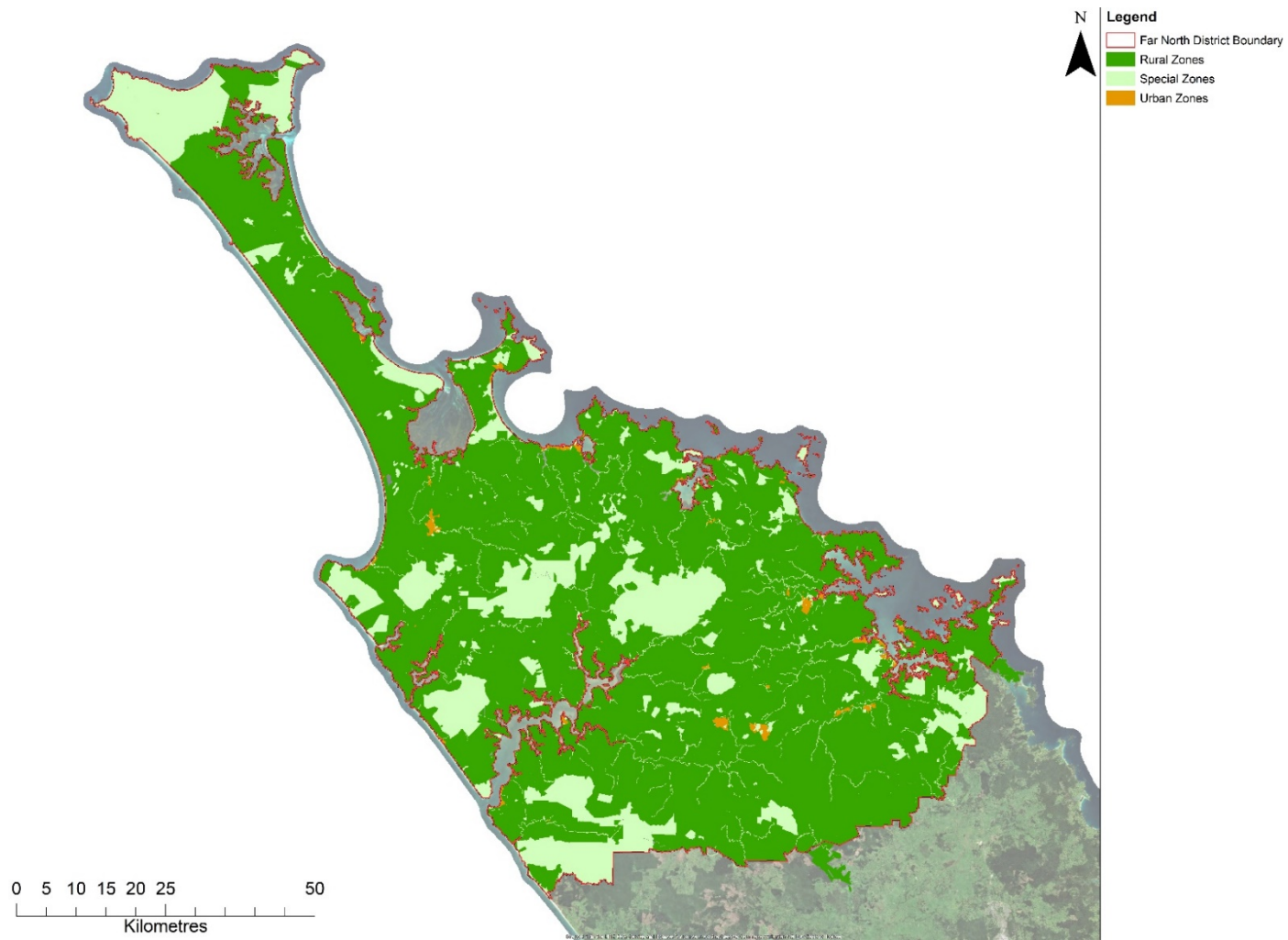


Figure 4: Map of Total Rural Environment Extent

## 2.3 Economic Growth – Future

### 2.3.1 Economic Futures Model

M.E has developed economic growth projections for the Far North District using its Economic Futures Model (EFM). The projections include growth in employment (MECs), gross output and value added between 2016 (base year) and 2043.

The economic projections are driven by a set of “Business as Usual” (BAU) commodity and service parameters, translated into demands. However, the key drivers of future demand are based on projections of population growth and tourism flows. In the Input-Output framework (the basis of the Multi-Regional Input-Output Table (MRIO)) these demands are termed ‘final demands’. Within the model final demands are made up of five categories: household consumption, international exports, inter-regional exports, gross fixed capital formation (GFKF), and changes in inventory. Further detail on the EFM is provided in **Appendix B**:

### 2.3.2 District Level Growth

The slow but steady growth in total district employment experienced in recent years (i.e. since 2014) is projected to continue in the medium to long term based on a medium growth outlook for the Far North District (Table 3). Based on the EFM, total district employment is expected to grow by 3,020 jobs between 2016 and 2043 (a total increase of 14%) to reach 24,820 employed. Gross Output is projected to increase from \$3,713m (2016) to \$5,319 by 2043 (growth of \$1,606m or +43%). Value Added is projected to increase from \$1,773m (2016) to \$2,417 by 2043 (growth of \$644m or +36%).

Table 3: Total Projected Growth in Far North District 2016-2043 by Economic Indicator

Variable	Growth Projections							Growth	
	2016	2018	2023	2028	2033	2068	2043	2016-2043	2016-2043 %
Employment (MECs)	21,800	22,560	23,290	23,910	24,400	24,690	24,820	3,020	14%
Gross Output (\$m <sup>2016</sup> )	\$ 3,713	\$ 3,936	\$ 4,250	\$ 4,548	\$ 4,829	\$ 5,083	\$ 5,319	1,606	43%
Value Added (\$m <sup>2016</sup> )	\$ 1,773	\$ 1,860	\$ 1,991	\$ 2,115	\$ 2,228	\$ 2,328	\$ 2,417	644	36%

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario.

### 2.3.3 District Level Growth by Sector

Across the district, the ten largest employment sectors (as at 2016) account for 42% of current district employment and are anticipated to account for 26% of net employment growth to 2043. However, not all of these sectors show a projected increase in employment in the long term (Table 4). Detail on the growth outlook of all 48 sectors is shown in **Appendix C**, including projections of sector output and value added. The construction sector shows the strongest growth rate. Construction employment is projected to increase by 27% (+440 jobs) by 2023 and by 49% by 2043 (+820 jobs).

It is important to acknowledge that there are a range of assumptions in the EFM that influence future employment growth. First, it shows a business as usual outlook, so does not allow for significant sectoral shifts or local/regional initiatives. While slight population growth is projected (particularly in the medium term, see **Appendix D**), the demographic profile of the district is shifting (over time the District will have fewer young children and more elderly – i.e. an ageing population), and this places different pressures on the final demand sectors. Similarly, there are also improvements expected in productivity per employee. All of these factors (variously driving and slowing employment demands) are combined in the EFM. For example, while the EFM shows slight decline in Accommodation and Food Services employment, it shows that the turnover and value added of this sector is increasing overall in the long-term. Employment therefore shows only part of the growth story.

Table 4: Projected Employment Growth in Far North District 2016-2043 – Top Ten Sectors

Rank	Sector	Employment Growth Projections (MECs)							Growth		
		2016	2018	2023	2028	2033	2068	2043	2016-2043	2016-2043 %	
1	Health care and social assistance	2,580	2,570	2,540	2,540	2,530	2,500	2,440	-	140	-5%
2	Retail Trade	2,400	2,440	2,520	2,580	2,610	2,620	2,610		210	9%
3	Accommodation and food services	2,200	2,190	2,150	2,100	2,050	1,970	1,880	-	320	-15%
4	Education and training	2,160	2,160	2,140	2,110	2,050	1,980	1,890	-	270	-13%
5	Construction	1,660	1,980	2,100	2,210	2,310	2,400	2,480		820	49%
6	Professional, scientific, technical, administrative and support services	1,630	1,690	1,750	1,790	1,820	1,830	1,830		200	12%
7	Sheep, beef cattle and grain farming	850	870	900	930	960	990	1,010		160	19%
8	Central government administration, defence and public safety	790	800	800	800	790	780	750	-	40	-5%
9	Horticulture and fruit growing	760	790	840	880	920	960	990		230	30%
10	Rental, hiring and real estate services	680	710	750	790	820	850	870		190	28%
Sub-Total - Top 10 Employment Sections (2016)		15,710	16,200	16,490	16,730	16,860	16,880	16,750		1,040	7%
	Combined Other Sectors	6,090	6,360	6,800	7,180	7,540	7,810	8,070		1,980	33%
Total Sectors		37,510	38,760	39,780	40,640	41,260	41,570	41,570		4,060	11%
Top 10 Sector as Share of Total		42%	42%	41%	41%	41%	41%	40%		26%	

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario. MEC = Modified Employee Count (includes employees and estimated working proprietors)

Based on the EFM medium growth outlook, the top 10 employment sectors in the Far North will differ slightly by 2043 (Table 5). Central Government Administration and Rental, Hiring and Real Estate Services drop out of the top 10 (having ranked 8<sup>th</sup> and 10<sup>th</sup> in 2016 employment). Dairy Farming moves into 7<sup>th</sup> spot (previously the 11<sup>th</sup> biggest employer) and Agriculture, Forestry and Fishing Support services moves into 10<sup>th</sup> spot (previously the 13<sup>th</sup> biggest employer). Retail moves into the number 1 spot and Construction is projected to be the second biggest employer in the long term.

Table 5: Projected Top Ten Employment Sectors 2043 in Far North District

Rank 2043	Sector	Rank 2016	Shift
1	Retail Trade	2	↑
2	Construction	5	↑
3	Health care and social assistance	1	↓
4	Education and training	4	●
5	Accommodation and food services	3	↓
6	Professional, scientific, technical, administrative and support services	6	●
7	Dairy cattle farming	11	↑
8	Sheep, beef cattle and grain farming	7	↓
9	Horticulture and fruit growing	9	●
10	Agriculture, forestry and fishing support services	13	↑

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario.

#### Land Based Primary Production Sectors

Table 6 provides a summary of projected growth in the land based primary production sectors in the Far North. Over the long term, annual average growth of 1.5% in employment is projected – an increase of 1,070 jobs and a positive outlook relative to recent trends. Strong annual growth in Forestry and Logging is projected (5.1% per annum between 2016 and 2043). Dairy Farming shows more modest growth rates (2.2% per annum on average) but accounts for just over a third (36%) of employment growth to 2043. Gross output of the combined land based primary production sector is projected to increase by \$473m by 2043 (+83% or 3.1% per annum). Value added is projected to increase by \$161m over the same period +79%/2.9% per annum).

Table 6: Projected Land Based Primary Production Growth in Far North District 2016-2043

Sector	2016	2023	2043	Growth 2016- 2023	Growth 2016- 2043	Growth 2016- 2023 %	Growth 2016- 2043 %
<b>Employment (Modified Employee Count, MECs)</b>							
Horticulture and fruit growing	763	835	991	72	228	9%	30%
Sheep, beef cattle and grain farming	848	901	1,009	53	160	6%	19%
Dairy cattle farming	651	769	1,040	118	389	18%	60%
Poultry, deer and other livestock farming	152	170	208	18	56	12%	37%
Forestry and logging	173	237	409	64	236	37%	137%
<b>Total Land Based Primary Production</b>	<b>2,587</b>	<b>2,913</b>	<b>3,657</b>	<b>325</b>	<b>1,070</b>	<b>13%</b>	<b>41%</b>
<b>Gross Output (\$m2016)</b>							
Horticulture and fruit growing	89	103	138	13	49	15%	55%
Sheep, beef cattle and grain farming	171	190	242	19	71	11%	41%
Dairy cattle farming	161	199	305	38	145	24%	90%
Poultry, deer and other livestock farming	11	13	18	2	7	17%	63%
Forestry and logging	136	188	337	53	202	39%	148%
<b>Total Land Based Primary Production</b>	<b>568</b>	<b>693</b>	<b>1,041</b>	<b>125</b>	<b>473</b>	<b>22%</b>	<b>83%</b>
<b>Value Added (\$m2016)</b>							
Horticulture and fruit growing	37	42	57	5	20	15%	55%
Sheep, beef cattle and grain farming	69	77	97	8	29	11%	41%
Dairy cattle farming	52	64	98	12	46	24%	90%
Poultry, deer and other livestock farming	4	4	6	1	2	17%	63%
Forestry and logging	43	59	106	17	63	39%	148%
<b>Total Land Based Primary Production</b>	<b>203</b>	<b>246</b>	<b>364</b>	<b>43</b>	<b>161</b>	<b>21%</b>	<b>79%</b>

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario.

### 3 PLACING PRIMARY SECTOR PRODUCTION ON THE GROUND

This section examines the following primary production sectors in more detail – taking a spatial economic approach where possible as at 2016:

- Horticulture and Fruit Growing;
- Sheep, Beef Cattle and Grain Growing;
- Dairy Farming;
- Other Livestock Farming;
- Forestry and Logging; and
- Apiculture.

It also includes a spatial analysis of versatile soils, water resources and Maori owned land. The relationship between the key production sectors and these physical/ownership characteristics is examined (and from both perspectives).

#### 3.1 Approach

While information is known about employment and businesses at a meshblock level, this does not provide sufficient detail to understand each sector by rural zone<sup>30</sup> and by land area or property location (as required by Council’s brief). In order to present a more spatially refined analysis of these sectors, M.E has first carried out a reconciliation of employment activity in each meshblock with the properties that fall within each meshblock<sup>31</sup>. The property level estimates of employment by sector for 2016 allow for subsequent analysis that meets Council’s information needs. The approach applied, described in more detail in **Appendix E**, relies on a number of assumptions and there are limitations to the accuracy of some input data, and therefore the output at a localised level. However, the approach is considered appropriate for the purpose of this report as long as data limitations are acknowledged, and the findings are relied upon to inform high level and aggregate area trends and not property specific results and implications.

The key assumptions of the reconciliation approach are that:

- a) The meshblock location of 2016 employment by sector contained in the Business Directory is accurate and guides the allocation of employment to land parcels in rounds 1 and 2 of the reconciliation process.
- b) The LINZ land use codes supplied by Council for each parcel are accurate and relevant as at 2016. This is the area of most risk in terms of the reliability of the findings.
- c) It is assumed that the LINZ land use code reflects the primary activity of the property (as opposed to secondary activities).
- d) The following relationships between economic sectors and LINZ land use codes have been applied (round 1)<sup>32</sup>:
  - i. Horticulture sector >> Primary Industry – Market Gardens and Orchards.
  - ii. Dairy sector >> Primary Industry – Dairying.
  - iii. Sheep and Beef and Grain farming sector >> Primary Industry – Stock Fattening and Primary Industry – Store Livestock.

<sup>30</sup> As meshblock boundaries do not match zone boundaries.

<sup>31</sup> Based on their centroid location.

<sup>32</sup> Pairing economic sectors with just these land use codes is a key assumption of the approach. There is insufficient information available to understand if other land use codes may also contain businesses registered to these sectors. For example, M.E has not assigned any employment activity (i.e. registered businesses) to lifestyle block properties. The effect of this assumption is that employment is concentrated within the most obvious land use types.

- iv. Poultry, Deer and other Livestock farming (excluding Beekeeping) Sector >> Primary Industry – Specialist Livestock.
  - e) For the horticulture, dairy, sheep and beef and other livestock sectors, the land use code ‘Primary Industry – Multi Use’ was also considered for a ‘match’ if located in the same meshblock as sector employment not already allocated to the priority land use codes listed above. This formed round 2 of the allocation of meshblock employment to property parcels.
  - f) Where multiple sector-property matches were found *within* a meshblock, employment was allocated pro-rata by parcel area within that meshblock (rounds 1 and 2). At the conclusion of round 2, the following shares of total sector employment had been allocated to parcels: horticulture (83%), dairy (85%), sheep and beef (89%) and other livestock (63%).
  - g) For the residual of district wide sector employment not allocated in rounds 1 and 2 above at a meshblock level, this was allocated across the remaining priority land use parcels (listed in d) above) pro-rata by parcel area (round 3). That is, where there were meshblocks that contained employment, but no matching land use parcels in that meshblock this employment was summed and allocated to parcels in meshblocks that contained no matching employment based on their share of total remaining parcel area.
  - h) For the forestry sector, it was found that there was a very low match between the location of forestry and logging employment at the meshblock level and the location of the Primary Industry – Forestry land use parcels (just 28%). This is because large blocks of forest can often exist with no on-site employment (that employment may be linked to a residential address (owner/investor) or a forestry company (often based in urban centres)). As such, M.E decided to apportion total district forestry and logging sector employment pro-rata with the location of the forestry land use parcels (and by relative area). The result of this is that it ties employment to the land parcels, when in fact that is unlikely to be the case for 72% of forestry related jobs in the Far North District. This method does however allow M.E to link gross output and value added to the land.

This process resulted in estimated employment by unique parcel. District average ratios (productivities) of gross output per worker and value added per worker were then applied to ‘put gross output and value added on the ground’. A key assumption is that the ratios per worker are the same for all workers (irrespective of role) and across all locations. A limitation of this approach is that it may over-estimate output/value added where there are part time workers included in the total<sup>33</sup> or where some businesses within a sector are more labour intensive by nature than other types of businesses (i.e. market gardens versus orchards). It does not take account of differences in labour productivity.

At a high-level the adopted approach is based on the principle that employment is a better guide of business output and value added than land area. A large land area does not necessarily mean a large operation and output. On the other hand, employment levels usually correlate with output and decisions around costs versus profit. While land area per-se is also relevant, it is considered less reliable as a primary allocation mechanism – hence is only used for the allocation of the residual of employment across the horticulture, dairy, sheep and beef and other livestock sectors (between 11-37% of the sector total), although is relied on entirely (100%) for putting the forestry and logging sector on the ground.

Parcels were coded to operative district plan zones based on their centroid location. This is not entirely accurate given the non-uniform shapes of parcels and because some parcels may contain multiple zones. Grouping parcels by zone is therefore an approximation of their zone location but the approach allows parcels to remain whole. A consequence of this is that the sum of the parcels coded to any one zone does not match the sum of the aggregate parcel area falling within the zone boundaries. This is not however considered an issue in terms of the conclusions of this report.

Parcels that contained employment in a land based primary production sector (no matter how small) were then tagged as belonging to that sector. This allows those properties to be grouped and analysed, including their spatial relationships with other resource layers, discussed below. Some 82 properties (including those coded to Multi Use)

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<sup>33</sup> Part-time and full-time workers are not distinguished in the Statistics NZ Business Directory employee count variable.

are tagged to more than one sector. This is consistent with the purpose of the Multi Use land use code and applies to less than 0.5% of all property parcels in the district.

### 3.2 Maori Owned Land - Overview

The following sector discussions include an analysis of how each sector relates to Maori owned land, or otherwise. Maori owned land (excluding Treaty settlement land) has been defined in this report as<sup>34</sup>:

- **General Land Owned by Maori:** Land which has a status described by sections 129(1)(c) and 129(2)(c) of Te Ture Whenua Māori Act 1993. This status type is normally only associated with general land owned by a Maori Incorporation or vested in a trust subject to the jurisdiction of the Māori Land Court. This status type is not automatically applied to general land that maybe owned by an individual, or group of people one of whom is Māori (unless by order of the Māori Land Court).
- **Maori Customary Land:** Land which is still held in accordance with tikanga Māori the ownership for which has not been determined by the Māori Land Court as described in sections 129(1)(a) and 129(2)(a) of Te Ture Whenua Māori Act 1993.
- **Maori Freehold Land:** Land which has been determined by the Māori Land Court by freehold order or status order as Māori land as described by sections 129(1)(b) and 129(2)(b) of Te Ture Whenua Māori Act 1993.

Files defining these property parcels were supplied by the Ministry of Justice<sup>35</sup> – the public ‘Maori Land Layer’ is up to date as at May 2017. Figure 5 maps these three types of Maori owned land by parcel within Far North District.

Table 7 shows that General Maori owned land equates to 524ha. Customary land equates to 4ha and Maori Freehold land accounts for 99% of the total, at 101,993ha. This is a combined total of 102,521ha. Note, an additional 33ha of Freehold land was identified but falls within the areas excluded from this analysis (Coastal Marine Zone and land outside the District’s southern boundary).

Table 7: Summary of Maori Owned Land in Far North District by Estimated Operative Zone

Zone/Sub-Zone	Hectares (ha)				Share of Area by Type (%)				Total Maori Land Share by Zone (%)
	General Land Owned by Maori	Maori Customary Land	Maori Freehold Land	Total Maori Land	General Land Owned by Maori	Maori Customary Land	Maori Freehold Land	Total Maori Land	
Coastal Living	-	-	447	447	0%	0%	100%	100%	0%
General Coastal	73	4	18,532	18,609	0%	0%	100%	100%	18%
Minerals	0.3	-	67.4	67.7	0%	0%	100%	100%	0%
Rural Living	33.4	-	44.2	77.6	43%	0%	57%	100%	0%
Rural Production	415	-	82,165	82,580	1%	0%	99%	100%	81%
South Kerikeri Inlet Zone	-	-	-	-	0%	0%	0%	0%	0%
South Kerikeri Inlet Zone Sensitive Area	-	-	-	-	0%	0%	0%	0%	0%
Waimate North	-	-	37	37	0%	0%	100%	100%	0%
<b>Total Rural Environment *</b>	<b>522</b>	<b>4</b>	<b>101,292</b>	<b>101,819</b>	<b>1%</b>	<b>0%</b>	<b>99%</b>	<b>100%</b>	<b>99%</b>
Special Zone Area *	1	0	502	503	0%	0%	100%	100%	0%
Urban Environment *	1	-	199	200	1%	0%	99%	100%	0%
<b>Total Far North District</b>	<b>524</b>	<b>4</b>	<b>101,993</b>	<b>102,521</b>	<b>1%</b>	<b>0%</b>	<b>99%</b>	<b>100%</b>	<b>100%</b>

Source: FNDC/M.E. Based on spatial intersection of property polygons with operative zones file (overlaps removed). \*M.E defined aggregations. Excludes Coastal Marine Zone. Area calculated in GIS. Roads, lakes and rivers incl. in Special along with Conservation and other special use zones.

<sup>34</sup> This data does not include any information about lands that may have been returned under (or are subject to) any Treaty of Waitangi Settlement process – unless settlement legislation specifically requires the land become Māori Freehold Land or a Māori Reservation.

<sup>35</sup> This work is based on/includes Ministry of Justice and Ministry for Primary Industries data © Crown Copyright - Licensed for re-use under the Creative Commons Attribution 4.0 International Licence (BY) 4.0



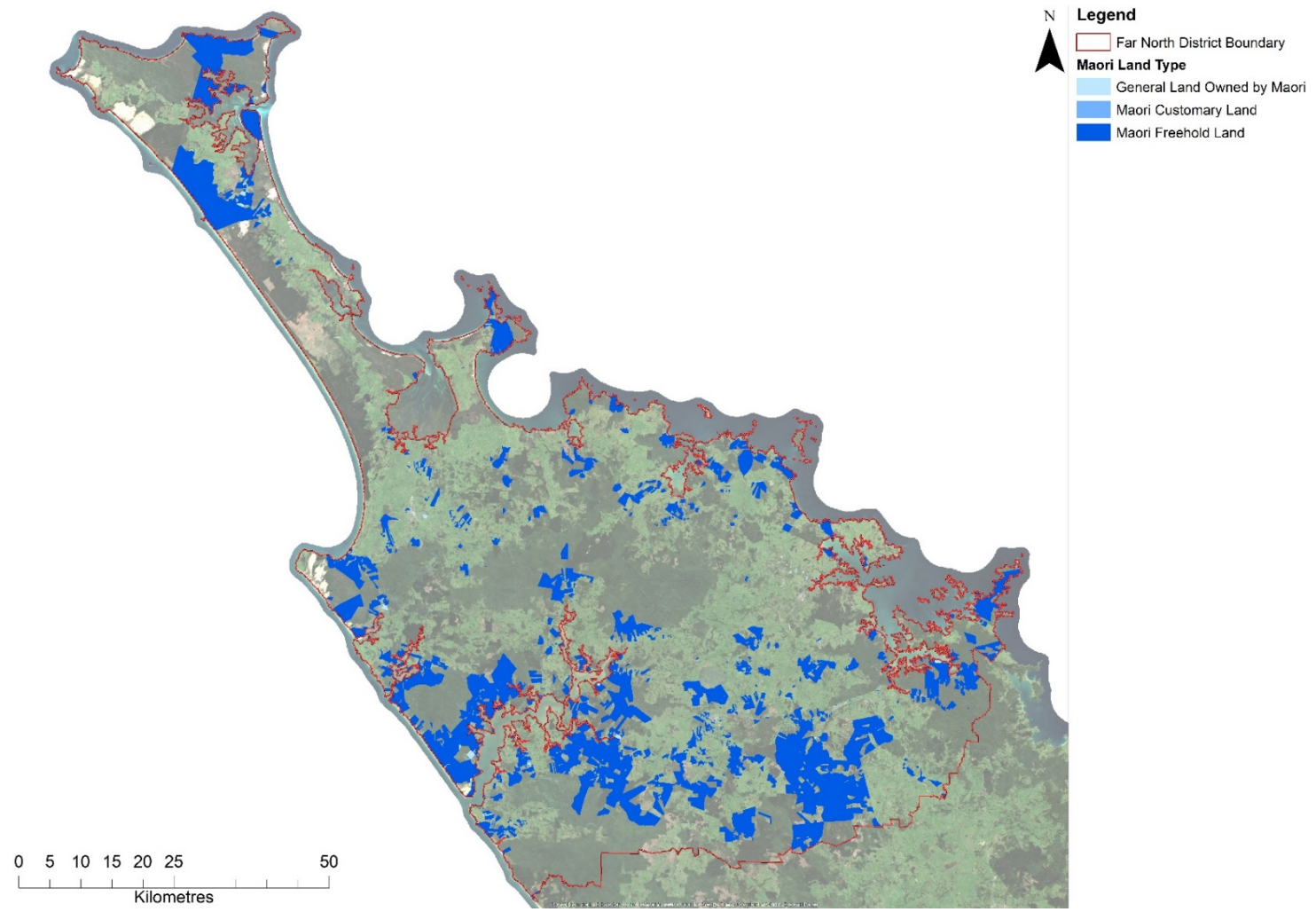


Figure 5: Map of Maori Owned Land Parcels by Type in Far North District

Overall, 99% of total Maori owned land is located in the rural environment. Management and planning for rural land is therefore likely to be especially relevant for the stakeholders of Maori land, particularly in terms of what is enabled (or constrained) in the Rural Production and General Coastal Zones, which contain 81% and 18% of all Maori owned land in the district respectively.

The Customary Maori Land located in the General Coastal Zone however makes up less than 1% of Maori land interests in that zone. General land owned by Maori makes up 43% of total Maori land interests in the Rural Living Zone, but again, this zone is of less significance in volume terms (but may have relatively more significance in value terms – not discussed here).

Figure 6 shows the current distribution of Maori land by property parcel size. It shows that the most common size bracket is parcels that are 20ha or larger (980 parcels or 23% of the total). The balance of parcels is widely spread across the size brackets, suggesting a diverse range of potential land uses. Parcels less than 2,000sqm account for a combined share of 13% (553 parcels) and parcels between 1ha and 4ha account for a combined share of 18% (790 parcels).

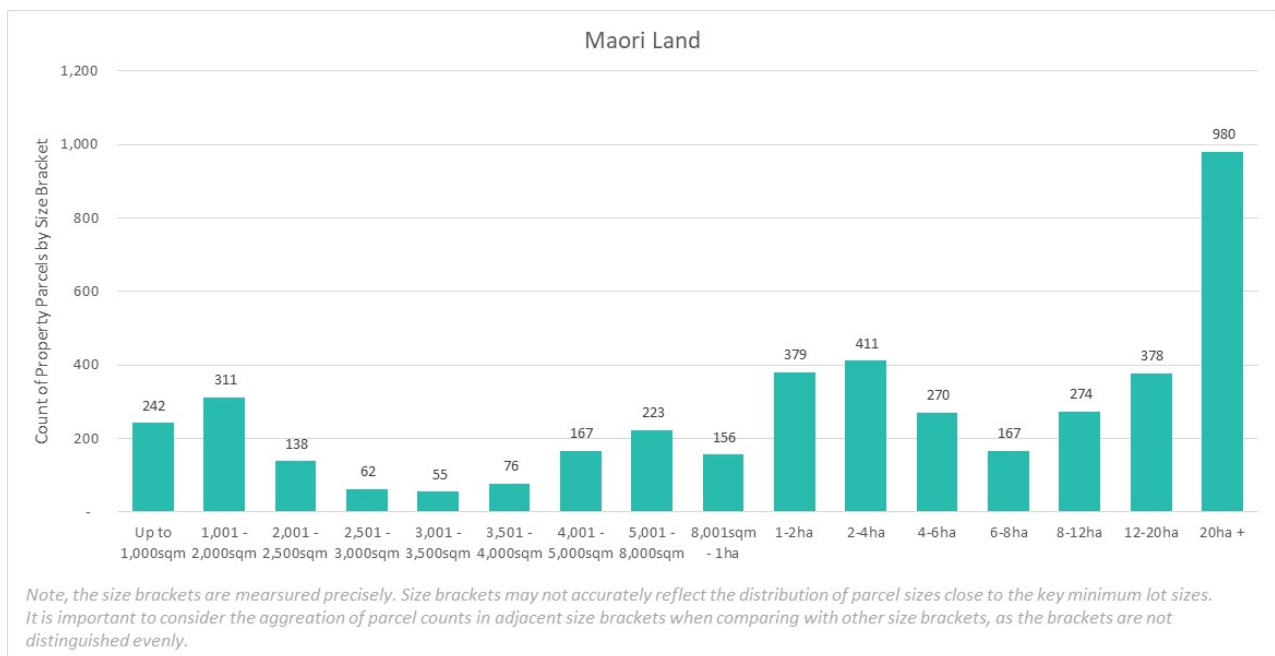


Figure 6: Distribution of Far North District Maori Owned Land (Excluding Settlement Land) by Size Bracket 2017/18

When looking at the current property parcels that are wholly or partially included in the area of Maori owned land (i.e. have a spatial overlap), a number of observations can be made (Table 8):

- Property parcels linked to land based primary production activities (horticulture, farming and forestry) make up just 23% of all Maori owned land parcels.
- In total there are an estimated 988 Maori owned primary production property parcels. There are 3,300 Maori owned land parcels with other types of land uses.

Table 8: Land Use Composition of Maori Owned Land by Primary Production Sector in Far North District

Variable (2016)	Sector						Total Land Based Primary Production **	Other Land Uses	Total Sectors
	Horticulture and fruit growing	Sheep, beef cattle and grain farming	Dairy cattle farming	Poultry, deer and other livestock farming	Forestry and logging				
Count (n) *									
Count of Total Properties ***	4	649	47	1	302	988	3,300	4,288	
Hectares of Total Properties***	36	44,486	3,022	71	38,013	77,307	29,930	107,237	
Maximum Property Size (ha)	11	5,878	697	71	6,241	6,241	1,141	6,241	
Average Property Size (ha)	9	69	64	71	126	78	9	25	
Employment (MECs)	6	114	33	4	52	208			
Gross Output (\$m)	\$ 0.7	\$ 22.9	\$ 8.2	\$ 0.2	\$ 40.7	\$ 72.8			
Value Added (\$m)	\$ 0.3	\$ 9.2	\$ 2.6	\$ 0.1	\$ 12.8	\$ 25.0			
Share by Sector (%)									
Count of Total Properties	0%	15%	1%	0%	7%	23%	77%	100%	
Hectares of Total Properties	0%	41%	3%	0%	35%	72%	28%	100%	
Employment (MECs)	3%	55%	16%	2%	25%	100%			
Gross Output (\$m)	1%	32%	11%	0%	56%	100%			
Value Added (\$m)	1%	37%	10%	0%	51%	100%			

Source: FNDC and M.E. \* Based on properties that contain an area of defined Maori owned land, irrespective of property portion. \*\* Excludes overlap where parcel may be tagged to more than one rural production sector. That is, total may be less than sum of sectors.

\*\*\* The district property parcel file does not cover the full extent of land zone area. Relates only to parcels contained in the dataset. May not capture all land intersected by Maori owned land.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

- More importantly, in terms of the land area of Maori owned land parcels (107,237ha)<sup>36</sup>, parcels linked to primary production activities account for an estimated 72% of the total (77,307ha of parcel area).
  - Horticulture and fruit growing properties make up less than 1% of the total area of Maori owned land properties;
  - Sheep, beef cattle and grain farming properties make up 41% of the total area;
  - Dairy farming properties make up 3% of the total area;
  - Forestry and logging properties make up 35% of the total area.
- Non-primary production land uses make up an estimated 28% of the area covering Maori owned property (29,930ha). Based on further analysis, the following land use (LINZ) codes account for the major share of non-productive land uses located on Maori owned land:
  - Primary Industry – Vacant or Idle (approximately 11% of the total area of Maori owned land properties)<sup>37</sup>;
  - Lifestyle - Vacant (approximately 7% of the total);
  - Lifestyle – Single Unit (approximately 3% of the total);
  - Recreation – Passive Outdoor (approximately 3% of the total);
  - Residential – Single Unit (other than bach) (approximately 3% of the total);
  - Residential – Vacant (approximately 1% of the total);
  - Residential – Bach (approximately 1% of the total);

<sup>36</sup> Compared to an actual area of Maori owned land of 102,521ha. This means that some parcels have only a portion of their area within defined Maori owned land areas (i.e. that Maori Owned Land may not be defined by parcel boundaries, or there is some overlap of parcel boundaries between the two files used for this analysis).

<sup>37</sup> This land use code is not included in the of primary production sector employment allocation as there is insufficient information as to which sector might be using the land (if any). As it is excluded from M.E's analysis of rural production activity land parcels, it falls within the 'Other Land Use' category for the purpose of this summary.

- Residential – Multi Unit (approximately 1% of the total);
  - Lifestyle – Multi Use (approximately 1% of the total);
  - Lifestyle – Multi Unit (approximately 1% of the total);
  - Community Services – Cemeteries & Crematorium (approximately 1% of the total); and
  - Community Services – Educational (approximately 1% of the total)
- There are an estimated 208 primary production sector (wage, salary and proprietor) workers located on (or associated with) properties with Maori ownership in 2016. This is an estimated 8% of all primary production wage, salary and proprietor employment in the District.
  - The gross output of primary production sectors on properties with Maori ownership in the Far North is estimated at \$72.8m (2016). This equates to 13% of total estimated primary production output in the District.
  - These Maori owned primary production properties contribute \$25.0m of value added to the Far North economy – 51% of which is generated by forestry (not including the contribution of down-stream activities such as processing and manufacturing sustain by the output of Maori owned land). This equates to 13% of total district primary production value added in 2016).
  - There are an estimated 1,830 Maori owned land parcels with an area of versatile soils (totalling 36,054ha of parcel area). Maori owned land parcels on versatile soils therefore account for 43% of all Maori owned land parcels (count) and 34% of the area of all Maori owned land parcels.
  - There are an estimated 4 Maori owned land parcels with an area of the Kerikeri Irrigation North Region<sup>38</sup> (totalling 36ha of parcel area). Maori owned land parcels in (or overlapping) the Kerikeri Irrigation North Region therefore account for 0.1% of all Maori owned land parcels (count) and 0.03% of the area of all Maori owned land parcels.
  - There is an estimated 1 Maori owned land parcel with an area of the Kerikeri Irrigation South Region<sup>39</sup> (totalling 134ha of parcel area). Maori owned land parcels in (or overlapping) the Kerikeri Irrigation South Region therefore account for 0.02% of all Maori owned land parcels (count) and 0.1% of the area of all Maori owned land parcels.
  - There are an estimated 198 Maori owned land parcels with an area of Aupouri Aquifer (totalling 10,392ha of parcel area). Maori owned land parcels on (or overlapping) the Aupouri Aquifer therefore account for 5% of all Maori owned land parcels (count) and 10% of the area of all Maori owned land parcels.

### 3.3 Highly Versatile Soils – Overview

The following primary production sector discussions include an analysis of how each sector utilises versatile soils (or otherwise)<sup>40</sup>. Versatile soils are defined according to the New Zealand Land Use Capability (LUC) Classification - 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. There are eight classes with limitations to use increasing and versatility of use decreasing from Class 1 to Class 8. LUC Classes 1 to 4 are suitable for arable and vegetable cropping, horticulture (including vineyards and berry fields), pastoral grazing, tree crop or production forestry use, although the focus here is on classes 1-3<sup>41</sup>.

In total, there are an estimated 64,436ha of class 1-3 soils in Far North District<sup>42</sup>. Figure 7 maps versatile soils across Far North District (refer **Appendix F**: for a map including LUC 4). This shows that the highly versatile soils are

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<sup>38</sup> Refer Figure 8 of this report for boundary definition.

<sup>39</sup> Ibid.

<sup>40</sup> NRC has defined around 118,388ha as being versatile soils (a subset of LUC Classes 1-3), equivalent to 9% of Northland's land area. The total area of LUC 1-3 soils is 127,500ha (9.6% of the region's land area). Source: NRC, February 2012.

<sup>41</sup> For a more detailed description of classes 1-3, see Lynn, IH, Manderson, AK, Harmsworth, GR, Eyles, GO, Douglas, GB, Mackay, AD, Newsome PJF. 2009. Land Use Capability Handbook - a New Zealand handbook for the classification of land 3rd Ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science 163pp.

<sup>42</sup> Based on a GIS shapefile supplied by FNDC.

concentrated around Kerikeri and Waipapa and across to the south west (through Waimate and Kaikohe) to the edge of the Mataraua Forest) and also around Waiharahara, Awanui, Kaitaia and Ahipara further to the north.

**Table 9: Summary of Highly Versatile Soils (1-3) by Estimated Operative Zone in Far North District**

Zone/Sub-Zone	Hectares (ha)				Share of Zone by Type (%)				Total Versatile Share by Zone (%)	Total Versatile Share by Rural Zone (%)
	Soil Type 1	Soil Type 2	Soil Type 3	Total Versatile Soils	Soil Type 1	Soil Type 2	Soil Type 3	Total Versatile Soils		
Coastal Living	-	89	310	399	0%	22%	78%	100%	1%	1%
General Coastal	-	201	2,296	2,497	0%	8%	92%	100%	4%	4%
Minerals	-	2	29	31	0%	8%	92%	100%	0%	0%
Rural Living	-	673	215	888	0%	76%	24%	100%	1%	2%
Rural Production	56	14,304	40,572	54,932	0%	26%	74%	100%	85%	93%
South Kerikeri Inlet Zone	-	-	-	-	0%	0%	0%	0%	0%	0%
South Kerikeri Inlet Zone Sensitive Area	-	-	-	-	0%	0%	0%	0%	0%	0%
Waimate North	35	192	116	343	10%	56%	34%	100%	1%	1%
<b>Total Rural Environment *</b>	<b>91</b>	<b>15,461</b>	<b>43,538</b>	<b>59,089</b>	<b>0%</b>	<b>26%</b>	<b>74%</b>	<b>100%</b>	<b>92%</b>	<b>100%</b>
Special Zone Area *	4	1,031	3,738	4,774	0%	22%	78%	100%	7%	
Urban Environment *	-	358	214	573	0%	63%	37%	100%	1%	
<b>Total Far North District</b>	<b>95</b>	<b>16,851</b>	<b>47,490</b>	<b>64,436</b>	<b>0%</b>	<b>26%</b>	<b>74%</b>	<b>100%</b>	<b>100%</b>	

*Source: FNDC/M.E. Based on spatial intersection of soil polygons with operative zones file (overlaps removed). \*M.E defined aggregations. Excludes Coastal Marine Zone. Area calculated in GIS. Roads, lakes and rivers included in Special along with Conservation and other special use zones.*

Table 9 provides a breakdown of highly versatile soil areas by rural and other zones. The significant majority (85%) of versatile soils are located in the Rural Production Zone. A further 7% is contained within the area of special zones (the majority of which is made up of the Conservation Zone). Just 1% (573ha) of highly versatile soils are located within the urban environment.

Within the rural environment, 85% of the highly versatile soils fall within the Rural Production Zone, although this is dominated (74%) by class 3 soils only. There is only one small pocket of class 1 soils located in the rural environment. This falls within the Rural Production Zone (56ha) and the Waimate North Zone (35ha).

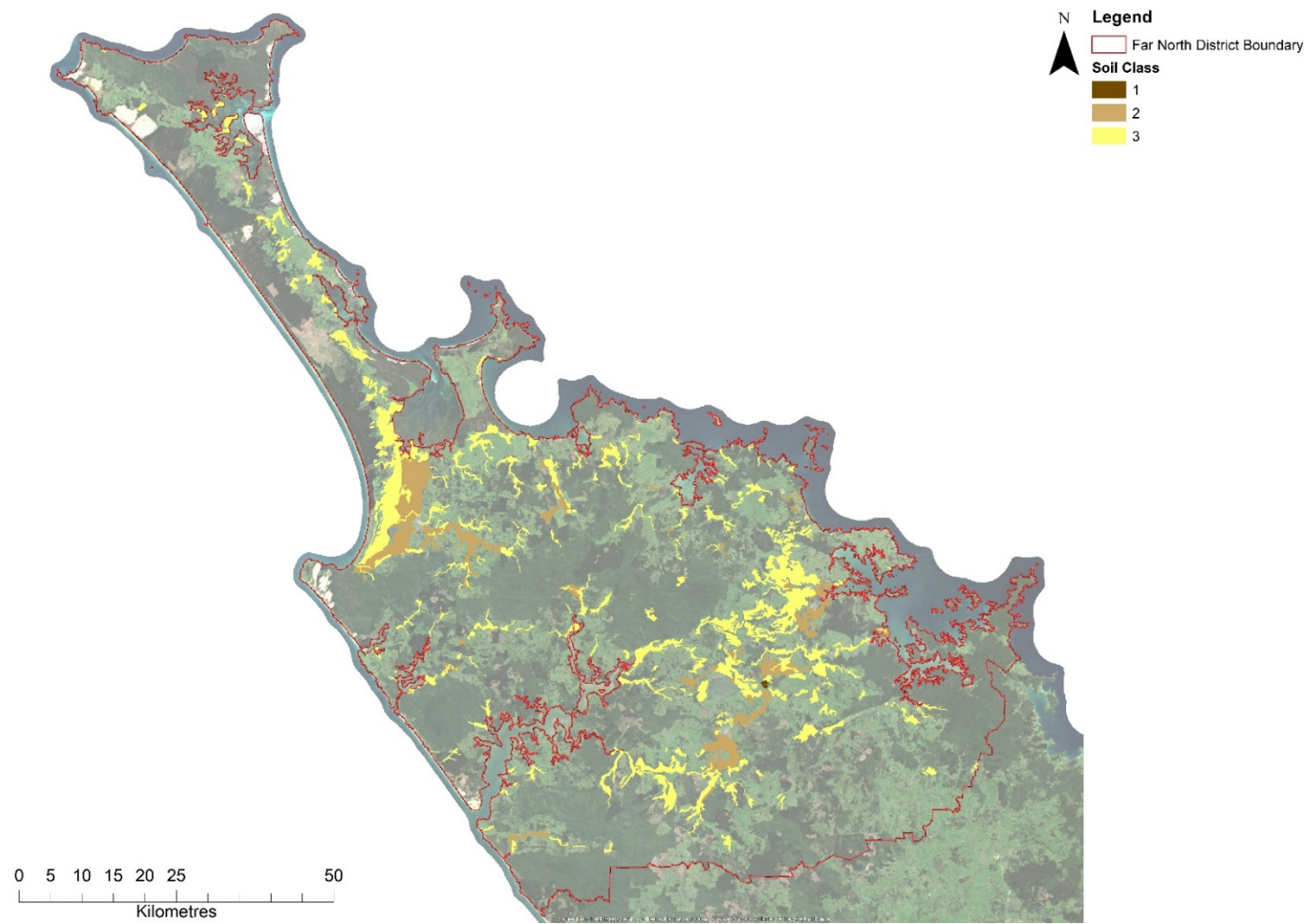


Figure 7: District Map of Highly Versatile Soils (LUC 1-3)

When looking at the current property parcels that are wholly or partially included in the area of highly versatile soils (i.e. have a spatial overlap), a number of observations can be made (Table 10):

- Property parcels linked to land based primary production activities (horticulture, farming and forestry) make up just 25% of all parcels containing an area of highly versatile soils.
- In total there are 4,106 primary production property parcels located on highly versatile soils. There are 12,148 other types of land use parcels located on highly versatile soils.
- More importantly, in terms of the land area of those parcels located on highly versatile soils (230,625ha)<sup>43</sup>, parcels linked to primary production activities account for 71% of the total (162,973ha of parcel area).
  - Horticulture and fruit growing properties make up just 1% of the total area of properties located on highly versatile soils,
  - Sheep, beef cattle and grain farming properties make up 47% of the total area,
  - Dairy farming properties make up 12% of the total area,
  - Forestry and logging properties make up 13% of the total area.
- Non-primary production land uses make up 29% of the area covering highly versatile soils. This means that 67,651ha of property is occupying highly versatile soil land that is unlikely to be utilising its productive capacity for economic gain. Based on further analysis, the following land use (LINZ) codes account for the major share of non-productive land uses located on highly versatile soils:
  - Lifestyle – Single Unit (approximately 5% of the total area of properties located on highly versatile soils),
  - Lifestyle - Vacant (approximately 5% of the total),
  - Recreation – Passive Outdoor (approximately 7% of the total),
  - Multi – Major Use Recreational (approximately 1% of the total),
  - Residential – Single Unit (other than bach) (approximately 2% of the total),
  - Community Services – Cemeteries & Crematorium (approximately 1% of the total),
  - Primary Industry – Vacant or Idle (approximately 4% of the total)<sup>44</sup>.
- There are 1,830 Maori owned land parcels with highly versatile soils. Maori owned land makes up 11% of all properties with highly versatile soils, and 16% of the total land area of properties with highly versatile soils.
- 19% of Maori owned parcels on highly versatile soils are primary production parcels, but 77% of the area of these highly versatile soil Maori land parcels are associated with primary production. This shows that Maori land holdings have a slightly above average utilisation rate of highly versatile soils for primary production compared to total properties with highly versatile soils.
- There are an estimated 1,535 primary production sector workers located on (or associated with) properties with highly versatile soils in 2016.
- The gross output of primary production sectors on highly versatile soils in the Far North is estimated at \$293.7m (2016). These primary production properties contribute \$107.8m of value added to the Far North economy (6% of total district value added in 2016).

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<sup>43</sup> Compared to an actual area of highly versatile soils of 204,357ha, thus confirming that some parcels have only a portion of their area with highly versatile soils.

<sup>44</sup> This land use code is not included in the of primary production sector employment allocation as there is insufficient information as to which sector might be using the land (if any). As it is excluded from M.E's analysis of rural production activity land parcels, it falls within the 'Other Land Use' category for the purpose of this summary. Vacant or idle primary industry land still provides the opportunity for productive use in the future.

Table 10: Land Use Composition of Highly Versatile Soils by Primary Production Sector in Far North District

Variable (2016)	Sector							Total Sectors
	Horticulture and fruit growing	Sheep, beef cattle and grain farming	Dairy cattle farming	Poultry, deer and other livestock farming	Forestry and logging	Total Land Based Primary Production **	Other Land Uses	
Count (n) *								
Count of Total Properties ***	315	2,672	913	26	210	4,106	12,148	16,254
Hectares of Total Properties***	2,713	108,268	28,304	851	30,826	162,973	67,651	230,625
Maximum Property Size (ha)	77	5,878	2,088	190	5,878	5,878	13,216	13,216
Average Property Size (ha)	9	41	31	33	147	40	1.4	5
Count of Maori Land Properties	4	254	21	-	70	340	1,490	1,830
Hectares of Maori Land Properties	36	17,879	1,269	-	14,972	27,660	8,394	36,054
Employment (MECs)	656	419	398	20	42	1,535		
Gross Output (\$m)	\$ 77.0	\$ 84.4	\$ 98.2	\$ 1.1	\$ 33.0	\$ 293.7		
Value Added (\$m)	\$ 31.5	\$ 34.0	\$ 31.5	\$ 0.4	\$ 10.4	\$ 107.8		
Share by Sector (%)								
Count of Total Properties	2%	16%	6%	0%	1%	25%	75%	100%
Hectares of Total Properties	1%	47%	12%	0%	13%	71%	29%	100%
Count of Maori Land Properties	0%	14%	1%	0%	4%	19%	81%	100%
Hectares of Maori Land Properties	0%	50%	4%	0%	42%	77%	23%	100%
Employment (MECs)	43%	27%	26%	1%	3%	100%		
Gross Output (\$m)	26%	29%	33%	0%	11%	100%		
Value Added (\$m)	29%	32%	29%	0%	10%	100%		

Source: FNDC and M.E. \* Based on properties that contain an area of versatile soils (classes 1-3), irrespective of property portion. \*\* Excludes overlap where parcel may be tagged to more than one rural production sector. That is, total may be less than sum of sectors.

\*\*\* The district property parcel file does not cover the full extent of land zone area. Relates only to parcels contained in the dataset. May not capture all land intersected by combined high-class soils.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

### 3.4 Water Resources – Overview

The following primary sector discussions also include an analysis of how each sector is located relative to the extent of the Kerikeri Irrigation North and South Regions (as defined for this study) and the district’s aquifers (grouped as the Aupouri Peninsula aquifer and other aquifers)<sup>45</sup>. Figure 8 maps these water resources within Far North District. We note that the boundaries of the Kerikeri Irrigation North and South Regions are based on data supplied by FNDC (and may or may not accurately capture the current extent of land connected to and utilising water from the Kerikeri Irrigation Company). These areas are considered indicative only for the purpose of this report.

Table 11: Summary of Water Resources by Zone in Far North District provides a breakdown of these water resources by rural zone. The Kerikeri Irrigation North Region spans a land area of approximately 3,854ha. Almost all of this Region (99.9%) covers rural environment zones (the Rural Production Zone), with just 5ha (0.1%) estimated to fall within a special zone. The Kerikeri Irrigation South Region spans a land area of approximately 1,947ha. Again, this is almost exclusively in the Rural Production Zone.

The Aupouri Peninsula aquifer spans a land area of 77,389ha<sup>46</sup>. The major share of this aquifer (87%) covers rural environment zones, 13% covers special zones and 1% overlaps urban zoning. A total of 67% of the defined aquifer extent covers the Rural Production Zone (52,010ha of land area) and a further 19% covers the General Coastal Zone (14,771ha).

<sup>45</sup> Note, there is a degree of overlap between the Kerikeri Irrigation North and South Regions and aquifers, so a property can be tagged for both.

<sup>46</sup> A further 242ha of the defined Aupouri aquifer extent falls within the Coastal Marine Zone and is excluded.



Table 11: Summary of Water Resources by Zone in Far North District

Zone/Sub-Zone	Hectares (ha)						Share of Area by Zone (%)					
	Kerikeri Irrigation North Region	Kerikeri Irrigation South Region	Aoupouri Peninsula Aquifer	Other Aquifers	Bores (Count)	Irrigated Land	Kerikeri Irrigation North Region	Kerikeri Irrigation South Region	Aoupouri Peninsula Aquifer	Other Aquifers	Bores **	Irrigated Land **
Coastal Living	-	-	326	407	102	12	0%	0%	0%	1%	4%	0%
General Coastal	-	-	14,771	143	188	18	0%	0%	19%	0%	8%	1%
Minerals	-	-	15	5	2	-	0%	0%	0%	0%	0%	0%
Rural Living	-	-	20	1,583	44	125	0%	0%	0%	5%	2%	4%
Rural Production	3,849	1,947	52,010	26,754	1,103	2,987	100%	100%	67%	81%	48%	92%
Sth. Kerikeri Inlet	-	-	-	133	2	-	0%	0%	0%	0%	0%	0%
Sth. Kerikeri Inlet SA	-	-	-	74	3	-	0%	0%	0%	0%	0%	0%
Waimate North	-	-	-	412	13	-	0%	0%	0%	1%	1%	0%
<b>Total Rural Environment *</b>	<b>3,849</b>	<b>1,947</b>	<b>67,142</b>	<b>29,511</b>	<b>1,457</b>	<b>3,142</b>	<b>100%</b>	<b>100%</b>	<b>87%</b>	<b>89%</b>	<b>63%</b>	<b>97%</b>
Special Zone Area *	5	0.1	9,806	2,203	248	78	0%	0%	13%	7%	11%	2%
Urban Environment *	-	-	441	1,431	593	29	0%	0%	1%	4%	26%	1%
<b>Total Far North District</b>	<b>3,854</b>	<b>1,947</b>	<b>77,389</b>	<b>33,145</b>	<b>2,298</b>	<b>3,249</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: FNDC/M.E. Based on spatial intersection of polygons/bore points with operative zones file (overlaps removed). \*M.E defined aggregations. Excludes Coastal Marine Zone.

Area calculated in GIS. Roads, lakes and rivers incl. in Special along with Conservation and other special use zones. Irrigation Regions, Aquifers and Irrigated Land overlap - see map.

\*\* Sourced from Northland Regional Council.

Other aquifers in the district (excluding the Aoupouri Peninsula aquifer) span a land area of 33,145ha<sup>47</sup>. Some of which overlap with the Kerikeri Irrigation North and South Regions. The major share of these aquifers (89%) covers rural environment zones, 7% covers special zones and 4% overlaps urban zoning. A total of 81% of the defined other aquifer extent covers the Rural Production Zone (26,754ha of land area) and a further 5% covers the Rural Living Zone (1,583ha).

Bore information is also available. In total there are 2,298 bore sites. Of those, 63% are in rural environment zones, 11% fall within special zones and 26% fall within urban zones. Of the total, 48% (1,103 bores) are located in the Rural Production Zone. Last, areas of known irrigated land (under a range of methods) are identified in Figure 8<sup>48</sup>. Irrigated land is calculated at 3,249ha, the majority of which is located in an aquifer area or in the Kerikeri Irrigation North and South Regions.

<sup>47</sup> A further 64ha of the defined aquifer extent falls within the Coastal Marine Zone and is excluded.

<sup>48</sup> Source: Northland Regional Council.

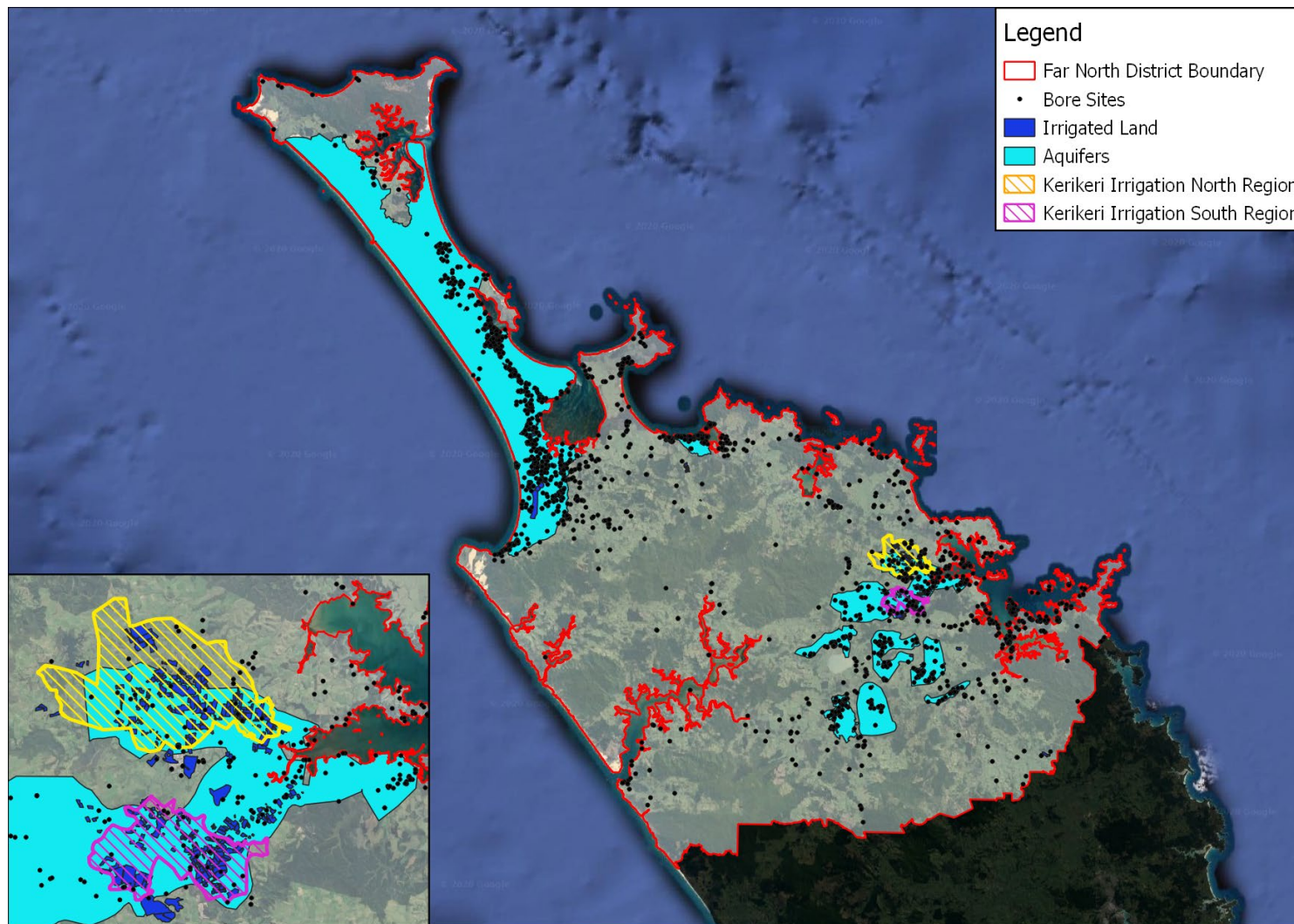


Figure 8: Map of Far North District Water Resources – Aquifers, Bores and Kerikeri Irrigation North and South Regions

When looking at the current properties that are wholly or partially included in the area covered by the Kerikeri Irrigation North Region (Figure 9), a number of observations can be made (Table 12):

- Property parcels linked to primary production activities (horticulture, farming and forestry) make up just 13% of all parcels containing an area of the Kerikeri Irrigation North Region. This of course assumes that the LINZ codes are accurate.
- In total there are 151 primary production property parcels located in the Kerikeri Irrigation North Region. There are 1,043 other types of land use parcels located within the Kerikeri Irrigation North Region boundary.

Table 12: Land Use Composition of Kerikeri Irrigation North Region by Primary Production Sector in Far North District

Variable (2016)	Sector					Total Land Based Primary Production **	Other Land Uses	Total Sectors
	Horticulture and fruit growing	Sheep, beef cattle and grain farming	Dairy cattle farming	Poultry, deer and other livestock farming	Forestry and logging			
<b>Count (n) *</b>								
Count of Total Properties ***	110	31	9	1	1	151	1,043	1,194
Hectares of Total Properties***	823	1,456	2,424	39	632	5,369	2,182	7,551
<i>Maximum Property Size (ha)</i>	51	268	2,088	39	632	2,088	53	2,088
<i>Average Property Size (ha)</i>	7	47	269	39	632	36	2	6
Count of Maori Land Properties	4	-	-	-	-	4	-	4
Hectares of Maori Land Properties	36	-	-	-	-	36	-	36
Employment (MECs)	157	7	14	0	1	180		
Gross Output (\$m)	\$ 18.4	\$ 1.4	\$ 3.5	\$ 0.0	\$ 0.7	\$ 24.0		
Value Added (\$m)	\$ 7.6	\$ 0.6	\$ 1.1	\$ 0.0	\$ 0.2	\$ 9.5		
<b>Share by Sector (%)</b>								
Count of Total Properties	9%	3%	1%	0%	0%	13%	87%	100%
Hectares of Total Properties	11%	19%	32%	1%	8%	71%	29%	100%
Count of Maori Land Properties	100%	0%	0%	0%	0%	100%	0%	100%
Hectares of Maori Land Properties	100%	0%	0%	0%	0%	100%	0%	100%
Employment (MECs)	88%	4%	8%	0%	0%	100%		
Gross Output (\$m)	77%	6%	15%	0%	3%	100%		
Value Added (\$m)	80%	6%	12%	0%	2%	100%		

Source: FNDC and M.E. \* Based on properties that contain an area of the defined Kerikeri Irrigation North Region, irrespective of property portion. \*\* Excludes overlap where parcel may be tagged to more than one rural production sector. That is, total may be less than sum of sectors.

\*\*\* The district property parcel file does not cover the full extent of land zone area. Relates only to parcels contained in the dataset. May not capture all land intersected by the Kerikeri Irrigation North Region.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

- More Importantly, in terms of the land area of those parcels located wholly or partly in the Kerikeri Irrigation North Region (7,551ha)<sup>49</sup>, parcels linked to primary production activities account for 71% of the total (5,369ha of parcel area).
  - Horticulture and Fruit growing properties make up 11% of the total area of properties located in the Kerikeri Irrigation North Region,
  - Sheep, Beef, Cattle and Grain farming properties make up 19% of the total area,
  - Dairy farming properties make up 32% of the total area,
  - Other livestock farming makes up 1% of the total area,
  - Forestry and Logging properties make up 8% of the total area.

<sup>49</sup> Compared to an actual land area of Kerikeri Irrigation North Region of 3,854ha, thus confirming that some parcels have only a portion of their area within the irrigation region boundary.

- Non-primary productive land uses make up 29% of the area covered by the Kerikeri Irrigation North Region. This means that 2,182ha of property is occupying (wholly or partly) the Kerikeri Irrigation North Region that is unlikely to be utilising its productive capacity for economic gain. Based on further analysis, the following land use (LINZ) codes account for the major share of non-productive land uses located in the Kerikeri Irrigation North Region:
  - Lifestyle – Single Unit (approximately 11% of the total area of properties located in the Kerikeri Irrigation North Region),
  - Lifestyle - Vacant (approximately 6% of the total),
  - Recreation – Passive Outdoor (approximately 24% of the total),
  - Residential – Single Unit (other than bach) (approximately 2% of the total).
- There are just 4 Maori owned land parcels wholly or partly within the Kerikeri Irrigation North Region. Maori owned land makes up just 0.3% of all properties wholly or partly within the boundary of the Kerikeri Irrigation North Region, and 0.5% of the total land area of properties wholly or partly within the region.
- 100% of Maori owned parcels within the Kerikeri Irrigation North Region are primary production parcels (Horticulture). This shows that Maori land holdings (although a very small sample) have an above average utilisation rate of irrigation potential for primary production compared to total properties within the Irrigation North Region.
- There are an estimated 180 primary production sector workers located on (or associated with) properties within the Kerikeri Irrigation North Region as at 2016.
- The gross output of primary production sectors in the Kerikeri Irrigation North Region in the Far North is estimated at \$24.0m. These primary production properties contribute \$9.5m of value added to the Far North economy (0.5% of total district value added in 2016).

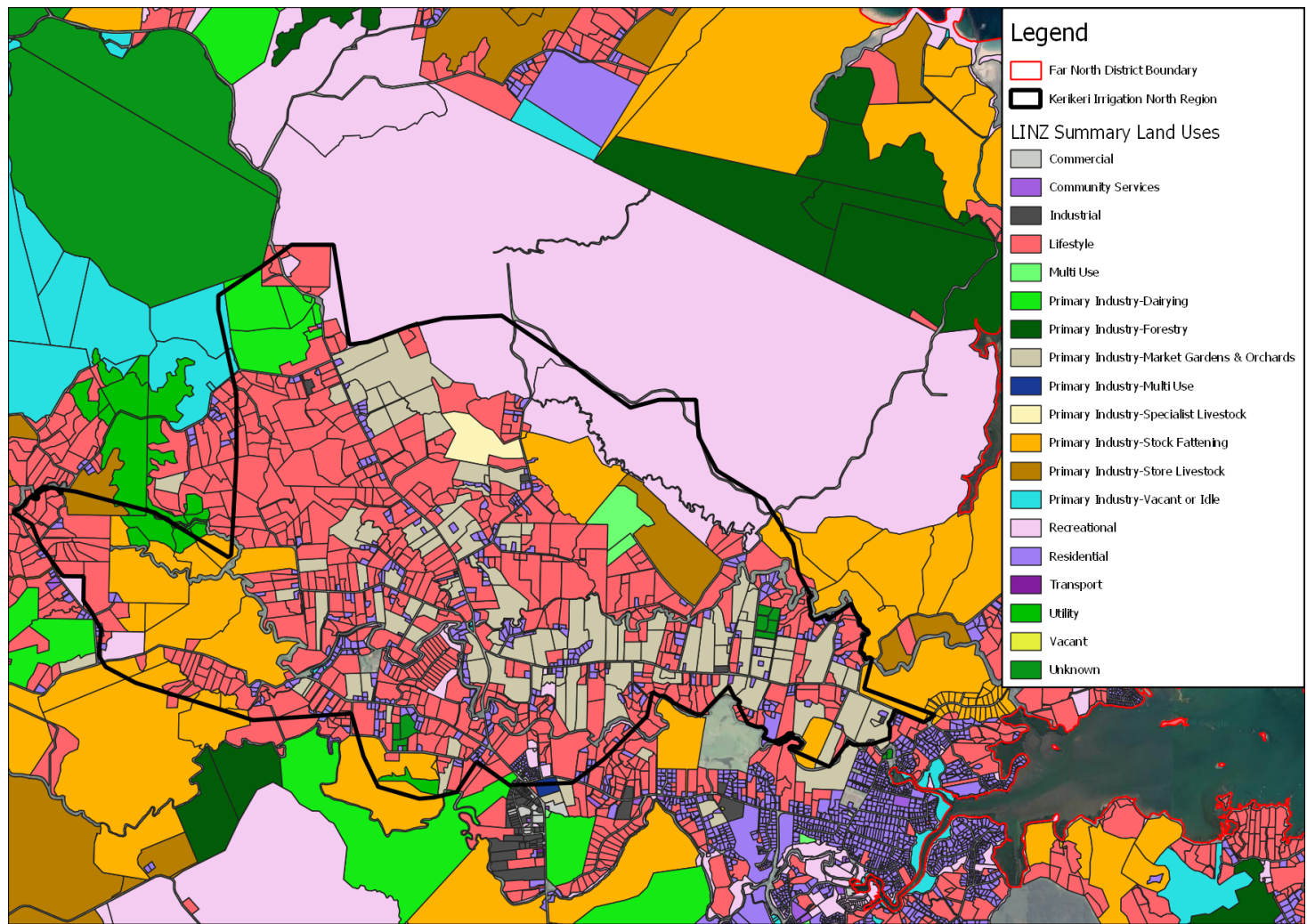


Figure 9: Map of Kerikeri Irrigation North Region – Summary of Current Land Uses (LINZ Codes) by Parcel

When looking at the current properties that are wholly or partially included in the area covered by the Kerikeri Irrigation South Region (Figure 10), a number of observations can be made (Table 13):

- Property parcels linked to primary production activities (horticulture, farming and forestry) make up just 16% of all parcels containing an area of the Irrigation South Region. This of course assumes that the LINZ codes are accurate.
- In total there are 116 primary production property parcels located in the Kerikeri Irrigation South Region. There are 588 other types of land use parcels located within the Kerikeri Irrigation South Region boundary.

Table 13: Land Use Composition of Kerikeri Irrigation South Region by Primary Production Sector in Far North District

Variable (2016)	Sector					Total Land Based Primary Production **	Other Land Uses	Total Sectors
	Horticulture and fruit growing	Sheep, beef cattle and grain farming	Dairy cattle farming	Poultry, deer and other livestock farming	Forestry and logging			
<b>Count (n) *</b>								
Count of Total Properties ***	80	24	12	-	-	116	588	704
Hectares of Total Properties***	470	923	236	-	-	1,629	1,342	2,971
<i>Maximum Property Size (ha)</i>	31	174	134	-	-	174	66	174
<i>Average Property Size (ha)</i>	6	38	20	-	-	14	2	4
Count of Maori Land Properties	-	-	1	-	-	1	-	1
Hectares of Maori Land Properties	-	-	134	-	-	134	-	134
Employment (MECs)	163	10	4	-	-	177		
Gross Output (\$m)	\$ 19.1	\$ 2.1	\$ 1.0	\$ -	\$ -	\$ 22.2		
Value Added (\$m)	\$ 7.8	\$ 0.8	\$ 0.3	\$ -	\$ -	\$ 9.0		
<b>Share by Sector (%)</b>								
Count of Total Properties	11%	3%	2%	0%	0%	16%	84%	100%
Hectares of Total Properties	16%	31%	8%	0%	0%	55%	45%	100%
Count of Maori Land Properties	0%	0%	100%	0%	0%	100%	0%	100%
Hectares of Maori Land Properties	0%	0%	100%	0%	0%	100%	0%	100%
Employment (MECs)	92%	6%	2%	0%	0%	100%		
Gross Output (\$m)	86%	9%	5%	0%	0%	100%		
Value Added (\$m)	87%	9%	4%	0%	0%	100%		

Source: FNDC and M.E. \* Based on properties that contain an area of the defined Kerikeri Irrigation South Region, irrespective of property portion. \*\* Excludes overlap where parcel may be tagged to more than one rural production sector. That is, total may be less than sum of sectors.

\*\*\* The district property parcel file does not cover the full extent of land zone area. Relates only to parcels contained in the dataset. May not capture all land intersected by the Kerikeri Irrigation South Region.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

- More Importantly, in terms of the land area of those parcels located wholly or partly in the Kerikeri Irrigation South Region (2,971ha)<sup>50</sup>, parcels linked to primary production activities account for 55% of the total (1,629ha of parcel area).
  - Horticulture and Fruit growing properties make up 16% of the total area of properties located in the Kerikeri Irrigation South Region,
  - Sheep, Beef, Cattle and Grain farming properties make up 31% of the total area,
  - Dairy farming properties make up 8% of the total area.
- Non-primary productive land uses make up 45% of the area covered by the Kerikeri Irrigation South Region. This means that 1,342ha of property is occupying (wholly or partly) the Kerikeri Irrigation South Region that is unlikely

<sup>50</sup> Compared to an actual land area of Kerikeri Irrigation South Region of 1,947ha, thus confirming that some parcels have only a portion of their area within the irrigation region boundary.

to be utilising its productive capacity for economic gain. Based on further analysis, the following land use (LINZ) codes account for the major share of non-productive land uses located in the Kerikeri Irrigation South Region:

- Lifestyle – Single Unit (approximately 19% of the total area of properties located in the Irrigation South Region),
  - Lifestyle - Vacant (approximately 13% of the total),
  - Lifestyle – Multi-Unit (approximately 2% of the total),
  - Residential – Single Unit (other than bach) (approximately 3% of the total),
  - Residential – Vacant (approximately 1% of the total),
  - Industrial – Timbre Products & Furniture (approximately 2% of the total),
  - Commercial – Retail (approximately 2% of the total).
- There is just 1 Maori owned land parcel wholly or partly within the Kerikeri Irrigation South Region. Maori owned land makes up just 0.1% of all properties wholly or partly within the boundary of the Kerikeri Irrigation South Region, and 5% of the total land area of properties wholly or partly within the region.
  - 100% of Maori owned parcels within the Irrigation South Region are primary production parcels (Dairy Farming). This shows that Maori land holdings (although a small sample of one) have an above average utilisation rate of irrigation potential for primary production compared to total properties within the Kerikeri Irrigation South Region.
  - There are an estimated 177 primary production sector workers located on (or associated with) properties within the Kerikeri Irrigation South Region as at 2016.
  - The gross output of primary production sectors in the Kerikeri Irrigation South Region in the Far North is estimated at \$22.2m. These primary production properties contribute \$9.0m of value added to the Far North economy (0.5% of total district value added in 2016).

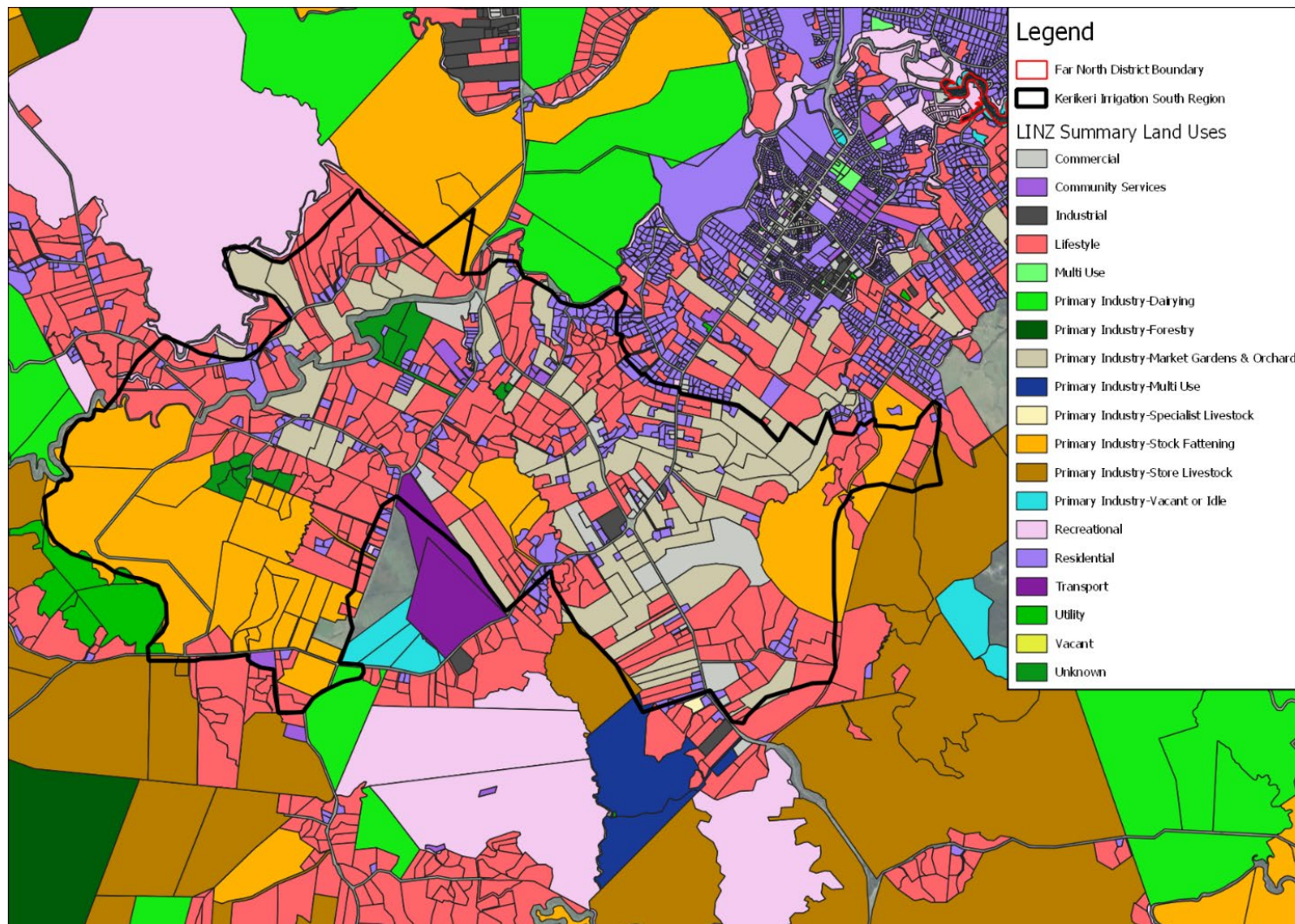


Figure 10: Map of Kerikeri Irrigation South Region – Summary of Current Land Uses (LINZ Codes) by Parcel



When looking at the current properties that are wholly or partially included in the area covered by the Aupouri Peninsula Aquifer, and included in M.E's modelling<sup>51</sup>, a number of observations can be made (Table 14):

- Primary production property parcels make up 18% of all parcels containing an area within the extent of the Aupouri Aquifer.
- In total there are 999 primary production property parcels located in the aquifer area (assuming accurate LINZ codes). There are 4,409 other types of land use parcels located within the aquifer boundary.
- In terms of the land area of those parcels located in the aquifer area and included in the modelling (78,479ha<sup>52</sup>), primary production parcels account for 60% of the total (46,768ha of parcel area – this excludes the large area of forestry land missing from the modelling).
  - Horticulture and Fruit growing properties make up 1% of the total area of properties located in the Aupouri Aquifer,
  - Sheep, Beef Cattle and Grain farming properties make up 33% of the total area,
  - Dairy farming properties make up 8% of the total area,
  - Forestry and Logging properties make up 17% of the total area.
- Non-primary production land uses make up 40% of the modelled area covered by the aquifer. This means that 31,711ha of property is occupying the land served by the Aquifer that is unlikely to be utilising its productive capacity for economic gain (based on the LINZ codes supplied).
- Based on further analysis, the following land use (LINZ) codes account for the major share of non-productive land uses located in the Aupouri Aquifer (in descending order):
  - Primary Industry – Vacant or Idle<sup>53</sup>,
  - Lifestyle – Single Unit,
  - Lifestyle - Vacant,
  - Recreation – Passive Outdoor,
  - Residential – Single Unit (other than bach).
- There are 198 Maori owned land parcels within the extent of the aquifer. Maori owned land makes up just 4% of all properties within the boundary of the aquifer, and 13% of the total land area of properties within the aquifer.
- 23% of Maori owned parcels within the aquifer area are primary production parcels, but 81% of the area of these Maori land parcels are associated with primary production. This shows that Maori land holdings have a slightly above average utilisation rate of aquifer potential for primary production compared to total properties within the extent of the aquifer.
- There are an estimated 513 primary production sector workers located on (or associated with) properties within the extent of the aquifer as at 2016. These estimates are considered conservative.
- The gross output of primary production sectors in the Aupouri Aquifer area in the Far North is estimated at \$97.1m. (2016). These primary production properties contribute \$35.1m of value added to the Far North economy (2% of total district value added in 2016). These estimates are considered conservative.

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<sup>51</sup> The analysis in this section is impacted by the absence of a larger area of property, known to be Crown forestry land used for commercial redress for Treaty settlement claims, in M.E's model. This limitation is discussed further in Appendix E. If the model had included this property, land areas and percentages would adjust.

<sup>52</sup> Compared to an actual land area of Aupouri Aquifer of 77,389ha, thus confirming that some parcels have only a portion of their area within the aquifer boundary.

<sup>53</sup> This land use code is not included in the allocation of primary production sector employment as there is insufficient information as to which sector might be using the land (if any). As it is excluded from M.E's analysis of rural production activity land parcels, it falls within the 'Other Land Use' category for the purpose of this summary. Vacant or idle primary industry land still provides the opportunity for productive use in the future.

Table 14: Land Use (Parcel) Composition of Aupouri Aquifer by Primary Production Sector in Far North District

Variable (2016)	Sector						Total Land Based Primary Production **	Other Land Uses	Total Sectors
	Horticulture and fruit growing	Sheep, beef cattle and grain farming	Dairy cattle farming	Poultry, deer and other livestock farming	Forestry and logging				
<b>Count (n) *</b>									
Count of Total Properties ***	83	587	296	4	33	999	4,409	5,408	
Hectares of Total Properties***	1,043	25,681	6,147	318	13,657	46,768	31,711	78,479	
<i>Maximum Property Size (ha)</i>	48	2,586	188	194	6,241	6,241	13,216	13,216	
<i>Average Property Size (ha)</i>	13	44	21	80	414	47	7	15	
Count of Maori Land Properties	-	40	-	-	5	45	153	198	
Hectares of Maori Land Properties	-	1,627	-	-	6,788	8,414	1,978	10,392	
Employment (MECs)	255	83	142	15	19	513			
Gross Output (\$m)	\$ 29.9	\$ 16.8	\$ 35.0	\$ 0.8	\$ 14.6	\$ 97.1			
Value Added (\$m)	\$ 12.3	\$ 6.8	\$ 11.2	\$ 0.3	\$ 4.6	\$ 35.1			
<b>Share by Sector (%)</b>									
Count of Total Properties	2%	11%	5%	0%	1%	18%	82%	100%	
Hectares of Total Properties	1%	33%	8%	0%	17%	60%	40%	100%	
Count of Maori Land Properties	0%	20%	0%	0%	3%	23%	77%	100%	
Hectares of Maori Land Properties	0%	16%	0%	0%	65%	81%	19%	100%	
Employment (MECs)	50%	16%	28%	3%	4%	100%			
Gross Output (\$m)	31%	17%	36%	1%	15%	100%			
Value Added (\$m)	35%	19%	32%	1%	13%	100%			

Source: FNDC and M.E. \* Based on properties that contain an area of the Aupouri Peninsula Aquifer, irrespective of property portion. \*\* Excludes overlap where parcel may be tagged to more than one rural production sector. That is, total may be less than sum of sectors.

\*\*\* The district property parcel file does not cover the full extent of land zone area. Relates only to parcels contained in the dataset. May not capture all land intersected by combined Maori ownership.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

Figure 11, provides a map of grouped land uses in the extent of the Aupouri Aquifer. Note, the large area within the Aquifer extent that is excluded from the property parcel file supplied by Council.

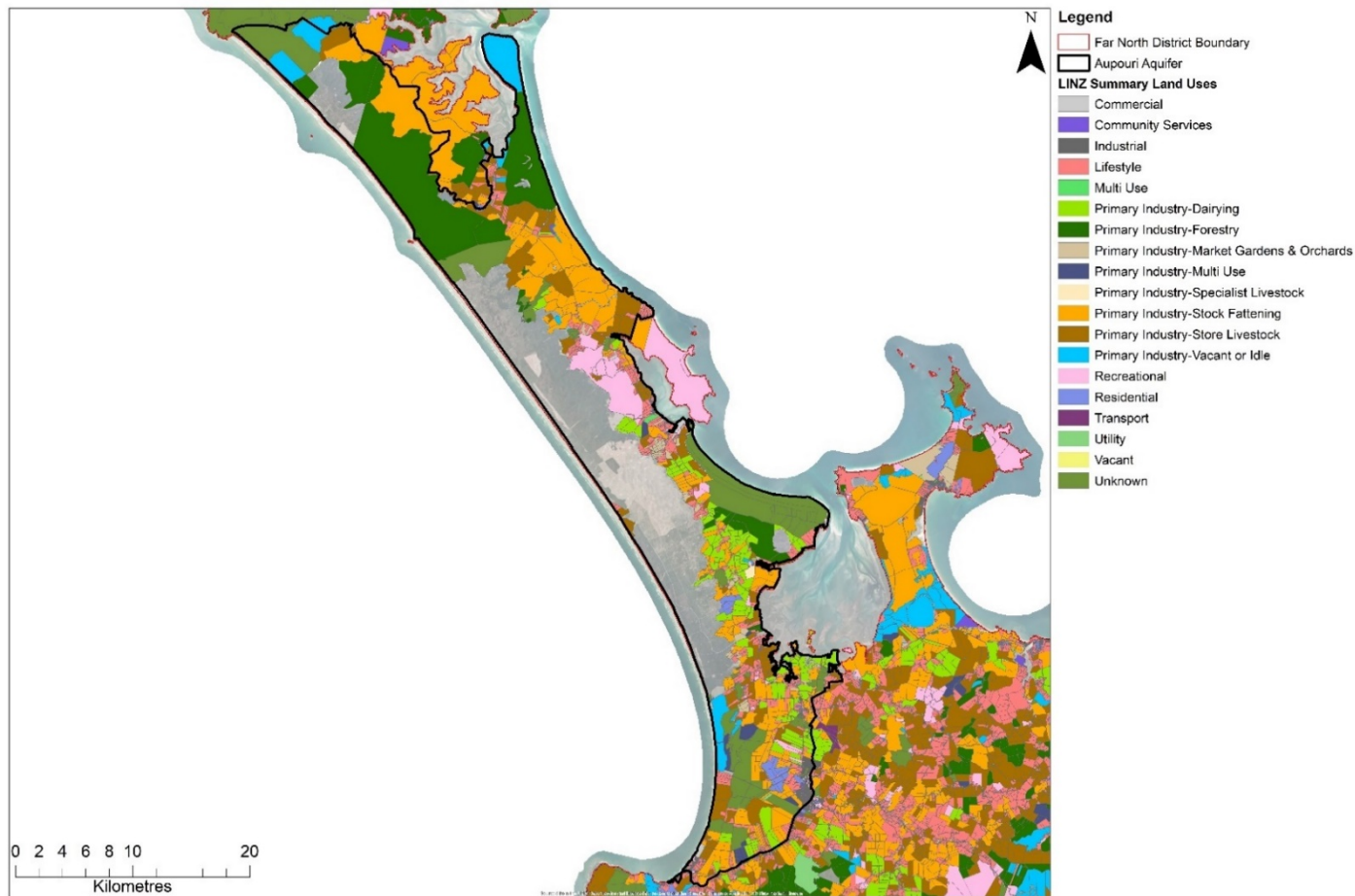


Figure 11: Map of Aupouri Aquifer – Summary of Current Land Uses (LINZ Codes) by Parcel

## 3.5 Horticulture and Fruit Growing

### 3.5.1 Industry Overview

Horticulture NZ (HortNZ) is the industry body that represents fruit and vegetable growers in NZ. Its role includes advocating for members and promoting the industry to the rest of the world, thus providing access to new markets for local producers. HortNZ also work with their members to help them adapt to regulatory and technology changes, enabling stewardship of and access to natural resources for generations to come<sup>54</sup>.

Nationally, the value of NZ's horticulture products<sup>55</sup> in 2016, was reported to be in excess of \$8.7b, with the aim of being a \$10b industry by 2020. Exports made up the majority (58%) of the total value, with fruit accounting for the largest share (55%) of horticulture exports, followed by wine exports (31%), vegetables (12%) and other horticulture products (3%). Kiwifruit exports made up 64% of the total fresh fruit export value, followed by apples (27%). Horticulture contributed 10.3% of NZ's total merchandise exports for 2016. New Zealand-grown produce were exported to 124 countries in 2016, the top destination being Australia (\$804m) and the United States (\$679). Japan, China and the United Kingdom are also significant export destinations (Horticulture New Zealand, 2016).

Horticulture activities are distributed across an estimated 4,460 hectares of land in Northland (Horticulture New Zealand, 2016). With its subtropical climate and wide diversity of soil, Northland has a large variety of crops thriving in the region, with a quarter to a third of produce, exported. The largest crop is Kiwifruit, with around 3.6m trays of green and gold Kiwifruit produced annually<sup>56</sup>. Citrus fruit are very popular and well-established in the region, while blueberries are an emerging, but rapidly growing, crop. Another significant product is avocados, with Northland crops accounting for nearly half (45%) of NZ's total crop<sup>57</sup>.

In the Far North District, Kerikeri is particularly well-known for its citrus, with mandarin, lemons and navel oranges being most popular. The District is furthermore, becoming well recognised as one of the prime subtropical growing areas for avocados. This becomes clear when examining the significant land use conversions occurring, as pastoral farmers sell up to avocado orchard developers keen to capitalise on the region's idyllic growing conditions and the availability of suitable land. Local estate agents also report a noticeable shift to avocado orchards throughout the Kaipara district, and in the Houhora area, on the eastern coast<sup>58</sup>.

#### Issues/Challenges

**Losing horticulture growing land through re-zoning or rural residential development intensification:** This issue is not unique to the Far North District Changes in zoning and through rural residential land use intensification of agricultural land, by various local councils across New Zealand is one of the key issues faced by the industry. Houses and lifestyle blocks increasingly encroach on valuable horticulture growing land. There are ongoing talks between industry bodies (such as HortNZ) and local councils to discuss proposed plan changes to zones, which will put some growing areas under pressure from urbanisation (HortNZ Annual Report, 2017).

**Labour shortages in Northland:** The horticultural industry generally is very dependent on seasonal workers during harvest periods. Each year, there is an influx of overseas workers around Kerikeri (including back packers wanting to take on work while travelling). However, in March 2018, the Ministry of Social Development declared an official labour shortage in horticulture. While there are schemes in place to bring in labour on seasonal visas (including from the Pacific Islands), it is possible that immigration rules may be further loosened to help alleviate the country's fruit-picking crisis<sup>59</sup>. HortNZ has been active in groups made up of the key product groups and district associations, assessing labour shortages in Northland and putting together a strategy that would focus on building the supply and skills of Northland's horticulture permanent (resident) workforce (HortNZ Annual Report, 2017).

<sup>54</sup> <http://www.hortnz.co.nz/about-us/key-objectives/>

<sup>55</sup> Includes fruit and vegetables (fresh and processed), wine and other (e.g. flowers, seeds & plants; nuts; etc.)

<sup>56</sup> <https://www.northlandnz.com/business/sectors/horticulture/> (accessed 19/04/2018)

<sup>57</sup> <https://www.northlandnz.com/business/sectors/horticulture/> (accessed 19/04/2018)

<sup>58</sup> [http://www.nzherald.co.nz/the-country/news/article.cfm?c\\_id=16&objectid=11940071](http://www.nzherald.co.nz/the-country/news/article.cfm?c_id=16&objectid=11940071)

<sup>59</sup> <https://www.stuff.co.nz/business/farming/cropping/102315759/visas-loosened-to-resolve-fruitpicking-crisis>

**Climate change/adverse weather patterns:** Droughts and floods are said to become more common and more intense. NIWA's scientist are projecting an increase of 7% in drought frequency was also projected from 2030 and 2050, for Northland<sup>60</sup>. Recent droughts in Northland, have forced growers to think about their irrigation needs and become more proactive about storing water and not only relying of natural rainfall patterns. These and other predicted climatic changes are requiring growers to carefully consider the future of their crops and the best use of resources and remains an ongoing discussion in the industry.

**Irregular bearing cycle of avocado production:** Avocado export volumes are expected to fall 54% percent to 2.2 million trays in the year to June 2018, and only partially recover the following year to 3.1 million trays. This reflects two low years on the irregular bearing cycle of production which makes it difficult to develop markets for avocados. The industry is investing in research to mitigate these swings in production to enhance industry sustainability. (Ministry for Primary Industries, 2018).

#### Outlook

The Ministry for Primary Industries (MPI) is projecting strong overall growth in the horticulture sector, driven by expansion of kiwifruit area and favourable weather conditions for pip fruit and wine production, in 2018. Strong overseas demand for high quality products like gold kiwifruit, wine (particularly Sauvignon Blanc in the US), and new apple varieties is expected to continue supporting strong prices across the sector. This is good news for Northland, where kiwifruit and wine make up a significant share of their produce. (Ministry for Primary Industries, 2018).

#### **3.5.2 Key Statistics**

According to the SNZ Business directory 2016, the Horticulture and Fruit Growing sector in Far North District comprises of 273 businesses and 763 workers. Figure 12 shows that over a quarter of these businesses fall within the 'Other Fruit and Tree Nut Growing' industry (which includes avocado growing). The average number of workers per business is 2.8 (2016) although this may not accurately reflect seasonal workers, and the total turnover (gross output) of the sector is estimated at \$89m (from all sources of business income)<sup>61</sup>, which contributes \$37m to the district economy (value added). The resulting district wide averages of gross output per worker and value added per worker are therefore estimated at \$117,200 and \$48,000 respectively (2016).

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<sup>60</sup> <http://www.mfe.govt.nz/climate-change/how-climate-change-affects-nz/how-might-climate-change-affect-my-region/northland>

<sup>61</sup> It is estimated that a portion of gross output and value added of all businesses registered as horticulture and fruit growing as their primary activity comes from apiculture. There is also potential for other sources of compatible income and will vary from business to business.



Figure 12: Horticulture and Fruit Growing Sector Businesses 2016 by Industry

Table 15 summarises the spatial analysis of the horticultural and fruit growing sector in 2016 by zone based on a mix of Council, SNZ and M.E data sources.

Key findings include:

- The sector is made up of an estimated 366 property parcels<sup>62</sup>, 96% of which are in the rural environment. The major share of property parcels is located in the Rural Production Zone (an estimated 310), with 24 property parcels located in the Rural Living Zone.
- These properties cover an estimated 4,035ha. *By comparison, parcels coded to the Primary Industry – Market Gardens and Orchards land use total 3,279ha<sup>63</sup>. The additional properties (ha) in M.E’s modelling arise from the matching of a small number of businesses to Primary Industry – Multi Use land use properties where considered reasonable in selected meshblocks (and includes the total area of those properties where matched).*

<sup>62</sup> This is derived from M.E’s reconciliation of employment to land parcels, and assumes that QV has appropriately identified properties used for market gardens and orchards (i.e. assigned an accurate LINZ code). Given that some orchards can appear to be viable on relatively small lots, it is possible that some horticultural land has been coded as Lifestyle properties. The results in this section may slightly underestimate the count and area of horticultural land (with flow on effects to the accuracy of per hectare ratios). Results are indicative only within the limitations of the data.

<sup>63</sup> The Council parcel file contained some overlap where parcels were assigned different land use codes. After cleaning (primarily removal of unit title properties), the sum of properties was approximately 110% of the total area of unique properties. This figure may therefore include some overlap with other land uses.

- 76% of total horticulture property land area falls within the Rural Production Zone (compared to 85% of the properties) and 14% falls within the General Coastal Zone (compared to just 4% of the properties). This reflects the average property size in different zones. The implied average across the rural environment is 10.6ha. The average is smallest in the Rural Living Zone (estimated at 4.8ha). In the Rural Production Zone properties average an estimated 9.8ha but in the General Coastal Zone, they average 34.9ha. This is likely to reflect difference in business type (i.e. between market gardens versus orchards).
- There are only 4 horticultural properties in Maori ownership (whether general, customary or freehold). These are all located in the Rural Production Zone and cover a combined area of 36ha.
- 98% of 2016 sector employment is located in the rural environment, based on the attribution of properties to rural zones. The Rural Production Zone accounts for 74% (an estimated 568) of workers in the sector – i.e. properties in this zone have an average employment density of approximately 0.19 workers per ha.
- In contrast, the 24 properties in the Rural Living Zone contain an estimated 14% of the sectors workforce – with an above average employment density of 0.92 per ha.
- Based on the approach taken by M.E, these employment shares flow through to shares of gross output and value added. The implication is that the average gross output per ha across all rural zones is estimated at \$23,430/ha for the horticultural sector<sup>64</sup>.
- This varies from an implied ratio of \$14,940/ha in the General Coastal Zone, \$10,980/ha in the Coastal Living Zone, \$21,850/ha in the Rural Production Zone and a significant \$107,620/ha in the Rural Living Zone. The latter closely resembles the regional turnover ratios for Kiwifruit Gold growing – the highest of all horticultural sector turnovers based on an NRC study (2012). However, care is needed in interpreting these ratios at the zone level. As discussed above, the nature of businesses in the Rural Living Zone may differ in their type, employment mix and business model (i.e. may include some gate/retail sales given their proximity to urban areas) or sustain more part time staff (again given their accessibility) compared to other zones. All of these potential factors could have a compounding effect on the sensitivity of results. As can the incidence of high-class soils and/or water for irrigation. The horticultural properties in the Rural Living Zone around Kerikeri/Waipapa do benefit from these resources (discussed below), and this may contribute to higher turnover and value added rates per ha relative to properties in other zones or locations.

Figure 13 maps the general location of horticulture sector properties across the District (based on the data available) and also estimated employment levels in those properties. Included is an aerial photograph of typical horticultural land use patterns. This is followed by a heat map showing the relative distribution of gross output per ha (Figure 14) and value added per ha for 2016 (Figure 15). While difficult to see at a district-wide scale, the vast majority of horticultural activity occurs to the north-west and south-west of Kerikeri, with additional pockets at the base of the Aupouri Peninsula and on the Karikari Peninsula.

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<sup>64</sup> By way of comparison, in the Northland Regional Council report ‘The Economic Value of Alternative Uses of Valuable Soils in Northland’ (Feb. 2012), the regional average productivity of horticultural activities varied from a minimum of \$13,000/ha for avocado growing in the mid-north to a maximum of \$106,800/ha for kiwifruit-gold growing. A weighted average is not provided. Similarly, in the Berl report ‘Assessment of the Economic Value of Rural Productive Potential in the Greater Otaki Area’ (2011) – used as the basis of a 2013 report in Auckland (by Primary Focus NZ Ltd), flower growing, fruit growing, vegetable growing and viticulture all had an average productivity of \$21,000/ha.

Table 15: Summary Analysis of the Horticultural and Fruit Growing Sector 2016

Variable (2016)	Zone/Sub-Zone								Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North			
<b>Properties in Sector</b>										
Count of Total Properties	1	16	-	24	310	-	-	351	366	
<i>Share of Total Properties by Zone</i>	0%	4%	0%	7%	85%	0%	0%	96%	100%	
Hectares of Total Properties	16	559	-	116	3,047	-	-	3,738	4,035	
<i>Share of Total Properties by Zone</i>	0%	14%	0%	3%	76%	0%	0%	93%	100%	
Minimum Property Size (ha)	16.20	0.01	-	0.30	0.05	-	-			
Maximum Property Size (ha)	16.2	483.3	-	23.3	77.4	-	-			
Average Property Size (ha)	16.2	34.9	-	4.8	9.8	-	-	10.6	11.0	
<b>Sector Use of Maori Land **</b>										
Count of Maori Freehold Properties	0	0	0	0	4	0	0	4	4	
<i>Share of Maori Properties by Zone</i>	0%	0%	0%	0%	100%	0%	0%	100%	100%	
Hectares of Maori Land	-	-	-	-	36	-	-	36	36	
<i>Share of Maori Properties by Zone</i>	0%	0%	0%	0%	100%	0%	0%	100%	100%	
<b>Sector Economic Activity</b>										
Sector Employment (MECs)	2	71	-	106	568	-	-	747	763	
<i>Share of Sector MECs by Zone</i>	0%	9%	0%	14%	74%	0%	0%	98%	100%	
Sector Gross Output (\$m) *	\$ 0.2	\$ 8.3	\$ -	\$ 12.5	\$ 66.6	\$ -	\$ -	\$ 87.6	\$ 89.4	
<i>Share of Sector Gross Output by Zone</i>	0%	9%	0%	14%	74%	0%	0%	98%	100%	
Sector Value Added (\$m) *	\$ 0.1	\$ 3.4	\$ -	\$ 5.1	\$ 27.3	\$ -	\$ -	\$ 35.9	\$ 36.7	
<i>Share of Sector Value Added by Zone</i>	0%	9%	0%	14%	74%	0%	0%	98%	100%	
Average MECs/ha	0.09	0.13	-	0.92	0.19	-	-	0.20	0.19	
Average GO/ha (\$) *	\$ 10,980	\$ 14,940	\$ -	\$ 107,620	\$ 21,850	\$ -	\$ -	\$ 23,430	\$ 22,170	
Average VA/(\$) ha *	\$ 4,500	\$ 6,120	\$ -	\$ 44,110	\$ 8,960	\$ -	\$ -	\$ 9,600	\$ 9,090	

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.



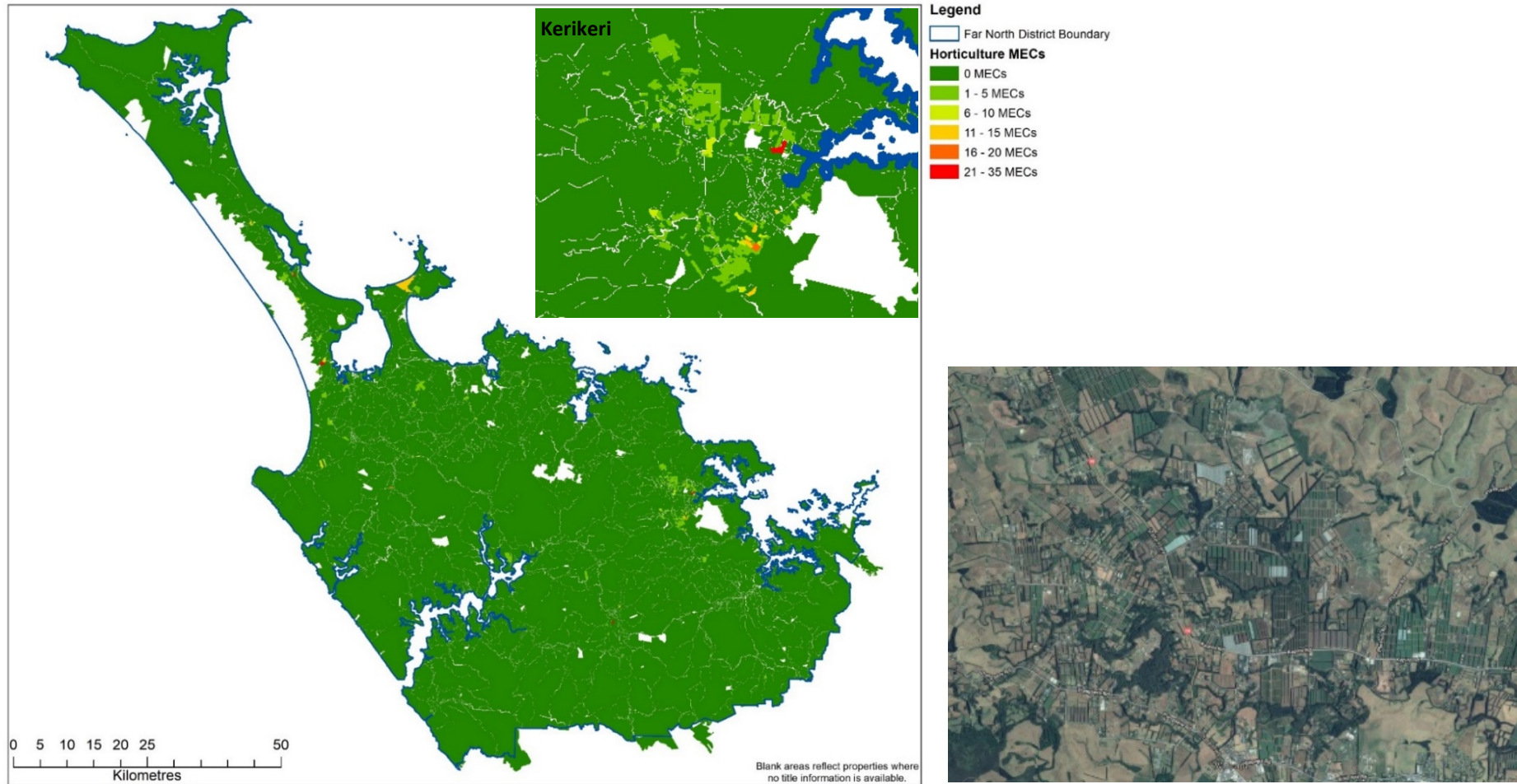


Figure 13: Employment by Estimated Horticultural Property Parcels and Indicative Land Use Image, 2016

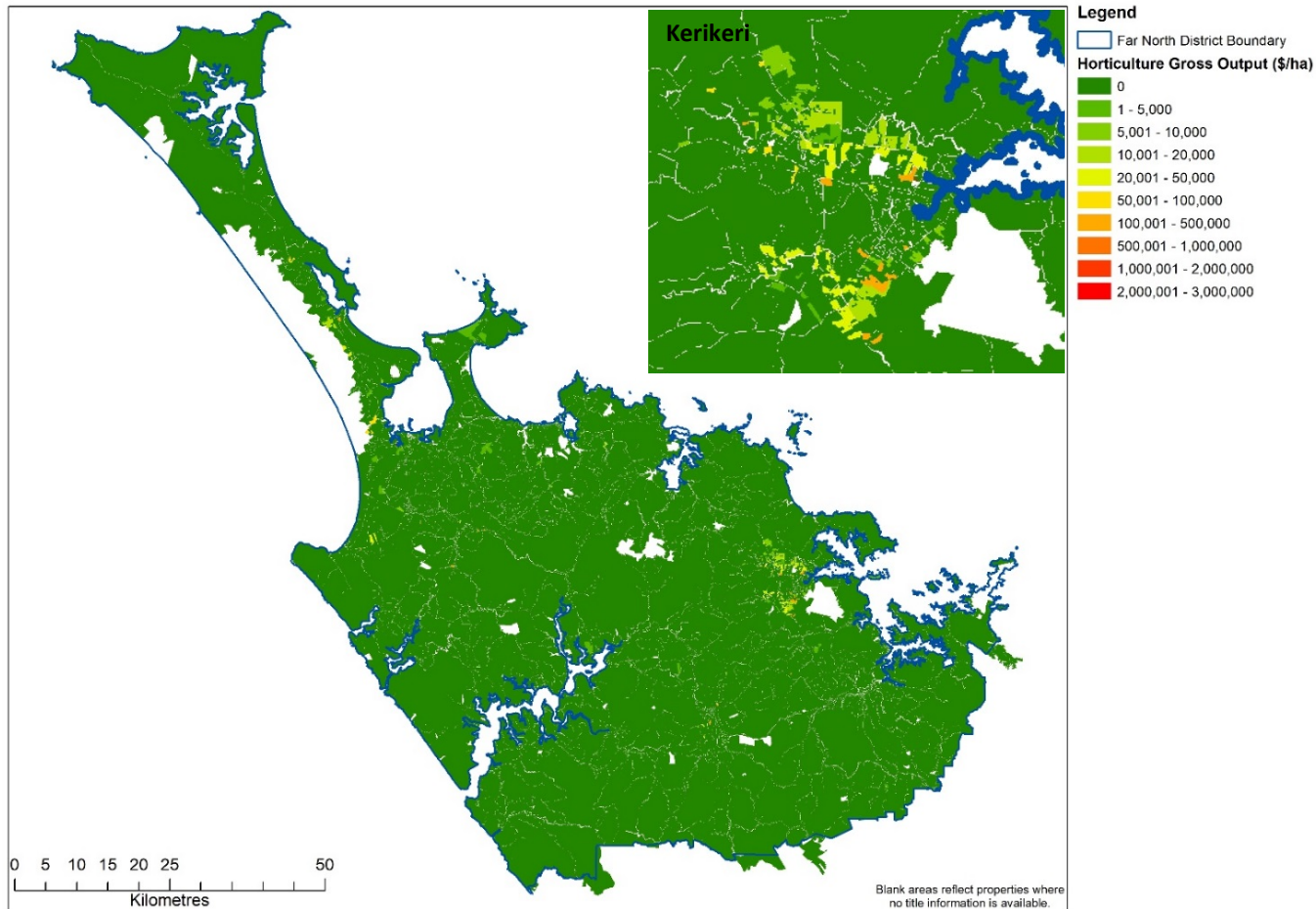


Figure 14: Estimated Horticultural Gross Output per Hectare 2016

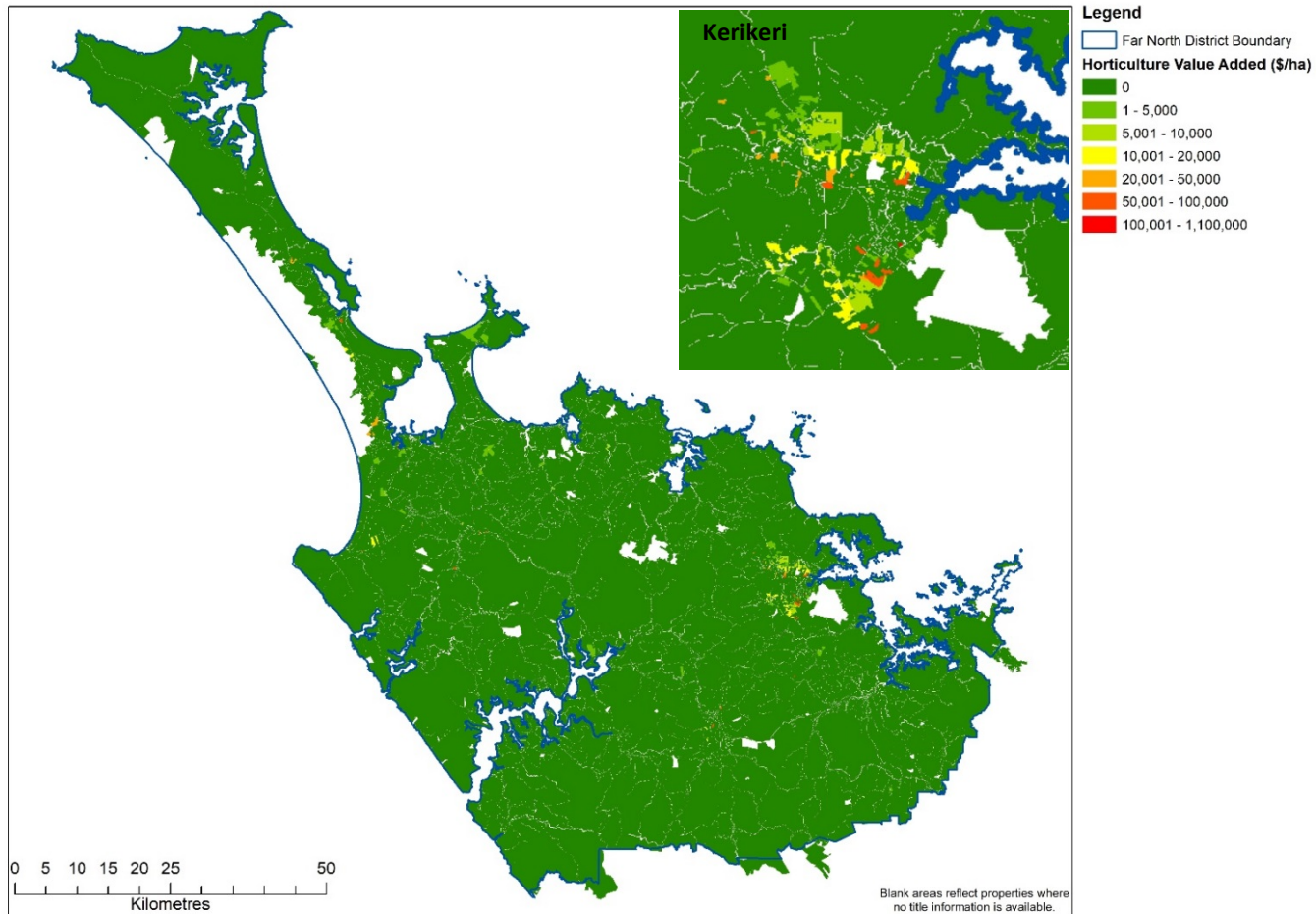


Figure 15: Estimated Horticultural Value Added per Hectare 2016

Far North District Council are interested in what share of the horticultural sector occurs in and around Kerikeri and in the combined clusters of horticultural land north of Awanui versus the rest of the district. **Appendix G:** contains a map of the Kerikeri High School Enrolment Zone which has been used to capture the Kerikeri and surrounds catchment, and also a map of the 'Northern Horticultural Areas'. The latter was defined initially by Council by identifying localities known to include primarily avocado orchards (but potentially other crops also). M.E then aggregated property parcels in these localities, using aerial photographs where relevant, to ensure that the main orchard properties were captured. The parcels selected were not however limited to visible orchards, or indeed parcels coded to market gardens and orchards by QV (LINZ codes) – rather contiguous areas were defined in each locality.

This exercise further highlighted that the QV land use coding does not always reflect the land use apparent in aerial photographs (or on the ground). There are instances where the QV land use codes suggest no horticultural land use, contrary to evidence in aerial photographs. Given that M.E's analysis approach relies heavily on the land use (LINZ) coding, it is clear that caution is needed when considering the modelled results – particularly in this Horticultural section – as it is likely to contain a number of inaccuracies due to the limitations of available data.

**Appendix G:** also contains the results of the analysis of these two horticultural areas. Key findings include:

- 61% of property parcels identified by M.E as contributing to the horticultural sector are located in the Kerikeri High School Zone catchment, and a further 15% are located within the defined Northern Horticultural Areas catchment. This leaves 24% of horticultural sector properties in the rest of the district.
- In terms of the hectares of horticultural sector properties, 37% of this horticultural land area is located in the Kerikeri High School Zone catchment, and a further 16% are located within the defined Northern Horticultural Areas catchment. This leaves 47% of horticultural property land area in the rest of the district.
- 51% of employment (2016) associated with horticultural sector properties is located in the Kerikeri High School Zone catchment (an estimated 389 workers), and a further 21% (157 workers) is located within the defined Northern Horticultural Areas catchment. This leaves 28% of horticultural sector employment (217 workers) in the rest of the district.
- An estimated \$45.6m of horticultural sector gross output and \$18.7m of value added (2016) associated with horticultural sector properties is generated in the Kerikeri High School Zone catchment (51%), and a further \$18.4m of sector gross output and \$7.5m of value added is generated within the defined Northern Horticultural Areas catchment (21%). This leaves \$25.5m of sector gross output and \$10.4m of value added generated in the rest of the district (28%).

Table 16: Summary Analysis of the Horticultural and Fruit Growing Sector 2016 by Soils

Variable (2016)	Zone/Sub-Zone								Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North			
<b>Sector Use of Versatile Soils **</b>										
Count of Properties with Versatile Soils	-	4	-	24	280	-	-	308	315	
Count of Properties with Other Soils	1	12	-	-	30	-	-	43	51	
Total Count of Properties	1	16	-	24	310	-	-	351	366	
Share of Properties with Versatile Soils	0%	25%	0%	100%	90%	0%	0%	88%	86%	
Share of Properties without Versatile Soils	100%	75%	0%	0%	10%	0%	0%	12%	14%	
Total Properties	100%	100%	0%	100%	100%	0%	0%	100%	100%	
Hectares of Properties with Versatile Soils	-	38	-	116	2,534	-	-	2,688	2,713	
Hectares of Properties with Other Soils	16	521	-	-	513	-	-	1,050	1,322	
Total Hectares of Properties	16	559	-	116	3,047	-	-	3,738	4,035	
Share of Properties with Versatile Soils	0%	7%	0%	100%	83%	0%	0%	72%	67%	
Share of Properties without Versatile Soils	100%	93%	0%	0%	17%	0%	0%	28%	33%	
Total Properties	100%	100%	0%	100%	100%	0%	0%	100%	100%	
Average Parcel Size (Ha) with Versatile Soils	-	9.5	-	4.8	9.0	-	-	8.7	8.6	
Average Parcel Size (Ha) without Versatile Soils	16.2	43.4	-	-	17.1	-	-	24.4	25.9	
Average Parcel Size (Ha) All Soils	16.2	34.9	-	4.8	9.8	-	-	10.6	11.0	
Output of Properties with Versatile Soils	\$ -	\$ 6.0	\$ -	\$ 12.5	\$ 57.1	\$ -	\$ -	\$ 75.6	\$ 77.0	
Output of Properties with Other Soils	\$ 0.2	\$ 2.3	\$ -	\$ -	\$ 9.5	\$ -	\$ -	\$ 11.9	\$ 12.5	
Total Output of Properties	\$ 0.2	\$ 8.3	\$ -	\$ 12.5	\$ 66.6	\$ -	\$ -	\$ 87.6	\$ 89.4	
Share of Properties with Versatile Soils	0%	72%	0%	100%	86%	0%	0%	86%	86%	
Share of Properties without Versatile Soils	100%	28%	0%	0%	14%	0%	0%	14%	14%	
Total Properties	100%	100%	0%	100%	100%	0%	0%	100%	100%	
Average GO/ha with Versatile Soils	\$ -	\$ 159,380	\$ -	\$ 107,620	\$ 22,540	\$ -	\$ -	\$ 28,140	\$ 28,380	
Average GO/ha without Versatile Soils	\$ 10,980	\$ 4,440	\$ -	\$ -	\$ 18,430	\$ -	\$ -	\$ 11,370	\$ 9,430	
Value Add. of Properties with Versatile Soils	\$ -	\$ 2.5	\$ -	\$ 5.1	\$ 23.4	\$ -	\$ -	\$ 31.0	\$ 31.5	
Value Add. of Properties with Other Soils	\$ 0.1	\$ 0.9	\$ -	\$ -	\$ 3.9	\$ -	\$ -	\$ 4.9	\$ 5.1	
Total Value Added of Properties	\$ 0.1	\$ 3.4	\$ -	\$ 5.1	\$ 27.3	\$ -	\$ -	\$ 35.9	\$ 36.7	
Share of Properties with Versatile Soils	0%	72%	0%	100%	86%	0%	0%	86%	86%	
Share of Properties without Versatile Soils	100%	28%	0%	0%	14%	0%	0%	14%	14%	
Total Properties	100%	100%	0%	100%	100%	0%	0%	100%	100%	
Average VA/ha with Versatile Soils	\$ -	\$ 65,320	\$ -	\$ 44,110	\$ 9,240	\$ -	\$ -	\$ 11,530	\$ 11,630	
Average VA/ha without Versatile Soils	\$ 4,500	\$ 1,820	\$ -	\$ -	\$ 7,550	\$ -	\$ -	\$ 4,660	\$ 3,870	

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 16 provides a breakdown of estimated horticultural properties by soil type for the total district – showing the count, area, gross output and value added on properties that include an area of highly versatile soils and those that do not (i.e. no intersect with soil class 1-3 areas). Key findings include:

- Of the estimated 366 horticultural properties in the rural environment, 86% contain an area of highly versatile soils (315 properties) and 14% do not (51 properties).
- 100% of the horticultural properties in the Rural Living Zone (24 in total) contain an area of highly versatile soils. 90% of the properties in the Rural Production Zone are also located on areas of highly versatile soils.
- In contrast, three quarters (75%) of the properties in the General Coastal Zone have no versatile soils – this equates to 93% of the total horticultural property land area in this zone having soils of class 4 or higher.
- The average horticultural property (parcel) size with highly versatile soils is considerably smaller than those horticultural properties without highly versatile soils – 8.6ha on average across all zones compared to 25.9ha respectively. This implies that smaller horticultural properties are more economically viable when they have the benefit of highly versatile soils.

- The average gross output per ha ratio of horticultural properties with highly versatile soils is also significantly higher (at an estimated \$28,140/ha across the rural environment) compared to output per ha on properties with other soils (\$11,370/ha). The same applies to value added per ha outcomes. This trend is evident in the Rural Production Zone and General Coastal Zone. It implies that versatile soils sustain higher returns (relative to costs) and/or support higher value crops.

Table 17: Summary Analysis of the Horticultural and Fruit Growing Sector 2016 by Water Resource

Variable (2016)	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	South Kerikeri Inlet Zone Sensitive Area	Waimate North	Total Rural Environment	Total Far North District
<b>Sector Relative to Kerikeri North Irrigation Region ***</b>										
Count of Properties within Kerikeri Irr. North	-	-	-	1	108	-	-	-	109	110
Count of Properties outside Kerikeri Irr. North	1	16	-	23	202	-	-	-	242	256
<b>Total Count of Properties</b>	<b>1</b>	<b>16</b>	<b>-</b>	<b>24</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>351</b>	<b>366</b>
Share of Properties within Kerikeri Irr. North	0%	0%	0%	4%	35%	0%	0%	0%	31%	30%
Share of Properties outside Kerikeri Irr. North	100%	100%	0%	96%	65%	0%	0%	0%	69%	70%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>
Hectares of Properties within KI North	-	-	-	23	800	-	-	-	823	823
Hectares of Properties Outside KI North	16	559	-	93	2,247	-	-	-	2,915	3,212
<b>Total Hectares of Properties</b>	<b>16</b>	<b>559</b>	<b>-</b>	<b>116</b>	<b>3,047</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,738</b>	<b>4,035</b>
Share of Properties within Kerikeri Irr. North	0%	0%	0%	20%	26%	0%	0%	0%	22%	20%
Share of Properties outside Kerikeri Irr. North	100%	100%	0%	80%	74%	0%	0%	0%	78%	80%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>
Average Parcel Size (Ha) within KI North	-	-	-	23.3	7.4	-	-	-	7.6	7.5
Average Parcel Size (Ha) outside KI North	16.2	34.9	-	4.0	11.1	-	-	-	12.0	12.5
<b>Average Parcel Size (Ha) Total</b>	<b>16.2</b>	<b>34.9</b>	<b>-</b>	<b>4.8</b>	<b>9.8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>10.6</b>	<b>11.0</b>
<b>Sector Relative to Kerikeri South Irrigation Region ***</b>										
Count of Properties within Kerikeri Irr. South	-	-	-	3	77	-	-	-	80	80
Count of Properties outside Kerikeri Irr. South	1	16	-	21	233	-	-	-	271	286
<b>Total Count of Properties</b>	<b>1</b>	<b>16</b>	<b>-</b>	<b>24</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>351</b>	<b>366</b>
Share of Properties within Kerikeri Irr. South	0%	0%	0%	13%	25%	0%	0%	0%	23%	22%
Share of Properties outside Kerikeri Irr. South	100%	100%	0%	88%	75%	0%	0%	0%	77%	78%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>
Hectares of Properties within KI South	-	-	-	11	459	-	-	-	470	470
Hectares of Properties Outside KI South	16	559	-	105	2,588	-	-	-	3,268	3,565
<b>Total Hectares of Properties</b>	<b>16</b>	<b>559</b>	<b>-</b>	<b>116</b>	<b>3,047</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,738</b>	<b>4,035</b>
Share of Properties within Kerikeri Irr. South	0%	0%	0%	9%	15%	0%	0%	0%	13%	12%
Share of Properties outside Kerikeri Irr. South	100%	100%	0%	91%	85%	0%	0%	0%	87%	88%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>
Average Parcel Size (Ha) within KI South	-	-	-	3.6	6.0	-	-	-	5.9	5.9
Average Parcel Size (Ha) outside KI South	16.2	34.9	-	5.0	11.1	-	-	-	12.1	12.5
<b>Average Parcel Size (Ha) Total</b>	<b>16.2</b>	<b>34.9</b>	<b>-</b>	<b>4.8</b>	<b>9.8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>10.6</b>	<b>11.0</b>
<b>Sector Relative to District Aquifers ***</b>										
Count of Properties within any Aquifer Area	1	5	-	23	259	-	-	-	288	295
Count of Properties outside Aquifer Area	-	11	-	1	51	-	-	-	63	71
<b>Total Count of Properties</b>	<b>1</b>	<b>16</b>	<b>-</b>	<b>24</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>351</b>	<b>366</b>
Share of Properties within any Aquifer Area	100%	31%	0%	96%	84%	0%	0%	0%	82%	81%
Share of Properties outside Aquifer Area	0%	69%	0%	4%	16%	0%	0%	0%	18%	19%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>
Hectares of Properties within any Aquifer Area	16	54	-	107	2,299	-	-	-	2,476	2,501
Hectares of Properties Outside Aquifer Area	-	505	-	9	748	-	-	-	1,262	1,534
<b>Total Hectares of Properties</b>	<b>16</b>	<b>559</b>	<b>-</b>	<b>116</b>	<b>3,047</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,738</b>	<b>4,035</b>
Share of Properties within any Aquifer Area	100%	10%	0%	92%	75%	0%	0%	0%	66%	62%
Share of Properties outside Aquifer Area	0%	90%	0%	8%	25%	0%	0%	0%	34%	38%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>
Average Parcel Size (Ha) within any Aquifer Area	16.2	10.7	-	4.6	8.9	-	-	-	8.6	8.5
Average Parcel Size (Ha) outside Aquifer Area	-	45.9	-	8.9	14.7	-	-	-	20.0	21.6
<b>Average Parcel Size (Ha) Total</b>	<b>16.2</b>	<b>34.9</b>	<b>-</b>	<b>4.8</b>	<b>9.8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>10.6</b>	<b>11.0</b>
<b>Sector Relative to Bore Sites ***</b>										
Count of Properties with one or more Bore	1	2	-	1	42	-	-	-	46	46
Count of Properties without Bores	-	14	-	23	268	-	-	-	305	320
<b>Total Count of Properties</b>	<b>1</b>	<b>16</b>	<b>-</b>	<b>24</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>351</b>	<b>366</b>
Share of Properties with One or More Bores	100%	13%	0%	4%	14%	0%	0%	0%	13%	13%
Share of Properties without Bores	0%	88%	0%	96%	86%	0%	0%	0%	87%	87%
<b>Total Properties</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation North or South Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 17 provides a breakdown of estimated horticultural properties with and without access to water resources for the total district.

Key findings include:

- Of the estimated 351 horticultural properties in the rural environment, 31% are located wholly or partly within the defined Kerikeri Irrigation North Region (109 properties) and 23% are located wholly or partly within the defined Kerikeri Irrigation South Region (80 properties). A total of 54%. Of the horticultural properties that are in the Rural Environment and sit outside the combined Kerikeri Irrigation North and South Regions, 1 is in the Coastal Living Zone, 16 are in the General Coastal Zone, 20 are in the Rural Living Zone and 125 are in the Rural Production Zone. An estimated 35% of the horticultural properties in the Rural Production Zone fall within the Kerikeri Irrigation North Region and 25% fall within the Kerikeri Irrigation South Region (a total share of 61%).
- The average horticultural property (parcel) size within the Kerikeri Irrigation North Region is about 60% of the size of the horticultural properties outside the Irrigation North Region – on average 7.5ha compared to 12.5ha across all horticultural parcels (and a combined weighted average size of 11.0ha). The average horticultural property (parcel) size within the Kerikeri Irrigation South Region is about 50% of the size of the horticultural properties outside the Kerikeri Irrigation South Region – on average 5.9ha.
- Of the estimated 351 properties in the rural environment, 82% are located wholly or partly above the defined district aquifers (288 properties) and 18% are not (63 properties). This includes both the Aupouri Aquifer and the several smaller aquifers, including those in and around the Kerikeri Irrigation North and South Regions. An estimated 84% of the horticultural properties in the Rural Production Zone fall within an aquifer catchment.
- The average horticultural property (parcel) size within any aquifer area is just over a third the size of the horticultural properties outside of an aquifer area – on average 8.5ha compared to 21.6ha across all sector parcels and zones.
- Of the estimated 351 properties in the rural environment, just 13% contain one or more bores (46 properties) and 87% do not (305 properties).

The incidence of both highly versatile soils and a location within an aquifer area, and vice versa, has also been examined. Care is recommended due to the decreasing sample sizes when analysed at this level of detail. Figure 16 shows that the average horticultural property (parcel) size is smallest when that property has the benefit of both highly versatile soils and an aquifer (8.1ha) and the average size is largest when that property has neither highly versatile soils or an aquifer location (34.3ha). When only one resource is available, either highly versatile soils or an aquifer, the average parcel size of horticultural properties is also relatively small but suggests that highly versatile soils slightly trump an aquifer location in terms of sustaining smaller productive properties.

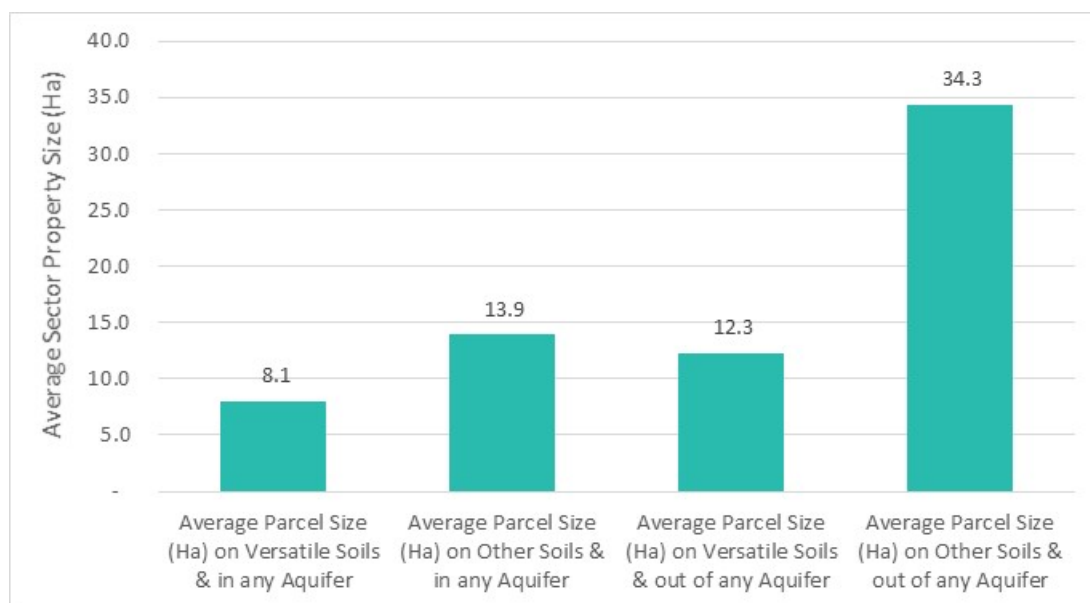


Figure 16: Analysis of Average Horticultural Parcel Size by Versatile Soils and Aquifer Locations

Figure 17 shows the average count of horticultural sector employment per hectare – a measure of how productive properties are. Due to the approach taken by M.E, the same trend would be evident for gross output per hectare and



value added per hectare. It shows that on average, horticultural properties in aquifer locations (irrespective of soil quality) sustain a higher ratio of employment per hectare than properties that are not in an aquifer area. Outside of aquifer locations (the two right hand bars in the graph), the presence of highly versatile soils still sustains more employment per hectare relative to properties without the benefit of either of resource.

Care is needed with interpreting these results (Figure 16 and Figure 17) because the horticultural sector is very diverse and the presence of highly versatile soils and or plentiful water might determine what type of produce is grown and these in turn may vary in terms of their employment needs or economic lot sizes. That is, there may be other factors that contribute to or help explain these trends.

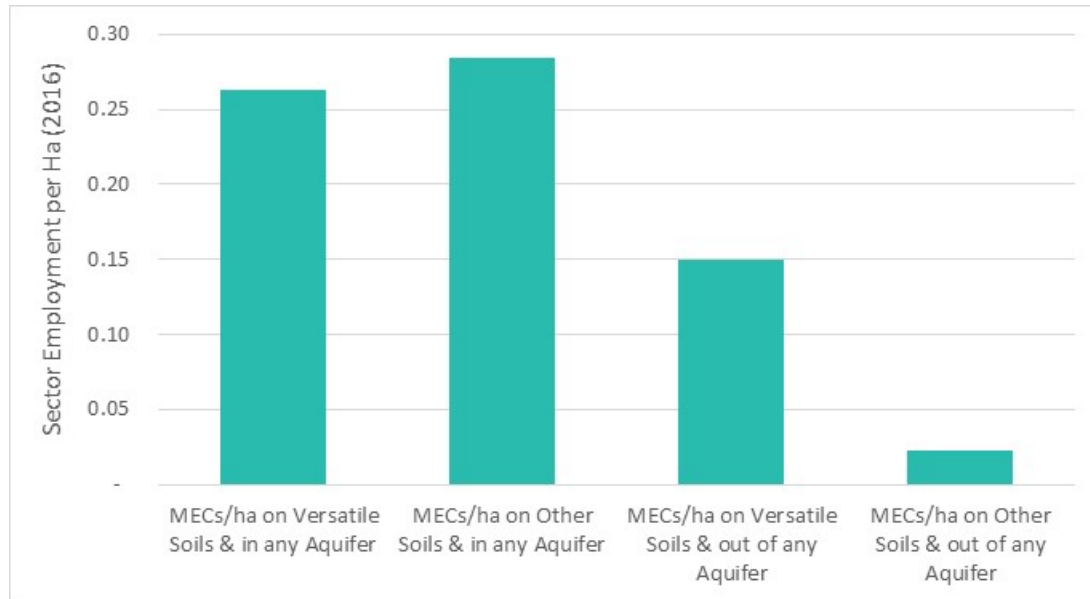


Figure 17: Analysis of Average Horticultural Employment per Ha by Versatile Soils and Aquifer Locations

## 3.6 Sheep, Beef Cattle and Grain Farming

### 3.6.1 Industry Overview

Around half (49%) of the national sheep flock is located on the North Island, and around 70% of the country's beef cattle<sup>65</sup>. The Agricultural Production Survey (APS) data published by Statistics New Zealand (SNZ), for June 2017, shows total beef cattle numbers in Northland had increased by around 7%<sup>66</sup> from the previous year, while sheep numbers in Northland had fallen from 366,000 in 2016, to 328,000 in 2017. MPI recently reported a similar trend at the national level, i.e. a shift towards cattle farming away from sheep (Ministry for Primary Industries, 2018)<sup>67</sup>. Sheep numbers in Northland currently represents around 1.2% (i.e. down from 1.3% in 2016) of the total flock in NZ, while Beef cattle in Northland makes up around 11% of the national herd (up from 10% in 2016).

Sheep, beef cattle and grain farming contributed nearly \$3b to the national economy in 2017 (1.2% of total GDP) (Infometrics, 2017a)<sup>68</sup>. On the back of the contraction of export revenue from meat and wool products in 2017, forecasters are expecting a bounce-back with strong growth in 2018. This is partly as a result of overall strong global economic growth, as well as much stronger prices for both lamb and beef exports (Ministry for Primary Industries, 2018).

<sup>65</sup> Statistics NZ, Agricultural Production Statistics: June 2017 (final).

<sup>66</sup> From 357,000 to 383,000 head.

<sup>67</sup> Ministry for Primary Industries. (2018). Situation and Outlook for Primary Industries. Retrieved April 16, 2018.

<sup>68</sup> Infometrics. (2017a). Annual Economic Profile: Far North District. Retrieved April 16, 2018, from <https://ecoprofile.infometrics.co.nz/Far%20North%20District>.

Beef + Lamb New Zealand Ltd (previously Meat and Wool New Zealand) is the farmer-owned, industry organisation representing New Zealand's sheep and beef farmers. Beef + Lamb New Zealand Inc operates under the same name and brand but is largely responsible for promoting beef and lamb in the domestic market. These two entities are jointly funded through the farmer levies which reinvested in the programmes that grow the sheep and beef industry (Beef + Lamb New Zealand, 2018).

### Issues/Challenges

**Alternative proteins:** A recent report published by Beef + Lamb NZ (Antedote, 2018)<sup>69</sup>, highlighting consumer trends and preferences showed that consuming red meat is becoming an indulgence for special occasions for a lot of consumers. Significant investment is being made into creating alternative proteins, in an attempt to improve consumer acceptance (Boniface, 2018)<sup>70</sup>. Nevertheless, consumers are still seeking red meat produced without hormones or antibiotics and to the highest standards of animal welfare – and NZ farm systems tick all of these boxes (Antedote, 2018). Furthermore, NZ farmers have the advantage of being viewed by the world as having some of the highest food standards and animal welfare standards<sup>71</sup>. However, now more than ever, the industry needs to educate consumers about the value of quality. Going forward, New Zealand meat producers need to identify what level of risk the products present for their industry, and plan accordingly.

**Environmental sustainability:** There is an accepted narrative that red meat production has an adverse effect on the climate, requiring great quantities of water, and leading to significant volumes of greenhouse gas emissions<sup>72</sup>. While the sheep and beef sector recognise that red meat production has environmental impacts, it remains positive that continued investment in research and development and increased use of advance technologies will maximise farm productivity in an environmentally sustainable manner<sup>73</sup>. NZ Landcare Trust works closely with B+LNZ on practical initiatives aimed at increasing awareness of sustainable farming practices<sup>74</sup>.

**Disease:** Beef + Lamb NZ, DairyNZ and Federated Farmers have all been working closely with MPI to respond to the Mycoplasma bovis outbreak. In the latest update by Biosecurity New Zealand (August 2018), there are 37 properties that are actively infected with the disease, including 8 in the North Island and one in Northland. These comprise 14 dairy farms, 21 beef farms and 2 other farms. A total of 58 properties, including those infected properties have restrictions in place and a further 180 are under a 'notice of direction' and 164 properties are 'under assessment'<sup>75</sup>. The government has decided that it will put in place measures, including a package of technical law changes, to attempt full eradication of the disease. The culling of infected herds will take place over the next two years (with losses of stock estimated at no less than 126,000 cattle). Farmers that are directed to have animals culled or their farm operations restricted under movement controls will be eligible for government compensation. This compensation will be essential in helping the sector recover from the outbreak.

**Labour shortage:** Similar to other agriculture sectors, the beef and sheep sector is finding it tough to recruit reliable, motivated workers. In addition, industry all over is facing the challenge of an aging workforce. A quick Trade Me search of the key words 'beef' and 'sheep', in Northland, reveals 73 vacancies ranging from shepherd, to farm manager and the like. Beef cattle farmer (farm manager) appears on the latest Immediate Skill Shortage List, published in February 2018, by Immigration New Zealand. A recent report commented on the apparent mismatch between the social, cultural and economic expectations of employers (farmers) and applicants in Northland. The author

<sup>69</sup> Antedote. (2018). Future of Meat. Beef + Lamb New Zealand. Retrieved April 16, 2018, from <https://beeflambnz.com/sites/default/files/news-docs/Alternative%20Proteins%20summary%20report.pdf>.

<sup>70</sup> Boniface, A. (2018, March 21). Plenty at steak. Westpac Fortnightly Agri Update, pp. 1-2. Retrieved April 17, 2018, from [https://westpaciq.westpac.com.au/wibiqauthoring/uploads/file/New\\_Zealand/2018/March-2018/NZ\\_Fortnightly\\_Agri\\_Update\\_21\\_March\\_2018.pdf](https://westpaciq.westpac.com.au/wibiqauthoring/uploads/file/New_Zealand/2018/March-2018/NZ_Fortnightly_Agri_Update_21_March_2018.pdf).

<sup>71</sup> <https://www.stuff.co.nz/business/farming/102125463/industrialised-meat-backlash-to-favour-nz-sheep-and-beef-farmers>

<sup>72</sup> <http://www.newshub.co.nz/environmentsci/beef-farming-harmful-to-environment--study-2014072218>

<sup>73</sup> <https://beeflambnz.com/your-levies-at-work/future-farms-initiative>

<sup>74</sup> <http://www.landcare.org.nz/News-Features/News/Sustainable-Direction-for-Sheep-and-Beef-Farmers>

<sup>75</sup> <https://www.mpi.govt.nz/protection-and-response/mycoplasma-bovis/>

recommended support be provided to farm owners to help them engage more effectively with the workforce (Martin Jenkins, 2017).<sup>76</sup>

### Outlook

After a 9% drop in export revenue from meat and wool products in 2017, the sector is forecast to strengthen in 2018, returning to 2016 revenue levels (\$9b). MPI's most recent Situation and Outlook of Primary Industries (2018), projected red meat prices in the coming year to increase by around 14.7% for lamb, 20.5% for mutton, 2% for beef, and 11.7% for venison. Overall, the outlook for beef cattle farmers remains positive, with beef consumption trending upward in key markets including the United States, China, Japan, and South Korea. There is some angst among sheep farmers, with the NZ lamb export price expected to drop somewhat in 2019, and a continued decrease in sheep numbers. In contrast to the 2017 season, which saw wool exports drop by 18%, an increase of 16% is forecasted for 2018. Global wool prices have strengthened over the past 12 months, with China still the largest single market for NZ wool exports, taking 40% in 2016/17.

### **3.6.2 Key Statistics**

According to the SNZ Business directory, the sheep, beef cattle and grain farming sector (here on referred to as sheep and beef farming) in Far North District comprises of 936 businesses and 848 workers. Figure 18 shows that 84% of these businesses fall within the 'Beef cattle farming (specialised)' industry, with a further 11% in combined 'Sheep-beef cattle farming.' Only 3% of these farms are recorded as just sheep farming and grain growing has a limited role in the Far North. The average number of workers per business is around 1 (2016) and the total turnover (gross output) of the sector is estimated at \$171m (from all sources of business income)<sup>77</sup>, which contributes \$69m to the district economy (value added). The resulting district wide averages of gross output per worker and value added per worker are therefore estimated at \$201,500 and \$81,200 respectively (2016).

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<sup>76</sup> Martin Jenkins. (2017, August). Northland Workforce Stocktake and Planning. Ministry of Business, Innovation and Employment.

<sup>77</sup> It is estimated that a portion of gross output and value added of all businesses registered as Sheep, Beef Cattle and Grain Farming as their primary activity comes from apiculture. There is also potential for other sources of compatible income and this will vary from business to business.

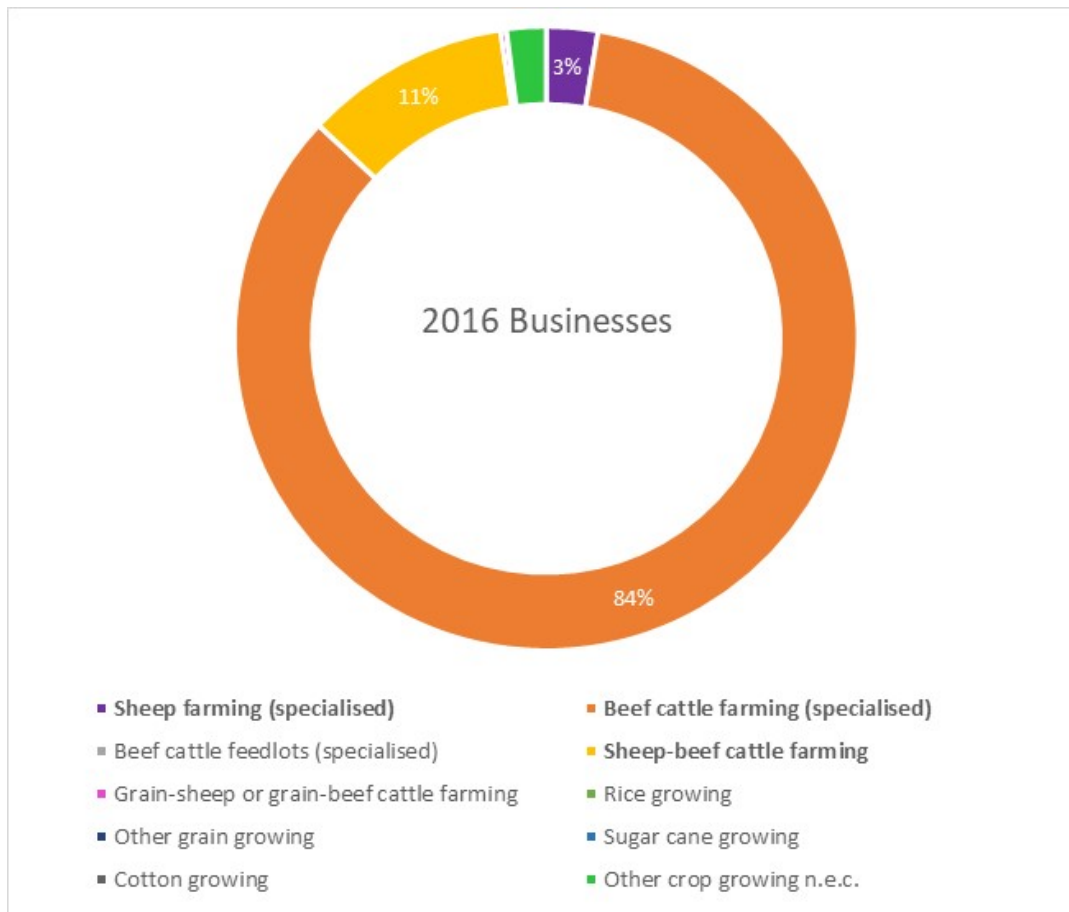


Figure 18: Sheep, Beef Cattle and Grain Growing Sector Businesses 2016 by Industry

Table 18 summarises the spatial analysis of the sheep and beef farming sector in 2016 by zone based on a mix of Council, SNZ and M.E data sources.

Key findings include:

- The sector is made up of an estimated 6,846 property parcels, 98% of which are in the rural environment. The major share of property parcels is located in the Rural Production Zone (an estimated 6,103 parcels), with 457 property parcels located in the General Coastal Zone.
- These properties cover an estimated 261,725ha. *By comparison, parcels coded to the Primary Industry – Stock Fattening and Primary Industry – Store Livestock land use total 259,330ha<sup>78</sup>. The slight difference in properties (ha) in M.E’s modelling arises from the removal of minor overlap of parcels with these land use codes.*
- 87% of total sheep and beef property land area falls within the Rural Production Zone (compared to 89% of the properties) and 11% falls within the General Coastal Zone (compared to just 7% of the properties).
- This reflects the average parcel size in different zones. The average across the rural environment is 38.9ha. The average is smallest in the Coastal Living Zone (estimated at 7.0ha). In the Rural Production Zone land parcels average an estimated 37.5ha but in the General Coastal Zone, they average 63.1ha.
- There are a significant 649 sheep and beef property parcels in Maori ownership across all zones (whether general, customary or freehold). These are largely located in the Rural Production Zone (580). In total, Maori owned sheep and beef farm property parcels cover a combined area of 44,486ha (17% of total sector land area). The

<sup>78</sup> The Council parcel file contained some overlap where parcels were assigned different land use codes. After cleaning (primarily removal of unit title properties), the sum of properties was approximately 110% of the total area of unique properties. This figure may therefore include some overlap with other land uses.

average size of Maori owned sheep and beef farms is 68.5ha. By comparison, the overall average size of sheep and beef farms not on Maori owned land is smaller at 35.1ha.

- 99% of 2016 sector employment is located in the rural environment, based on the attribution of properties to rural zones. The Rural Production Zone accounts for 88% of workers (an estimated 749) in the sector. In general, employment density per hectare is very low given the land extensive nature of farming. The 457 property parcels in the General Coastal Zone contain an estimated 9% of the sector's employment.
- Based on the approach taken by M.E, these employment shares flow through to shares of gross output and value added. The implication is that the average gross output per ha in the rural environment is estimated at \$650/ha for the sheep and beef sector in the Far North<sup>79</sup>.
- This varies across zones, but care is needed when the count of properties is small. The most reliable averages of gross output are in the Rural Production Zone (\$660/ha) and the General Coastal Zone (\$520/ha).

Figure 19 maps the general location of sheep and beef sector properties across the district and also estimated employment levels in those properties as well as an aerial photograph of typical sheep and beef farming land use patterns (east of the Puketi Forest). This is followed by a heat map showing the relative distribution of gross output per ha (Figure 20) and value added per ha for 2016 (Figure 21). It is evident at a district-wide scale that sheep and beef farming activity occurs extensively throughout the Far North.

Table 18: Summary Analysis of the Sheep, Beef Cattle and Grain Farming Sector 2016

Variable (2016)	Zone/Sub-Zone								Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North			
<b>Properties in Sector</b>										
Count of Total Properties	65	457	11	35	6,103	6	1	6,678	6,846	
<i>Share of Total Properties by Zone</i>	1%	7%	0%	1%	89%	0%	0%	98%	100%	
Hectares of Total Properties	455	28,835	983	856	228,651	127	44	259,951	261,725	
<i>Share of Total Properties by Zone</i>	0%	11%	0%	0%	87%	0%	0%	99%	100%	
Minimum Property Size (ha)	0.01	0.00	0.35	0.01	0.00	5.23	44.11			
Maximum Property Size (ha)	89.2	5,877.8	561.6	271.7	2,585.9	49.7	44.1			
Average Property Size (ha)	7.0	63.1	89.4	24.5	37.5	21.1	44.1	38.9	38.2	
<b>Sector Use of Maori Land **</b>										
Count of Maori Freehold Properties	-	64	-	1	580	-	-	645	649	
<i>Share of Maori Properties by Zone</i>	0%	10%	0%	0%	89%	0%	0%	99%	100%	
Hectares of Maori Land	-	9,263	-	34	35,185	-	-	44,482	44,486	
<i>Share of Maori Properties by Zone</i>	0%	21%	0%	0%	79%	0%	0%	100%	100%	
<b>Sector Economic Activity</b>										
Sector Employment (MECs)	5	74	5	4	749	3	1	841	848	
<i>Share of Sector MECs by Zone</i>	1%	9%	1%	0%	88%	0%	0%	99%	100%	
Sector Gross Output (\$m) *	\$ 0.9	\$ 14.9	\$ 0.9	\$ 0.7	\$ 150.9	\$ 0.7	\$ 0.2	\$ 169.4	\$ 170.9	
<i>Share of Sector Gross Output by Zone</i>	1%	9%	1%	0%	88%	0%	0%	99%	100%	
Sector Value Added (\$m) *	\$ 0.4	\$ 6.0	\$ 0.4	\$ 0.3	\$ 60.8	\$ 0.3	\$ 0.1	\$ 68.2	\$ 68.9	
<i>Share of Sector Value Added by Zone</i>	1%	9%	1%	0%	88%	0%	0%	99%	100%	
Average MECs/ha	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	
Average GO/ha (\$) *	\$ 2,080	\$ 520	\$ 970	\$ 860	\$ 660	\$ 5,280	\$ 4,940	\$ 650	\$ 650	
Average VA/(\$) ha *	\$ 840	\$ 210	\$ 390	\$ 350	\$ 270	\$ 2,130	\$ 1,990	\$ 260	\$ 260	

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

<sup>79</sup> By way of comparison, in the Northland Regional Council report 'The Economic Value of Alternative Uses of Valuable Soils in Northland' (Feb. 2012), the regional average productivity of sheep and beef farming was \$685/ha. Similarly, in the Berl report 'Assessment of the Economic Value of Rural Productive Potential in the Greater Otaki Area' (2011) – used as the basis of a 2013 report in Auckland (by Primary Focus NZ Ltd), beef cattle, sheep and beef, and sheep farming all had an average productivity of \$1,000/ha.

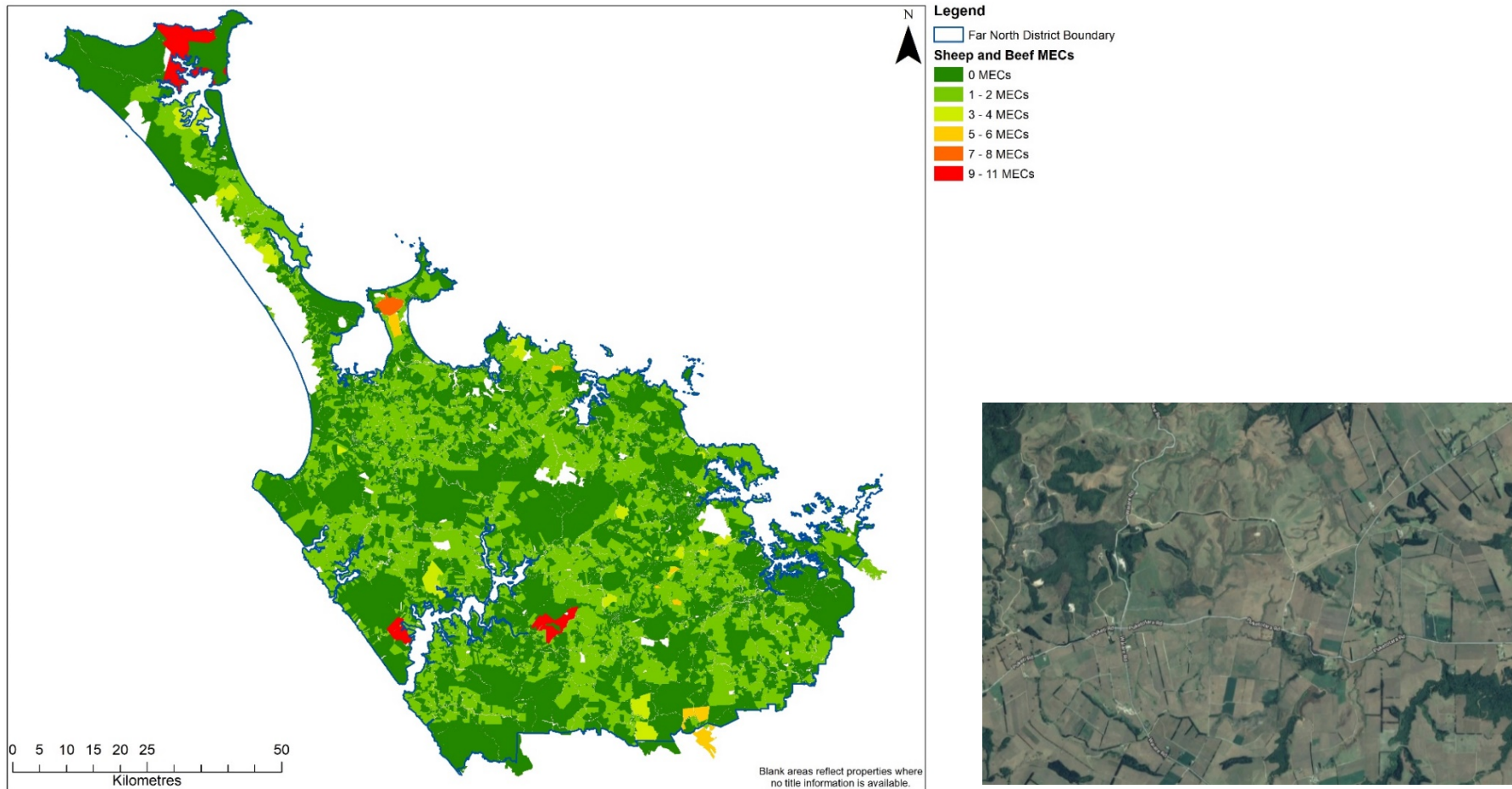


Figure 19: Employment by Estimated Sheep & Beef Farming Parcels and Indicative Land Use Pattern, 2016

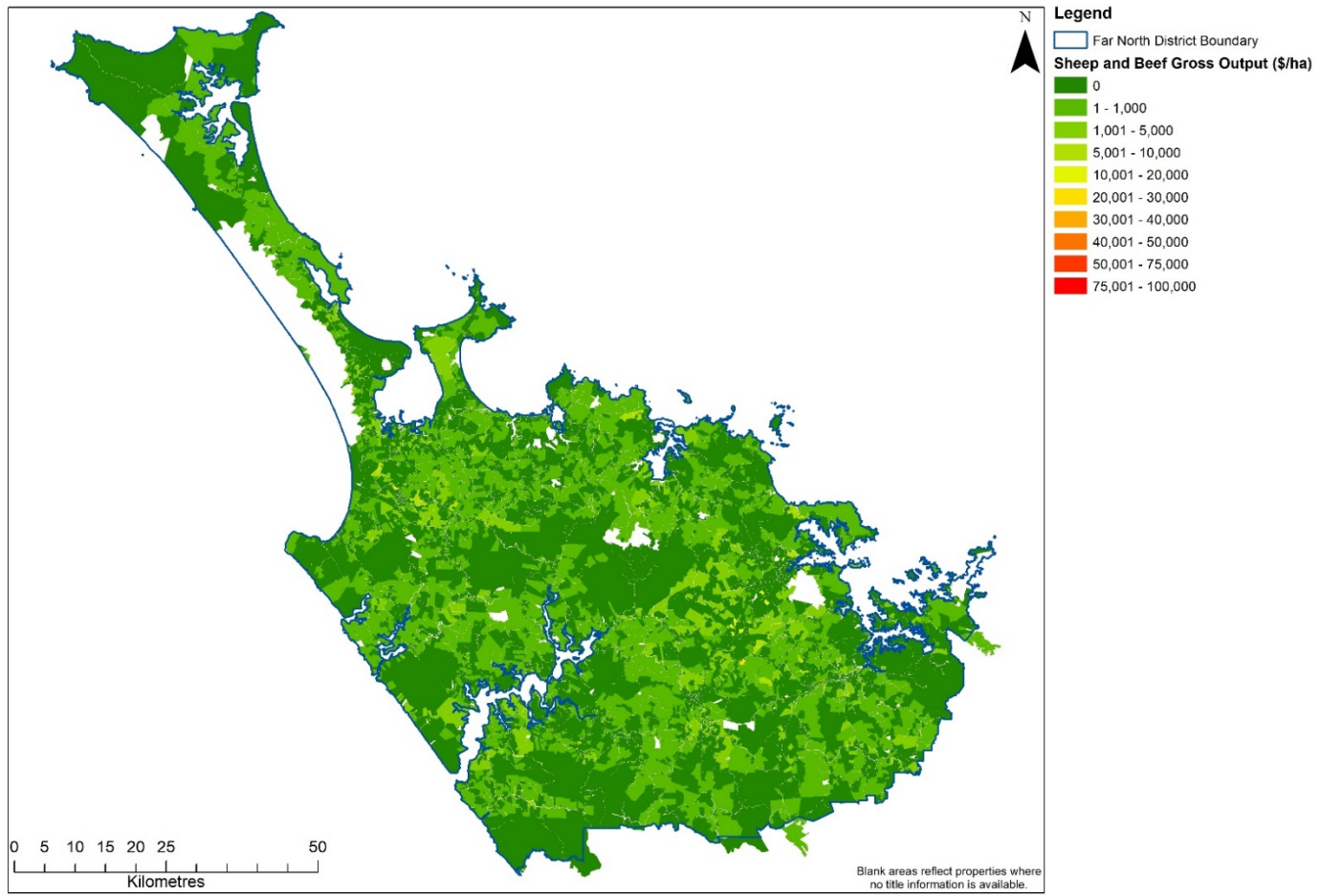


Figure 20: Estimated Sheep, Beef Cattle and Grain Farming Gross Output per Hectare 2016

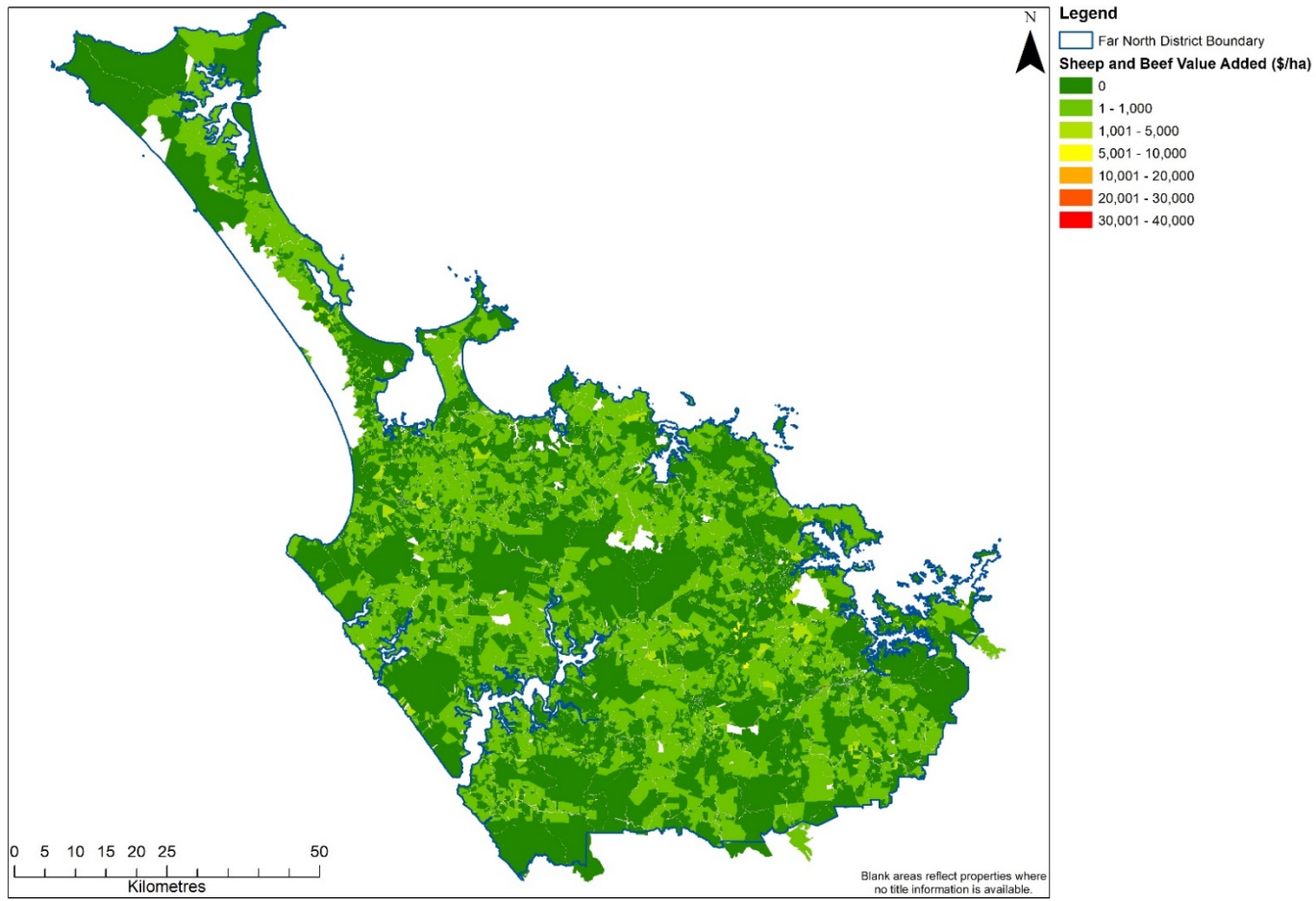


Figure 21: Estimated Sheep, Beef Cattle and Grain Farming Value Added per Hectare 2016



Table 19: Summary Analysis of the Sheep, Beef Cattle and Grain Farming Sector 2016 by Soils

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Sector Use of Versatile Soils **</b>									
Count of Properties with Versatile Soils	37	93	3	17	2,467	-	1	2,618	2,672
Count of Properties with Other Soils	28	364	8	18	3,636	6	-	4,060	4,174
Total Count of Properties	65	457	11	35	6,103	6	1	6,678	6,846
Share of Properties with Versatile Soils	57%	20%	27%	49%	40%	0%	100%	39%	39%
Share of Properties without Versatile Soils	43%	80%	73%	51%	60%	100%	0%	61%	61%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hectares of Properties with Versatile Soils	214	14,195	765	478	92,273	-	44	107,970	108,268
Hectares of Properties with Other Soils	241	14,640	219	377	136,378	127	-	151,982	153,457
Total Hectares of Properties	455	28,835	983	856	228,651	127	44	259,951	261,725
Share of Properties with Versatile Soils	47%	49%	78%	56%	40%	0%	100%	42%	41%
Share of Properties without Versatile Soils	53%	51%	22%	44%	60%	100%	0%	58%	59%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average Parcel Size (Ha) with Versatile Soils	5.8	152.6	254.9	28.1	37.4	-	44.1	41.2	40.5
Average Parcel Size (Ha) without Versatile Soils	8.6	40.2	27.3	21.0	37.5	21.1	-	37.4	36.8
Average Parcel Size (Ha) All Soils	7.0	63.1	89.4	24.5	37.5	21.1	44.1	38.9	38.2
Output of Properties with Versatile Soils	\$ 0.7	\$ 5.7	\$ 0.9	\$ 0.6	\$ 76.0	\$ -	\$ 0.2	\$ 84.1	\$ 84.4
Output of Properties with Other Soils	\$ 0.2	\$ 9.2	\$ 0.0	\$ 0.2	\$ 74.9	\$ 0.7	\$ -	\$ 85.2	\$ 86.5
Total Output of Properties	\$ 0.9	\$ 14.9	\$ 0.9	\$ 0.7	\$ 150.9	\$ 0.7	\$ 0.2	\$ 169.4	\$ 170.9
Share of Properties with Versatile Soils	78%	38%	96%	79%	50%	0%	100%	50%	49%
Share of Properties without Versatile Soils	22%	62%	4%	21%	50%	100%	0%	50%	51%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average GO/ha with Versatile Soils	\$ 3,470	\$ 400	\$ 1,190	\$ 1,220	\$ 820	\$ -	\$ 4,940	\$ 780	\$ 780
Average GO/ha without Versatile Soils	\$ 850	\$ 630	\$ 190	\$ 410	\$ 550	\$ 5,280	\$ -	\$ 560	\$ 560
Value Add. of Properties with Versatile Soils	\$ 0.3	\$ 2.3	\$ 0.4	\$ 0.2	\$ 30.6	\$ -	\$ 0.1	\$ 33.9	\$ 34.0
Value Add. of Properties with Other Soils	\$ 0.1	\$ 3.7	\$ 0.0	\$ 0.1	\$ 30.2	\$ 0.3	\$ -	\$ 34.3	\$ 34.9
Total Value Added of Properties	\$ 0.4	\$ 6.0	\$ 0.4	\$ 0.3	\$ 60.8	\$ 0.3	\$ 0.1	\$ 68.2	\$ 68.9
Share of Properties with Versatile Soils	78%	38%	96%	79%	50%	0%	100%	50%	49%
Share of Properties without Versatile Soils	22%	62%	4%	21%	50%	100%	0%	50%	51%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average VA/ha with Versatile Soils	\$ 1,400	\$ 160	\$ 480	\$ 490	\$ 330	\$ -	\$ 1,990	\$ 310	\$ 310
Average VA/ha without Versatile Soils	\$ 340	\$ 250	\$ 80	\$ 170	\$ 220	\$ 2,130	\$ -	\$ 230	\$ 230

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 19 provides a breakdown of estimated sheep and beef property parcels by soil type for the total district – showing the count, area, gross output and value added on properties that include an area of highly versatile soils and those that do not (i.e. no intersect with soil class 1-3 areas).

Key findings include:

- Of the estimated 6,678 sheep and beef properties in the rural environment, 39% contain an area of highly versatile soils (2,618 properties) and 61% do not (4,060 properties).
- An above average share of sheep and beef properties contain highly versatile soils in the Coastal Living Zone (57%) and Rural Living Zone (49%). Just 20% of sheep and beef farms in the General Coastal Zone have an area of highly versatile soils.
- In the Rural Production Zone, where the majority of sheep and beef farming takes place, 40% of the total parcel land area includes areas of highly versatile soils.
- The average sheep and beef property (parcel) size with highly versatile soils is slightly larger than the average property size without any highly versatile soils – 40.5ha per parcel compared to 36.8ha across all zones.

- The average gross output per ha ratio of sheep and beef properties with highly versatile soils is moderately higher (at an estimated \$780/ha) compared to output per ha on properties without highly versatile soils (\$560/ha). The same applies to value added per ha outcomes.
- This trend is even more pronounced in the Rural Production Zone where gross output per ha with highly versatile soils is \$820/ha compared to \$550/ha without. It implies that highly versatile soils sustain higher returns (relative to costs), even though the sector as a whole does not specifically seek highly versatile soils as a location driver.

Table 20: Summary Analysis of the Sheep, Beef Cattle and Grain Farming Sector 2016 by Water Resource

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Sector Relative to Kerikeri North Irrigation Region ***</b>									
Count of Properties within Kerikeri Irr. North	-	-	-	-	30	-	-	30	31
Count of Properties outside Kerikeri Irr. North	65	457	11	35	6,073	6	1	6,648	6,815
Total Count of Properties	65	457	11	35	6,103	6	1	6,678	6,846
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. North	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hectares of Properties within KI North	-	-	-	-	1,456	-	-	1,456	1,456
Hectares of Properties Outside KI North	455	28,835	983	856	227,195	127	44	258,495	260,269
Total Hectares of Properties	455	28,835	983	856	228,651	127	44	259,951	261,725
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	1%	0%	0%	1%	1%
Share of Properties outside Kerikeri Irr. North	100%	100%	100%	100%	99%	100%	100%	99%	99%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average Parcel Size (Ha) within KI North	-	-	-	-	48.5	-	-	48.5	47.0
Average Parcel Size (Ha) outside KI North	7.0	63.1	89.4	24.5	37.4	21.1	44.1	38.9	38.2
Average Parcel Size (Ha) Total	7.0	63.1	89.4	24.5	37.5	21.1	44.1	38.9	38.2
<b>Sector Relative to Kerikeri South Irrigation Region ***</b>									
Count of Properties within Kerikeri Irr. South	-	-	-	-	24	-	-	24	24
Count of Properties outside Kerikeri Irr. South	65	457	11	35	6,079	6	1	6,654	6,822
Total Count of Properties	65	457	11	35	6,103	6	1	6,678	6,846
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. South	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hectares of Properties within KI South	-	-	-	-	923	-	-	923	923
Hectares of Properties Outside KI South	455	28,835	983	856	227,729	127	44	259,028	260,803
Total Hectares of Properties	455	28,835	983	856	228,651	127	44	259,951	261,725
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. South	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average Parcel Size (Ha) within KI South	-	-	-	-	38.4	-	-	38.4	38.4
Average Parcel Size (Ha) outside KI South	7.0	63.1	89.4	24.5	37.5	21.1	44.1	38.9	38.2
Average Parcel Size (Ha) Total	7.0	63.1	89.4	24.5	37.5	21.1	44.1	38.9	38.2
<b>Sector Relative to District Aquifers ***</b>									
Count of Properties within any Aquifer Area	43	88	2	26	970	6	1	1,136	1,177
Count of Properties outside Aquifer Area	22	369	9	9	5,133	-	-	5,542	5,669
Total Count of Properties	65	457	11	35	6,103	6	1	6,678	6,846
Share of Properties within any Aquifer Area	66%	19%	18%	74%	16%	100%	100%	17%	17%
Share of Properties outside Aquifer Area	34%	81%	82%	26%	84%	0%	0%	83%	83%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hectares of Properties within any Aquifer Area	267	6,500	584	336	38,609	127	44	46,467	47,128
Hectares of Properties Outside Aquifer Area	188	22,335	399	520	190,043	-	-	213,484	214,598
Total Hectares of Properties	455	28,835	983	856	228,651	127	44	259,951	261,725
Share of Properties within any Aquifer Area	59%	23%	59%	39%	17%	100%	100%	18%	18%
Share of Properties outside Aquifer Area	41%	77%	41%	61%	83%	0%	0%	82%	82%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average Parcel Size (Ha) within any Aquifer Area	6.2	73.9	291.9	12.9	39.8	21.1	44.1	40.9	40.0
Average Parcel Size (Ha) outside Aquifer Area	8.5	60.5	44.4	57.7	37.0	-	-	38.5	37.9
Average Parcel Size (Ha) Total	7.0	63.1	89.4	24.5	37.5	21.1	44.1	38.9	38.2
<b>Sector Relative to Bore Sites ***</b>									
Count of Properties with one or more Bore	4	27	1	4	204	1	1	242	244
Count of Properties without Bores	61	430	10	31	5,899	5	-	6,436	6,602
Total Count of Properties	65	457	11	35	6,103	6	1	6,678	6,846
Share of Properties with One or More Bores	6%	6%	9%	11%	3%	17%	100%	4%	4%
Share of Properties without Bores	94%	94%	91%	89%	97%	83%	0%	96%	96%
Total Properties	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 20 provides a breakdown of estimated sheep and beef property parcels with and without access to water resources for the total district.

Key findings include:

- Of the estimated 6,678 properties in the rural environment, just 0.4% are located wholly or partly within the defined Kerikeri Irrigation North Region (30 properties) and 0.4% are located wholly or partly within the defined Kerikeri Irrigation South Region (24 properties). This is a combined total of just under 1% and reflects the district wide spread of the sector (i.e. not limited to the area close to Kerikeri).
- The average sheep and beef property (parcel) size within the Kerikeri Irrigation North Region is larger (123%) than the average property size in the rest of the district – 47.0ha per parcel compared to 38.2ha across all zones (and a weighted average of 38.2ha). The average sheep and beef property (parcel) size within the Kerikeri Irrigation South Region is more or less the same size (101%) as the average property size in the rest of the district – 38.4ha per parcel.
- Of the estimated 6,678 properties in the rural environment, 17% are located wholly or partly above the defined district aquifers (1,136 properties) and 83% are not (5,542 properties). This includes both the Aupouri Aquifer and the several smaller aquifers, including those in and around the Kerikeri Irrigation North and South Region.
- The average sheep and beef property (parcel) size within any aquifer area is slightly larger than the average property size in the rest of the district – 40.0ha per parcel compared to 37.9ha across all zones.
- Of the total rural environment sheep and beef properties, just 4% contain one or more bores (242 properties) and 96% do not (6,436 properties).

Access to water resources is not a key feature or location driver of the sheep and beef sector, but it does appear to correlate with slightly larger properties (as does access to highly versatile soils).

The incidence of both highly versatile soils and a location within an aquifer area, and vice versa, has also been examined. Figure 22 shows the average count of sheep and beef sector employment per hectare – a measure of how productive properties are<sup>80</sup>. It shows that on average, sheep and beef properties that have both highly versatile soils and an aquifer location sustain a higher ratio of employment per hectare than properties that have access to only one (or none) of these resources. This confirms that sheep and beef properties are not materially influenced by soils or water resources but benefit from (can capitalise on) these resources when they occur in combination.

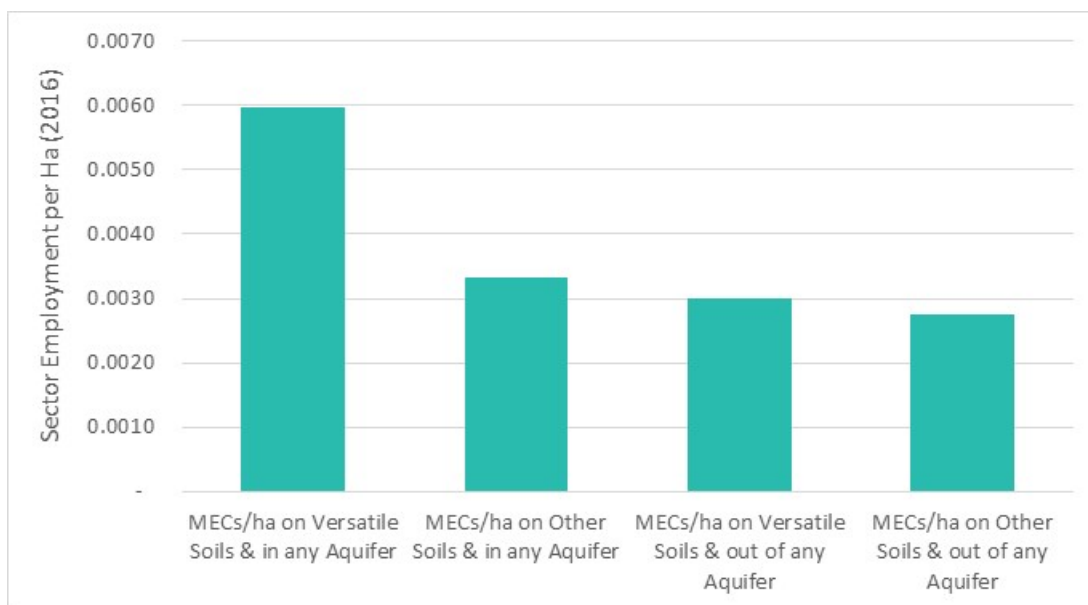


Figure 22: Analysis of Average Sheep & Beef Employment per Ha by Versatile Soils and Aquifer Locations

<sup>80</sup> Due to the approach taken by M.E, the same trend would be evident for gross output per hectare and value added per hectare.

## 3.7 Dairy Farming

### 3.7.1 Industry Overview

DairyNZ is the industry organisation that represents all New Zealand dairy farmers and invests in practical on-farm tools, science, resources and support and advocacy to ensure farmers have a profitable, sustainable and competitive future<sup>81</sup>.

#### Dairy Statistics

(LIC & DairyNZ, 2017)<sup>82</sup>: Nationally, the total effective hectares<sup>83</sup> in the 2016/17 season were 1.73 million – a decrease of about 23,000 ha on the previous season. Similarly, dairy cow numbers have fallen by nearly 220,000 since 2016 across the country. The majority of dairy herds (72.6%) are located in the North Island, with 9% of New Zealand’s dairy herds located in Northland. Northland has some of the smallest average herd sizes, i.e. 305 cows, and (together with the West Coast), the lowest average number of cows per hectare (2.23).

The Far North District accounts for around 2% of the total effective hectares. The Far North District is reported to have 254 herds comprising of more than 73,000 cows. Owner operators account for the majority (79%) of operators, with share milkers making up the balance. This is slightly above the North Island (74%) and national (72%) averages.

Production statistics for the Northland Region:

Region	District	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk solids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milk solids per effective hectare	Average kg milkfat per cow	Average kg protein per cow	Average kg milk solids per cow
Northland	Far North	1,028,282	51,185	39,027	90,212	388	295	683	177	135	312
	Whangarei	1,202,934	60,741	46,029	106,770	444	337	781	190	144	334
	Kaipara	1,087,788	53,958	41,617	95,575	384	296	680	177	136	313

Source: NZ Dairy Statistics, 2016/17

The weighted average dairy company total pay-out (per kilogram of milk solids) received by dairy farmers from seasonal supply milk was \$6.47 in 2016/17.

#### Economic Statistics

(Infometrics, 2017a)<sup>84</sup> and (Infometrics, 2017b)<sup>85</sup>: Nationally, conditions have remained challenging for dairy farmers, with negative GDP growth (-1.5%) over the year ending March 2017. Similarly, Dairy cattle farming experienced negative growth in Northland (-2.3%) that year. Dairy cattle farming contributes around \$272m to Northland’s regional GDP, making up a 4.5% share of the total. For NZ as a whole, this sector accounts for 2.2% of the total GDP. Dairy farming is the second largest employing industry in Northland (2,311), accounting for 3.3% of the region’s total employment. When including other dairy related employment (in processing and wholesaling), dairy jobs contribute nearly 5% of the total regional employment in Northland (NZIER, 2017)<sup>86</sup>. However, the dairy farming sector is second on the list of industries in the region, that had lost the most jobs between 2016 and 2017 (59 jobs lost).

<sup>81</sup> <https://www.dairynz.co.nz/about-us/how-we-operate/industry-good-and-the-levy/>

<sup>82</sup> LIC & DairyNZ. (2017). New Zealand Dairy Statistics 2016-17.

<sup>83</sup> Milking platform with support block excluded.

<sup>84</sup> Infometrics. (2017a). Annual Economic Profile: Northland.

<sup>85</sup> Infometrics. (2017b). Annual Economic Profile: Far North District.

<sup>86</sup> [https://www.dairynz.co.nz/media/5788612/quickstats\\_northland\\_web\\_2017.pdf](https://www.dairynz.co.nz/media/5788612/quickstats_northland_web_2017.pdf)

## Issues/Challenges

**Labour:** The chronic shortage of trained staff in the dairy industry has been well documented and talked about. Like the rest of NZ, Northland dairy farmers are struggling to find reliable workers. Industry bodies such as DairyNZ and Federated Farmers have renewed their call for more young people to consider a career in dairy given the shortage of skilled staff. Federated Farmers is launching a pilot Apprenticeship Dairy programme, in an effort to address the skills shortage. According to a report commissioned by the Ministry for Business, Innovation and Employment, the key issues facing the sector in sustaining labour supply, is the impact of fluctuating pay-outs, employment practices and negative perceptions of a career in the dairy sector (Martin Jenkins, 2017)<sup>87</sup>.

**Environmental impact:** The New Zealand dairy industry receives widespread public criticism of its environmental impacts, including the degradation of clean air and water. Dairy cows and their manure produce greenhouse gas emissions, which is reported to contribute to climate change<sup>88</sup>. As part of their commitment to combat climate change, the NZ government has an economy-wide target to reduce greenhouse gas emissions. Consequently, there is currently significant research underway to provide options for dairy farmers to reduce their on-farm emissions.

Further, Sir Peter Gluckman, Chief Science Advisor, advised that recent intensification in dairying was one of the main drivers of the change in water quality (Gluckman, 2017)<sup>89</sup>, having major and adverse impacts on the quality of our fresh water. Despite the dairy sectors commitment to minimise its environmental impact through initiatives such as the Water Accord, management of farm effluent and runoff, continue to be perceived very negatively by the NZ public (Hughey, Kerr, & Cullen, 2016)<sup>90</sup>. Looking to the future, the industry expects that domestic environmental policy will likely constrain cow numbers and the land area used for dairy farming. Growth will become even more reliant on productivity increases and rising proportions of value-add products.

**Public perception:** While a media scan suggests a growing divide between rural and urban New Zealanders, a recent study shows rural and urban New Zealanders hold similar views on several key topics in the primary sector, with a few exceptions (UMR Research, 2017)<sup>91</sup>. More relevant to this section is the finding that New Zealanders' views of the dairy industry are more likely to be positive than negative. Public perception is said to be at the heart of the what has been dubbed the 'rural-urban divide'. The concerns most respondents highlighted in the study, relates to animal welfare and the environmental impact of dairy farming, such as polluting our waterways. Farmers were also aware of some negative perceptions of bigger farms in the minds of the public or consumers. DairyNZ has set out to improve the public's perception of dairying, by implementing various strategies, including farm 'open days' and other public education initiatives.

**Disease:** There is an ongoing focus on the health of dairy cows, but more recently, the cattle disease *Mycoplasma bovis* has been identified at 14 dairy farms across New Zealand (as at August 2018). Refer section 3.6.1 for further detail on the outbreak and government's response.

**Weather patterns:** Dairy production is expected to fall 1.0 percent in the 2017/18 season due to a long, wet winter and spring, which was quickly followed by an overly dry summer in much of the country. As weather patterns continue to change over time, adverse events such as droughts and floods are predicted to become more common and more intense. Farmers in Northland have experienced some severe weather events over the past 12 months, including flooding and more recently a particularly dry summer. These extreme weather events are expected to become more common as a result of climate change, and the industry is facing the real possibility of this becoming the new 'normal'. Access to water for irrigation is a key factor in both dealing with droughts and in converting land to dairy farming.

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<sup>87</sup> Martin Jenkins. (2017). Northland workforce Stocktake and planning. A report prepared for the Ministry of Business, Innovation and Employment.

<sup>88</sup> <https://www.worldwildlife.org/industries/dairy>. Retrieved on 11/04/2018.

<sup>89</sup> Gluckman, P. (2017). New Zealand's fresh waters: Values, state, trends and human impacts.

<sup>90</sup> Hughey, K. F., Kerr, G. N., & Cullen, R. (2016). Public perceptions of New Zealand's environment: 2016. Christchurch: EOS Ecology.

<sup>91</sup> UMR Research. (2017). New Zealanders' views of the primary sector - A report for the Ministry for Primary Industries.

## Outlook

Despite the recent falls in dairy cow numbers, future sector growth will likely come from increasing efficiency and value-add. Strong export prices are expected to more than offset an expected decline in milk production this season, propelling national dairy export revenue to \$16.7b for the year ending June 2018. Average butter prices are up almost 50% on the previous year, while average whole milk powder prices are more than 10% higher than in 2017. NZ's export revenue from the dairy sector is expected to be close to \$17b by the year 2019, the highest of all the primary industry sectors, and nearly double that of meat and wool (the second largest). China, NZ's largest dairy market, continues to show strong demand for imported whole milk powder and infant formula (Ministry for Primary Industries, 2018)<sup>92</sup>.

### 3.7.2 Key Statistics

According to the SNZ Business directory, the dairy cattle farming sector in Far North District comprises of 324 businesses and 651 workers. It is therefore a third of the size of the sheep and beef farming sector in business count terms, but three quarters the size of the sheep and beef sector in employment terms. The average number of workers per business is around 2 (2016) making it twice as labour intensive as sheep and beef farming. The total turnover (gross output) of the sector is estimated at \$161m (from all sources of business income)<sup>93</sup>, which contributes \$52m to the district economy (value added). The resulting district wide averages of gross output per worker and value added per worker are therefore estimated at \$246,800 and \$79,200 respectively (2016).

Table 21 summarises the spatial analysis of the Dairy Farming sector in 2016 by zone based on a mix of Council, SNZ and M.E data sources.

Key findings include:

- The sector is made up of an estimated 1,748 property parcels, 98% of which are in the rural environment. The major share of property parcels is located in the Rural Production Zone (an estimated 1,653 parcels), with just 49 property parcels located in the General Coastal Zone and a scattering elsewhere.
- These properties cover an estimated 49,030ha. *By comparison, parcels coded to the Primary Industry – Dairy Cattle Farming land use total 45,580ha<sup>94</sup>. The additional properties (ha) in M.E's modelling arise from the matching of a small number of businesses to Primary Industry – Multi Use land use properties where considered reasonable in selected meshblocks (and includes the total area of those properties where matched).*
- 98% of total dairy farming property land area falls within the Rural Production Zone (compared to 95% of the properties) and just 2% falls within the General Coastal Zone (compared to just 3% of the properties). This reflects the average parcel size in different zones.
- The average across the rural environment is 28.6ha. Across the rural zones, care is needed in relying on averages based on only a small sample of properties. The most reliable average is in the Rural Production Zone (29.0ha per parcel), which is larger than in the General Coastal Zone (18.7ha).
- There are 47 dairy farming property parcels on Maori owned land (whether general, customary or freehold). These are solely located in the Rural Production Zone. In total, Maori owned dairy farming property parcels cover a combined area of 3,022ha (6% of total sector land area). This is an average size of 64.3ha per farm. By comparison, the overall average for non-Maori owned dairy farms is smaller at 27.6ha.
- 100% of 2016 sector employment is located in the rural environment, based on the attribution of properties to rural zones. The Rural Production Zone accounts for 98% of workers (an estimated 639) in the sector.

<sup>92</sup> Ministry for Primary Industries. (2018). Situation and Outlook for Primary Industries.

<sup>93</sup> It is estimated that a portion of gross output and value added of all businesses registered as Sheep, Beef Cattle and Grain Farming as their primary activity comes from apiculture. There is also potential for other sources of compatible income and will vary from business to business.

<sup>94</sup> The Council parcel file contained some overlap where parcels were assigned different land use codes. After cleaning (primarily removal of unit title properties), the sum of properties was approximately 110% of the total area of unique properties. This figure may therefore include some overlap with other land uses.

- In general, employment density per hectare is very low given the land extensive nature of farming. The 49 property parcels in the General Coastal Zone contain an estimated 1% of the sector's employment.
- Based on the approach taken by M.E, these employment shares flow through to shares of gross output and value added. The implication is that the average gross output per ha in the rural environment is estimated at \$3,280/ha for the dairy farming sector in the Far North<sup>95</sup>. Output per ha appears to be below this average in the General Coastal Zone. Elsewhere, the samples are small, and less weight should be given to the variability in those productivity results around the mean.

Figure 23 maps the general location of dairy farming sector properties across the District and also estimated employment levels in those properties. It includes an aerial photograph of typical dairy farming land use patterns (around Towai). This is followed by a heat map showing the relative distribution of gross output per ha (Figure 24) and value added per ha for 2016 (Figure 25). It is evident at a district-wide scale dairy farming activity occurs throughout the Far North but is slightly more prevalent in the southern half of the district and tends to avoid hilly topography (which is more suited to sheep and beef farming).

Table 21: Summary Analysis of the Dairy Farming Sector 2016

Variable (2016)	Zone/Sub-Zone								Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North			
<b>Properties in Sector</b>										
Count of Total Properties	1	49	4	-	1,653	-	6	1,713	1,748	
Share of Total Properties by Zone	0%	3%	0%	0%	95%	0%	0%	98%	100%	
Hectares of Total Properties	12	917	29	-	47,891	-	123	48,971	49,030	
Share of Total Properties by Zone	0%	2%	0%	0%	98%	0%	0%	100%	100%	
Minimum Property Size (ha)	11.56	0.01	1.92	-	0.00	-	0.06			
Maximum Property Size (ha)	11.6	110.7	15.7	-	2,088.2	-	61.8			
Average Property Size (ha)	11.6	18.7	7.2	-	29.0	-	20.5	28.6	28.0	
<b>Sector Use of Maori Land **</b>										
Count of Maori Freehold Properties	-	-	-	-	47	-	-	47	47	
Share of Maori Properties by Zone	0%	0%	0%	0%	100%	0%	0%	100%	100%	
Hectares of Maori Land	-	-	-	-	3,022	-	-	3,022	3,022	
Share of Maori Properties by Zone	0%	0%	0%	0%	100%	0%	0%	100%	100%	
<b>Sector Economic Activity</b>										
Sector Employment (MECs)	0	9	0	-	639	-	2	650	651	
Share of Sector MECs by Zone	0%	1%	0%	0%	98%	0%	0%	100%	100%	
Sector Gross Output (\$m) *	\$ 0.0	\$ 2.1	\$ 0.0	\$ -	\$ 157.8	\$ -	\$ 0.5	\$ 160.4	\$ 160.6	
Share of Sector Gross Output by Zone	0%	1%	0%	0%	98%	0%	0%	100%	100%	
Sector Value Added (\$m) *	\$ 0.0	\$ 0.7	\$ 0.0	\$ -	\$ 50.6	\$ -	\$ 0.2	\$ 51.5	\$ 51.5	
Share of Sector Value Added by Zone	0%	1%	0%	0%	98%	0%	0%	100%	100%	
Average MECs/ha	0.01	0.01	0.00	-	0.01	-	0.02	0.01	0.01	
Average GO/ha (\$) *	\$ 2,460	\$ 2,330	\$ 490	\$ -	\$ 3,300	\$ -	\$ 3,980	\$ 3,280	\$ 3,280	
Average VA/(\$) ha *	\$ 790	\$ 750	\$ 160	\$ -	\$ 1,060	\$ -	\$ 1,280	\$ 1,050	\$ 1,050	

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

<sup>95</sup> By way of comparison, in the Northland Regional Council report 'The Economic Value of Alternative Uses of Valuable Soils in Northland' (Feb. 2012), the regional average productivity of dairy farming was \$3,780/ha. Similarly, in the Berl report 'Assessment of the Economic Value of Rural Productive Potential in the Greater Otaki Area' (2011) – used as the basis of a 2013 report in Auckland (by Primary Focus NZ Ltd), dairy farming had an average productivity of \$4,639/ha.



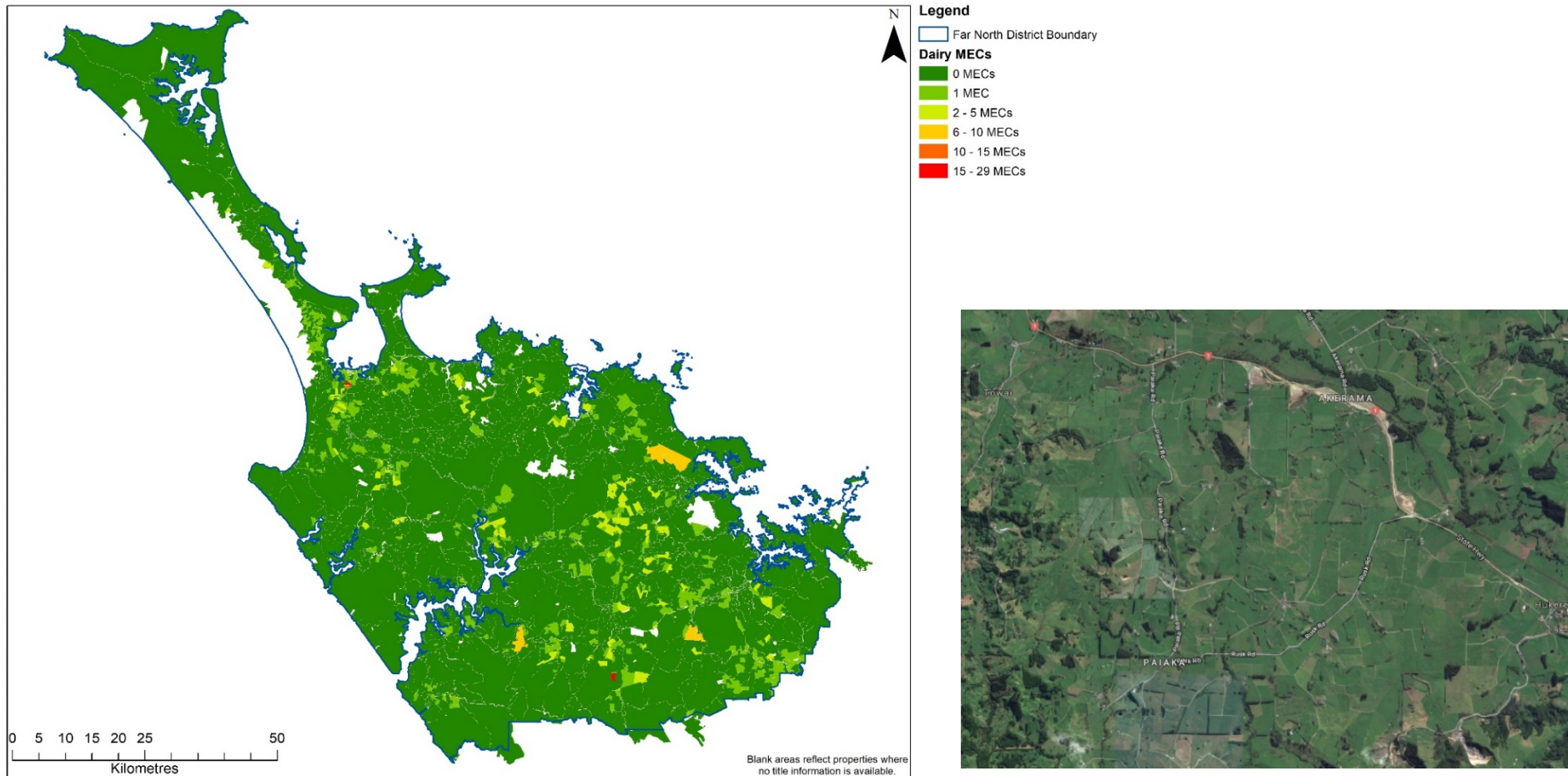


Figure 23: Employment by Estimated Dairy Farming Property Parcels, 2016 and Indicative Land Use Pattern

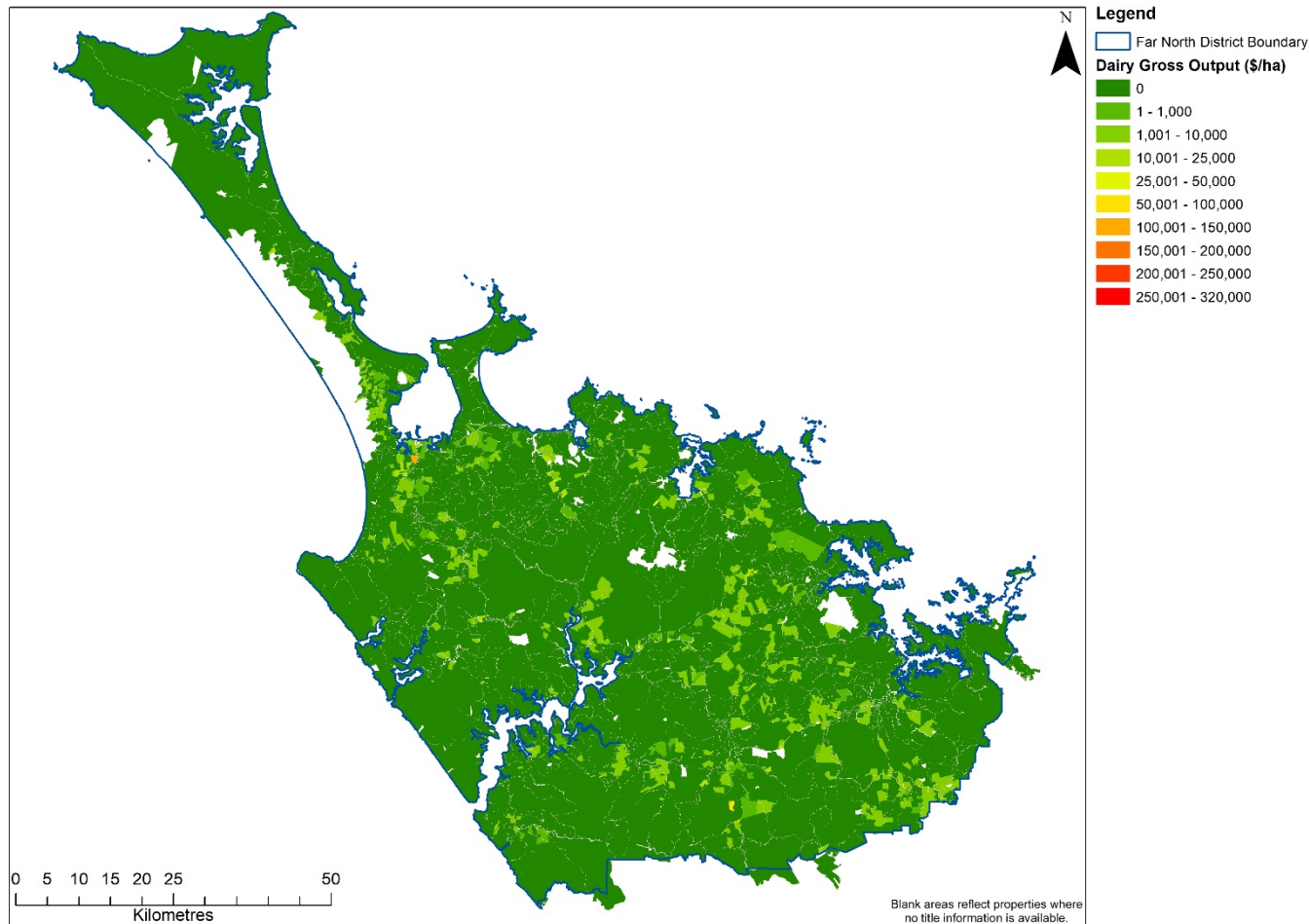


Figure 24: Estimated Dairy Farming Gross Output per Hectare 2016

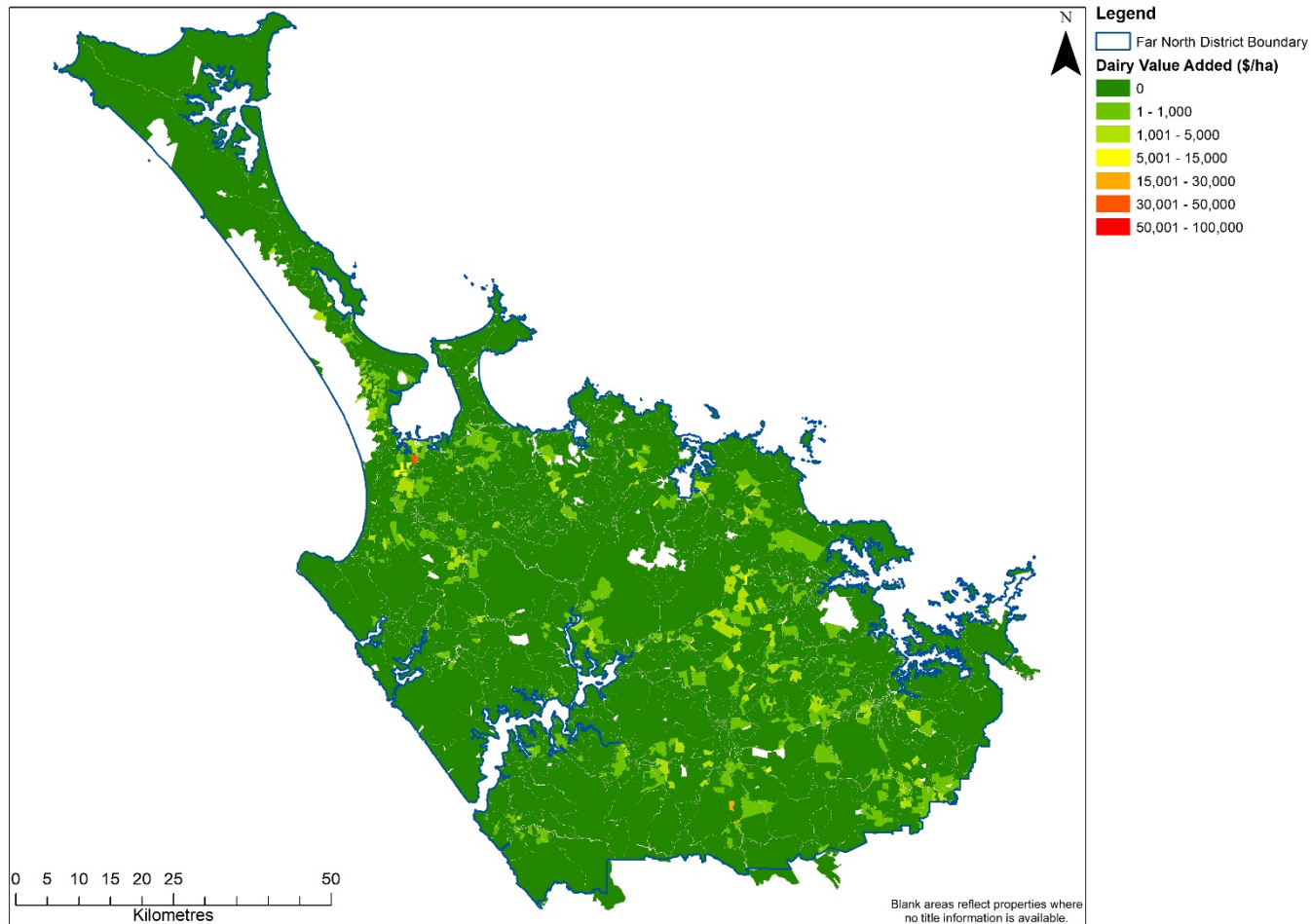


Figure 25: Estimated Dairy Farming Value Added per Hectare 2016

Table 22 provides a breakdown of estimated Dairy Farming property parcels by soil type for the total district – showing the count, area, gross output and value added on properties that include an area of highly versatile soils and those that do not (i.e. no intersect with soil class 1-3 areas).

Key findings include:

- Of the estimated 1,713 properties in the rural environment, 52% contain an area of highly versatile soils (886 properties) and 48% do not (827 properties).
- An above average share of dairy farming properties contain highly versatile soils in the General Coastal Zone (61%) but this accounts for a very small portion of the sector.
- In the Rural Production Zone, where the majority of dairy farming takes place, 58% of the total parcel land area includes areas of highly versatile soils.

Table 22: Summary Analysis of the Dairy Farming Sector 2016 by Soils

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Sector Use of Versatile Soils **</b>									
Count of Properties with Versatile Soils	-	30	2	-	848	-	6	886	913
Count of Properties with Other Soils	1	19	2	-	805	-	-	827	835
Total Count of Properties	1	49	4	-	1,653	-	6	1,713	1,748
Share of Properties with Versatile Soils	0%	61%	50%	0%	51%	0%	100%	52%	52%
Share of Properties without Versatile Soils	100%	39%	50%	0%	49%	0%	0%	48%	48%
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%
Hectares of Properties with Versatile Soils	-	458	24	-	27,683	-	123	28,289	28,304
Hectares of Properties with Other Soils	12	459	5	-	20,207	-	-	20,683	20,727
Total Hectares of Properties	12	917	29	-	47,891	-	123	48,971	49,030
Share of Properties with Versatile Soils	0%	50%	84%	0%	58%	0%	100%	58%	58%
Share of Properties without Versatile Soils	100%	50%	16%	0%	42%	0%	0%	42%	42%
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%
Average Parcel Size (Ha) with Versatile Soils	-	15.3	12.1	-	32.6	-	20.5	31.9	31.0
Average Parcel Size (Ha) without Versatile Soils	11.6	24.2	2.3	-	25.1	-	-	25.0	24.8
Average Parcel Size (Ha) All Soils	11.6	18.7	7.2	-	29.0	-	20.5	28.6	28.0
Output of Properties with Versatile Soils	\$ -	\$ 1.4	\$ 0.0	\$ -	\$ 96.2	\$ -	\$ 0.5	\$ 98.1	\$ 98.2
Output of Properties with Other Soils	\$ 0.0	\$ 0.8	\$ 0.0	\$ -	\$ 61.6	\$ -	\$ -	\$ 62.4	\$ 62.4
Total Output of Properties	\$ 0.0	\$ 2.1	\$ 0.0	\$ -	\$ 157.8	\$ -	\$ 0.5	\$ 160.5	\$ 160.6
Share of Properties with Versatile Soils	0%	63%	52%	0%	61%	0%	100%	61%	61%
Share of Properties without Versatile Soils	100%	37%	48%	0%	39%	0%	0%	39%	39%
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%
Average GO/ha with Versatile Soils	\$ -	\$ 2,950	\$ 300	\$ -	\$ 3,480	\$ -	\$ 3,980	\$ 3,470	\$ 3,470
Average GO/ha without Versatile Soils	\$ 2,460	\$ 1,700	\$ 1,490	\$ -	\$ 3,050	\$ -	\$ -	\$ 3,020	\$ 3,010
Value Add. of Properties with Versatile Soils	\$ -	\$ 0.4	\$ 0.0	\$ -	\$ 30.9	\$ -	\$ 0.2	\$ 31.5	\$ 31.5
Value Add. of Properties with Other Soils	\$ 0.0	\$ 0.3	\$ 0.0	\$ -	\$ 19.8	\$ -	\$ -	\$ 20.0	\$ 20.0
Total Value Added of Properties	\$ 0.0	\$ 0.7	\$ 0.0	\$ -	\$ 50.6	\$ -	\$ 0.2	\$ 51.5	\$ 51.5
Share of Properties with Versatile Soils	0%	63%	52%	0%	61%	0%	100%	61%	61%
Share of Properties without Versatile Soils	100%	37%	48%	0%	39%	0%	0%	39%	39%
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%
Average VA/ha with Versatile Soils	\$ -	\$ 950	\$ 100	\$ -	\$ 1,120	\$ -	\$ 1,280	\$ 1,110	\$ 1,110
Average VA/ha without Versatile Soils	\$ 790	\$ 550	\$ 480	\$ -	\$ 980	\$ -	\$ -	\$ 970	\$ 970

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

- Across all rural zones, the average dairy farm property (parcel) size with highly versatile soils tends to be slightly larger (31.9ha) compared to dairy farm parcels with no highly versatile soils (25.0ha).
- The average gross output per ha ratio of dairy farming properties with highly versatile soils is only slightly higher (at an estimated \$3,470/ha) compared to output per ha on properties without highly versatile soils (\$3,010/ha). The same applies to value added per ha outcomes.

- This implies that highly versatile soils sustain slightly higher returns (relative to costs), even though the sector as a whole does not specifically seek highly versatile soils as a location driver.

Table 23: Summary Analysis of the Dairy Farming Sector 2016 by Water Resource

Variable (2016)	Zone/Sub-Zone								Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone <sup>^</sup>	Waimate North			
<b>Sector Relative to Kerikeri North Irrigation Region ***</b>										
Count of Properties within Kerikeri Irr. North	-	-	-	-	9	-	-	9	9	
Count of Properties outside Kerikeri Irr. North	1	49	4	-	1,644	-	6	1,704	1,739	
Total Count of Properties	1	49	4	-	1,653	-	6	1,713	1,748	
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	1%	0%	0%	1%	1%	
Share of Properties outside Kerikeri Irr. North	100%	100%	100%	0%	99%	0%	100%	99%	99%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Hectares of Properties within KI North	-	-	-	-	2,424	-	-	2,424	2,424	
Hectares of Properties Outside KI North	12	917	29	-	45,466	-	123	46,547	46,606	
Total Hectares of Properties	12	917	29	-	47,891	-	123	48,971	49,030	
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	5%	0%	0%	5%	5%	
Share of Properties outside Kerikeri Irr. North	100%	100%	100%	0%	95%	0%	100%	95%	95%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Average Parcel Size (Ha) within KI North	-	-	-	-	269.4	-	-	269.4	269.4	
Average Parcel Size (Ha) outside KI North	11.6	18.7	7.2	-	27.7	-	20.5	27.3	26.8	
Average Parcel Size (Ha) Total	11.6	18.7	7.2	-	29.0	-	20.5	28.6	28.0	
<b>Sector Relative to Kerikeri South Irrigation Region ***</b>										
Count of Properties within Kerikeri Irr. South	-	-	-	-	12	-	-	12	12	
Count of Properties outside Kerikeri Irr. South	1	49	4	-	1,641	-	6	1,701	1,736	
Total Count of Properties	1	49	4	-	1,653	-	6	1,713	1,748	
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	1%	0%	0%	1%	1%	
Share of Properties outside Kerikeri Irr. South	100%	100%	100%	0%	99%	0%	100%	99%	99%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Hectares of Properties within KI South	-	-	-	-	236	-	-	236	236	
Hectares of Properties Outside KI South	12	917	29	-	47,655	-	123	48,735	48,794	
Total Hectares of Properties	12	917	29	-	47,891	-	123	48,971	49,030	
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Share of Properties outside Kerikeri Irr. South	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Average Parcel Size (Ha) within KI South	-	-	-	-	19.7	-	-	19.7	19.7	
Average Parcel Size (Ha) outside KI South	11.6	18.7	7.2	-	29.0	-	20.5	28.7	28.1	
Average Parcel Size (Ha) Total	11.6	18.7	7.2	-	29.0	-	20.5	28.6	28.0	
<b>Sector Relative to District Aquifers ***</b>										
Count of Properties within any Aquifer Area	-	36	-	-	427	-	6	469	495	
Count of Properties outside Aquifer Area	1	13	4	-	1,226	-	-	1,244	1,253	
Total Count of Properties	1	49	4	-	1,653	-	6	1,713	1,748	
Share of Properties within any Aquifer Area	0%	73%	0%	0%	26%	0%	100%	27%	28%	
Share of Properties outside Aquifer Area	100%	27%	100%	0%	74%	0%	0%	73%	72%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Hectares of Properties within any Aquifer Area	-	736	-	-	12,640	-	123	13,499	13,520	
Hectares of Properties Outside Aquifer Area	12	181	29	-	35,251	-	-	35,472	35,510	
Total Hectares of Properties	12	917	29	-	47,891	-	123	48,971	49,030	
Share of Properties within any Aquifer Area	0%	80%	0%	0%	26%	0%	100%	28%	28%	
Share of Properties outside Aquifer Area	100%	20%	100%	0%	74%	0%	0%	72%	72%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	
Average Parcel Size (Ha) within any Aquifer Area	-	20.5	-	-	29.6	-	20.5	28.8	27.3	
Average Parcel Size (Ha) outside Aquifer Area	11.6	13.9	7.2	-	28.8	-	-	28.5	28.3	
Average Parcel Size (Ha) Total	11.6	18.7	7.2	-	29.0	-	20.5	28.6	28.0	
<b>Sector Relative to Bore Sites ***</b>										
Count of Properties with one or more Bore	-	8	-	-	118	-	1	127	128	
Count of Properties without Bores	1	41	4	-	1,535	-	5	1,586	1,620	
Total Count of Properties	1	49	4	-	1,653	-	6	1,713	1,748	
Share of Properties with One or More Bores	0%	16%	0%	0%	7%	0%	17%	7%	7%	
Share of Properties without Bores	100%	84%	100%	0%	93%	0%	83%	93%	93%	
Total Properties	100%	100%	100%	0%	100%	0%	100%	100%	100%	

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). <sup>^</sup> Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 23 provides a breakdown of estimated dairy farming property parcels with and without access to water resources.

Key findings include:

- Of the estimated 1,713 properties in the rural environment, just 1% are located wholly or partly within the defined Kerikeri Irrigation North Region (9 properties) and 1% are located wholly or partly within the defined Kerikeri Irrigation South Region (12 properties). This reflects the district wide spread of the sector (i.e. not concentrated around Kerikeri).
- The average size of dairy farm properties (parcels) within the Kerikeri Irrigation North Region is 269.4ha. This is 10 times the average size of dairy farm parcels elsewhere in the district (26.8ha) and the weighted combined average of 28.0ha. Conversely, within the Kerikeri Irrigation South Region, the average size of dairy farm property parcels is 19.7ha (smaller than the district average). Both these results are based on very small samples, so caution is recommended in drawing conclusions from them.
- Of the estimated 1,713 dairy farm properties in the rural environment, 27% are located wholly or partly above the defined district aquifers (469 properties) and 73% are not (1,244 properties). This includes both the Aupouri Aquifer and the several smaller aquifers, including those in and around the Kerikeri Irrigation North and South Regions.
- The average size of dairy farm properties (parcels) within any aquifer area is 27.3ha. This is only marginally less than the average size of dairy farm parcels elsewhere in the district (28.3ha).
- Of the total rural environment properties, just 7% contain one or more bores (124 properties) and 93% do not (1,546 properties).

Access to aquifer water resources is not a key feature or location driver of the dairy farming sector. The majority of dairy farms do not benefit from aquifers, bores or the Kerikeri Irrigation North and South Regions. This may help explain the below average herd sizes in the Far North. Some specific locations may however be viable for dairy farming because of the presence of these water resources. Access to water resources is likely to be important if farmers want to increase their herd size on their existing farm area (i.e. further intensify their farming activity) or mitigate adverse climate change effects.

The incidence of both highly versatile soils and a location within an aquifer area, and vice versa, has also been examined. Figure 26 shows the average count of dairy sector employment per hectare – a measure of how productive properties are<sup>96</sup>. It shows that on average, dairy properties in aquifer locations (the left two bars on the graph) sustain a higher ratio of employment per hectare on average than the majority of properties that are not in an aquifer area. Dairy properties that are in an aquifer and also benefit from highly versatile soils show the highest employment per hectare ratio – indicating that the combination of these resources is a competitive advantage. Outside of aquifer locations (the two right hand bars in the graph), there is little distinguishing productivity, irrespective of soil quality.

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<sup>96</sup> Due to the approach taken by M.E, the same trend would be evident for gross output per hectare and value added per hectare.

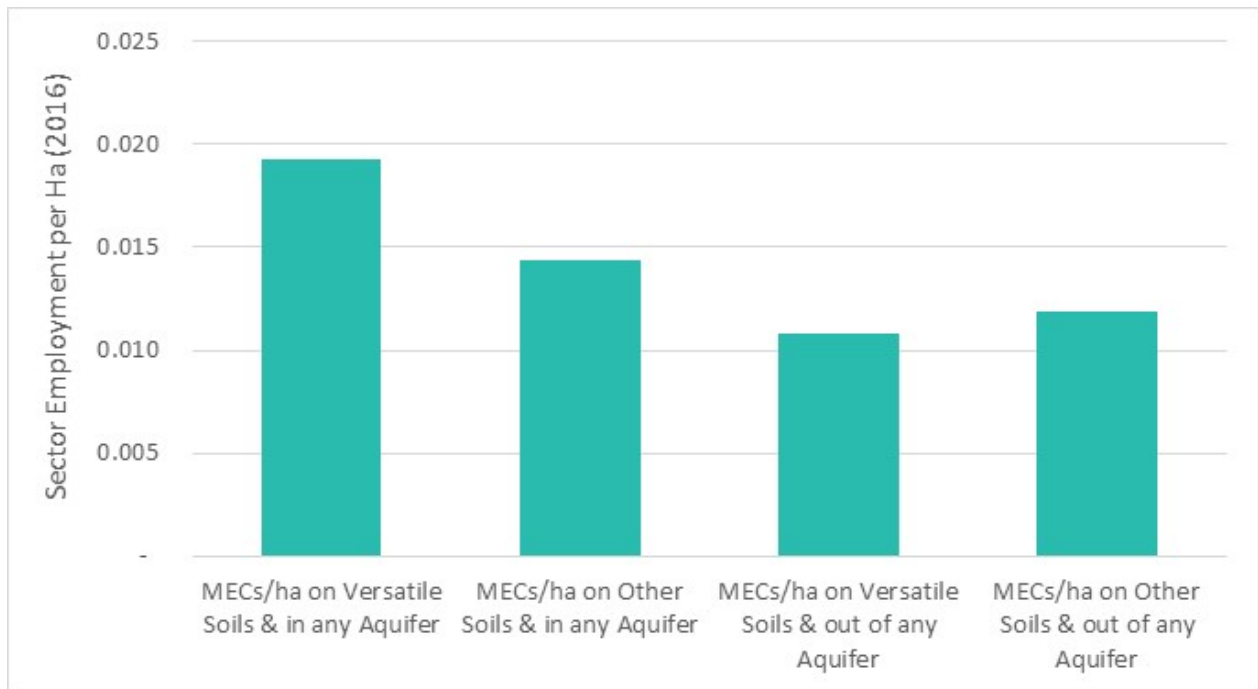


Figure 26: Analysis of Average Dairy Sector Employment per Ha by Versatile Soils and Aquifer Locations

## 3.8 Poultry, Deer and Other Livestock Farming (excluding Apiculture)

### 3.8.1 Industry Overview

Nationally, poultry, deer and other livestock farming contributed \$361m to NZ's GDP, in 2017. While some agriculture sectors found conditions challenging that year, the poultry sector recorded 4.2% growth in GDP between 2016 and 2017. In the Northland, poultry, deer & other livestock farming contributed \$18.6m to GDP. The growth in this sector in the Far North was slightly above the regional growth rate, i.e. 15% compared to 13.2%, between 2016 and 2017. This sector as a whole is said to have a comparative advantage in the Far North District when compared to the rest of NZ (Infometrics, 2017)<sup>97</sup>, particularly in employment terms. It should be noted that these figures/trends are inclusive of the apiculture sector, which is experiencing strong growth (and is discussed separately in this report).

#### Poultry

The industry body, Poultry Industry Association of NZ (PIANZ), represents the interests of more than 99% of poultry meat producers in New Zealand. It ensures that producers meet exacting standards in animal welfare, stockmanship and food safety. The New Zealand poultry industry also includes table egg production (PIANZ, 2018)<sup>98</sup>. The Egg Producers Federation of NZ (EPF) represents all commercial egg producers in NZ. Although the poultry sector includes turkey and duck farmers, the majority of poultry enterprises are chicken farms.

As at February 2017, Northland (and Auckland) had the most registered poultry farming (eggs) business units in the country, i.e. 21<sup>99</sup>. A further 6 poultry farming (meat)<sup>100</sup> business units are also recorded in Northland, totalling 27 poultry related businesses in the region. Northland is thus number five (together with Manawatu-Whanganui) on the list of regions in NZ with the most poultry farming business units overall<sup>101</sup>.

#### Outlook

In contrast to red meat consumption, which has been decreasing, NZ's per capita consumption of chicken meat, has increased strongly over the past couple of years. It is viewed as the main driver of recent industry growth. However, a 2016 report (Rabo Bank)<sup>102</sup> indicated that development of new export markets, expanded product offering to capture a larger share of consumer spending, and improving margins through productivity gains, would be needed for the industry to maximise its growth potential.

Construction on a new poultry breeding facility near Huntly started late in 2017<sup>103</sup> and is expected to start producing birds to supply the Asia Pacific region towards the middle of 2018. The initial assessment indicated that around 100 jobs would be created by the new facility, and \$58m added to NZ's poultry exports in the form of live birds<sup>104</sup>. Such development potential exists for all regions if they can attract the investment.

#### Issues/Challenges

**Cage eggs:** All major NZ supermarkets have commitment to move away from caged eggs, some being 'cage-free' as early as 2024<sup>105</sup>. The EPF estimates the cost to the average egg farmer to be in the vicinity of \$1m per farm. This is a significant cost and there is concern about the impact this will have on the industry.

<sup>97</sup> Infometrics. (2017). Annual Economic Profile: Northland. Retrieved from <https://ecoprofile.infometrics.co.nz/Northland%2bRegion/PDFProfile>

<sup>98</sup> PIANZ. (2018). Retrieved from Who We Are & What We Do: <https://pianz.org.nz/who-we-are/>

<sup>99</sup> <https://figure.nz/chart/qD7YkkfAFcmrk6MJ-r38TqmkvkksqN5jh>

<sup>100</sup> <https://figure.nz/chart/qD7YkkfAFcmrk6MJ-ld1x5iixawaAYM0n>

<sup>101</sup> <https://figure.nz/chart/qD7YkkfAFcmrk6MJ-Wdj4wwEaopbT2Q3P>

<sup>102</sup> Rabo Bank. (2016). NZ poultry industry - New strategies needed to catch next wave of growth. Retrieved from <https://www.rabobank.co.nz/media-releases/2016/160524-new-zealand-poultry-industry-new-strategies-needed-to-catch-next-wave-of-growth/>

<sup>103</sup> <https://www.globalmeatnews.com/Article/2017/11/16/Cobb-Vantress-breaks-ground-on-New-Zealand-site>

<sup>104</sup> Grandparent chicks.

<sup>105</sup> <http://www.stuff.co.nz/business/industries/97288606/NZs-egg-industry-is-sleepwalking>



**Animal welfare:** With video footage surfacing as recently as late 2017, showing dreadful conditions at a Northland poultry (egg) farm, the industry has come under fire for the poor conditions to which some farmers subject their animals. PIANZ maintains these incidents are isolated and that the vast majority of farmers adhere to the Code of Welfare issued under the Animal Welfare Act 1999.

**Biosecurity:** An important issue for the poultry industry is biosecurity. The absence of serious avian diseases, results in very strict biosecurity laws being enforced by MPI and NZ Customs, to protect the poultry industry.

**Localised issues:** Tegel Foods has (2017) applied to the Overseas Investment Office to purchase 250ha of former dairy land in Northland (north of Dargaville) to develop New Zealand's largest free range, state-of-the-art broiler chicken farm. They also lodged a resource consent with Kaipara District Council. While a key benefit of the proposed plant was 28 jobs (if approved), local residents have voiced concerns and staged protests. Fears of stench and pollution were among the impacts mentioned most often by protesters. The development is located next door to the Kapehu Marae and Kapehu whanau are opposed to the development due to adverse effects on their Marae and urupa. Submissions to both Northland Regional Council and Kaipara District Council were overwhelmingly opposed to the development and both Councils have recommended that the proposal be declined. While hearings were scheduled for August 2018, Tegel have suspended the hearings to gather additional information required by local government. While the scale of this proposal is unprecedented, it highlights the difficulties of growing the sector in sensitive environments, including close to resident communities.

### **Pigs**

New Zealand Pork is the statutory industry board that represents and supports New Zealand's commercial pig farmers, to ensure they have access to current knowledge to facilitate well managed environmental practices and animal welfare practices.

The latest figures published by Statistics New Zealand<sup>106</sup> (June 2017) puts the pig numbers in Northland at 3,100, a small decrease (-300) from the year before and very similar to the previous agricultural census (2,900; 2012). The pigs in Northland account for around 4% of the North Island total, and roughly 1% of New Zealand's total.

While domestic production of pork has stayed quite stable over the past 10 years, consumption of pork by New Zealanders has increased. Imports have largely supplied the increased demand.

### **Issues/Challenges**

**Animal Welfare:** Like the poultry industry, pig farmers have been criticized for subjecting their livestock to poor living conditions, after video footage emerged of pigs being raised in crates. With initiatives such as 'PigCare' (a welfare assurance programme), NZ Pork aims to illustrate the importance NZ farmers place on providing a high standard of welfare for their animals.

**Biosecurity:** New Zealand born and raised pigs are not exposed to a number of severe and debilitating pests and diseases suffered by pigs in most other countries. Therefore, farmers and industry bodies alike, view biosecurity as critically important to protecting the industry. NZPork actively engages with MPI on an ongoing basis, to ensure the protection of NZ's pig herd.

**Sustainability:** NZPork aims to provide farmers with ongoing support to ensure they have access to current knowledge to facilitate well managed environmental practices. NZPork is also involved in ongoing work both on a national and regional level, with the goal of ensuring sound policy development, and a better understanding of the industry<sup>107</sup>.

### **Deer**

Deer Industry New Zealand (DINZ) is responsible for promoting and assisting the development of the New Zealand deer industry, both domestically and internationally. The New Zealand Deer Farmers Association (NZDFA) is another key industry body, working closely with DINZ to maximise sustainable benefits for all deer farmers<sup>108</sup>.

<sup>106</sup> Agricultural Production Statistics: June 2017 (final)

<sup>107</sup> <https://www.nzpork.co.nz/sustainable-farming/>

<sup>108</sup> <https://deernz.org/about-deer-industry/new-zealand-deer-farmers-association#.WtVHC4huaUk>

The latest Agriculture Production Statistics published by Statistics New Zealand (June 2017) reported a total of around 836,000 deer in New Zealand, of which some 5,000 is found in Northland. Approximately 30% of New Zealand's deer are found on the North Island. This distribution has remained quite stable over the past two decades.

Figures released by DINZ, estimates the revenue from deer at \$266m for the year ended September 2017. Venison accounts for the largest share (62%) of the sector's revenue, followed by velvet (22%) and co-products<sup>109</sup> (11%), and the balance made up by the sale of hides and leather (5%). Venison production for the 2016/17 year totalled 16,630 tonnes (carcass weight) from 291,000 deer (Deer Industry New Zealand, 2016/17).

Whilst the volume of venison exported was down 9% year on year to 11,940 tonnes in 2017, the export value of venison increased to \$165m, mainly as a result of the higher average export value of venison, up by 9% to \$18,830 per tonne (Deer Industry New Zealand, 2016/17)<sup>110</sup>.

### Outlook

DINZ is reporting a growing demand in the domestic market for venison, with several ongoing initiatives to bring venison to local consumers in a form they want. Although the fall in velvet prices during the 2016/17 season was unsettling for many farmers, there were signs by the end of the season, of a recovery, with the longer-term trend of firming prices and growing volumes, returning. (Deer Industry New Zealand, 2016/17).

### Issues/Challenges

**Environmental sustainability:** Along with other farmers, deer farmers are subject to increased public and government scrutiny of the agriculture sector's environmental impact. However, DINZ points out that in addition to adhering to existing legislation that is aimed at protecting the natural environment, industry work is underway on an environmental code of practice and farmers are encouraged to set up environment plans (Land and Environment Plan – LEP) to prevent the degradation of natural resources such as water and soil.

**Animal health:** Maintaining the good health of their deer is seen by farmers as crucial to reaching their production goals. There are several threats to deer health including parasites (both gastrointestinal as well as external), bacterial and fungal diseases, and so on. Ongoing education of farmers<sup>111</sup> as well as research, are seen as the best way to combat these threats. DINZ highlighted its work on improving animal health in its latest annual report, which involved a combination of projects including drench development, breeding more robust deer, and understanding the role of stress – and how to mitigate it – on health and production (Deer Industry New Zealand, 2016/17).

### Horses

The three most prominent and well documented sectors of the equine industry in New Zealand include the breeding, racing and sport-horse industries. It is estimated that the racing (Thoroughbred and Standardbred) and sport-horse industries generate over \$2b in GDP nationally. The number of horses per head of population in New Zealand is estimated at 30 per 1,000 people (Bolwell, Rogers, Gee, & Rosanowski, 2017)<sup>112</sup>.

Businesses classified as horse farming in the Business Demography Survey (BD), consist of units mainly engaged in farm activities related to the breeding and care of horses, i.e. providing agistment services, horse breeding, and stud farm operations. In Northland, 74 such units are recorded.

The New Zealand thoroughbred industry is said to be one of the most successful in the world. In 2015/16, the industry produced 3,500 foals and exported 1,700 horses at an estimated value of \$138 million<sup>113</sup>.

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<sup>109</sup> Deer co-products include items for medicinal use in oriental medicine, as well as the bones and fat from deer, sinews, tendons, tails, etc.

<sup>110</sup> Deer Industry New Zealand. (2016/17). Annual Report. Retrieved from <https://deernz.org/sites/dinz/files/DINZ-2016-17-AR-Web.pdf>

<sup>111</sup> <https://deernz.org/deerhub/health>

<sup>112</sup> Bolwell, C. F., Rogers, C. W., Gee, E. K., & Rosanowski, S. M. (2017). Commercial equine production in New Zealand. 3. The racing and sport industries. Animal Production Science. Retrieved from <https://doi.org/10.1071/AN16753>

<sup>113</sup> <https://www.nzracing.co.nz/Breeding.aspx>

## Issues/Challenges

**Animal welfare:** Animal welfare is an ongoing topic of discussion for the equine community. As part of a wider effort to promote animal welfare, MPI released guidelines in 2016 to provide animal specific information to the owners and persons in charge of horses and donkeys about the standards they must achieve in order to meet their obligations under the Animal Welfare Act 1999 (Ministry for Primary Industries, 2016)<sup>114</sup>. Complaints late last year over neglect of animals by horse breeders in Canterbury<sup>115</sup> and the Whanganui<sup>116</sup> areas, are seen as damaging the industry’s reputation, and some farmers were of the view that the Animal Welfare Act (1999) is “inadequate” and MPI’s response not strong enough<sup>117</sup>.

### 3.8.2 Key Statistics

According to the SNZ Business directory, the poultry, deer and other livestock (here in referred to as other livestock farming) sector in Far North District comprises of 64 businesses and 37 workers. This excludes the bee keeping component of this broader sector, which is discussed separately. Figure 27 shows that just under half (42%) of these businesses fall within the ‘Horse farming’ industry, with a further 37% in the ‘Other livestock farming not elsewhere classified’ industry. Pig farming makes up 7% of business as does deer farming. Poultry farming also has a limited role in the Far North (a combined total of 6%).

The average number of workers per business is around 1 (2016) and the total turnover (gross output) of the sector is estimated at just \$2.1m (from all sources of business income)<sup>118</sup>, which contributes \$0.7m to the district economy (value added). The resulting district wide averages of gross output per worker and value added per worker are therefore estimated at \$55,500 and \$18,900 respectively (2016).

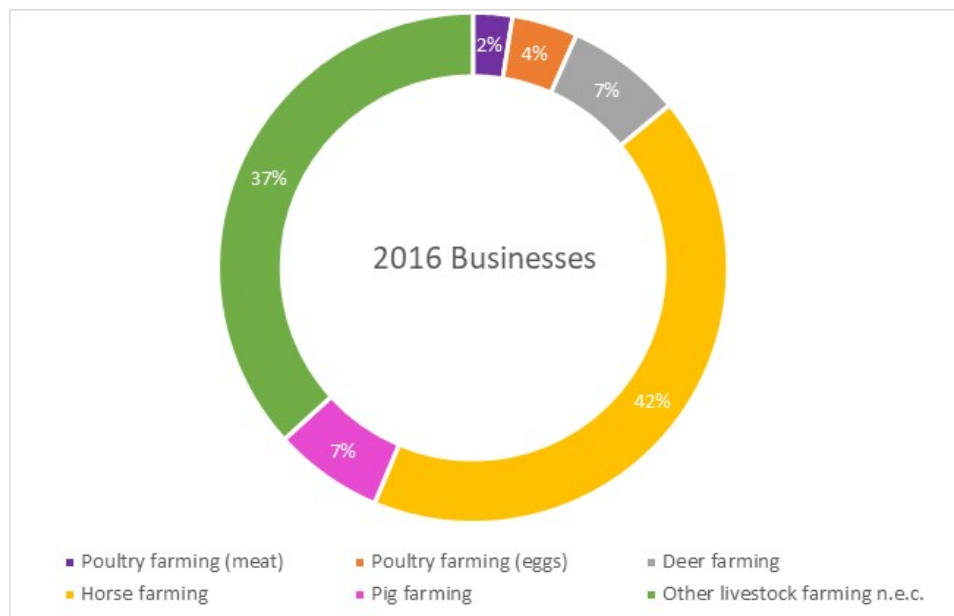


Figure 27: Poultry, Deer and Other Livestock Farming (Excl. Apiculture) Sector Businesses 2016 by Industry

<sup>114</sup> Ministry for Primary Industries. (2016, January 29). Code of Welfare: Horses and Donkeys. Retrieved April 17, 2018

<sup>115</sup> <https://www.stuff.co.nz/the-press/news/92556879/enforcement-of-new-zealands-animal-welfare-act-inadequate>

<sup>116</sup> <https://www.stuff.co.nz/national/98920151/stud-farm-accused-of-animal-welfare-problems-but-allowed-to-continue>

<sup>117</sup> <https://www.stuff.co.nz/the-press/news/92556879/enforcement-of-new-zealands-animal-welfare-act-inadequate>

<sup>118</sup> Based on the EFM, total gross output of this sector inclusive of bee-keeping is \$11.0m. M.E has estimated the amount of gross output associated with bee-keeping and subtracted it to leave \$2.1m. Nb. For other primary production sectors described in this section, apiculture related gross output is left in (as it is not limited to the bee-keeping industry). There is also potential for other sources of compatible income to contribute to the gross output of the Other Livestock sector (excluding bee-keeping) described above. This will vary from business to business.

Table 24 summarises the spatial analysis of the other livestock farming sector (excluding apiculture) in 2016 by zone based on a mix of Council, SNZ and M.E data sources.

Key findings include:

- The sector is made up of an estimated 64 property parcels, 97% of which are in the rural environment. The major share of property parcels is located in the Rural Production Zone (an estimated 59 parcels), with a few elsewhere.
- These properties cover an estimated 1,975ha. *By comparison, parcels coded to the Primary Industry – Specialist Livestock land use total 532ha<sup>119</sup>. The additional properties (ha) in M.E’s modelling arise from the matching of a small number of businesses to Primary Industry – Multi Use land use properties where considered reasonable in selected meshblocks (and includes the total area of those properties where matched).*
- 97% of total other livestock farming property land area falls within the Rural Production Zone (compared to 92% of the properties) and just 3% falls within the Waimate North Zone (compared to just 2% of the properties). This reflects the average parcel size in different zones.
- In the Rural Production Zone land parcels average an estimated 32.5ha and this is considered the most representative of the averages reported.
- According to the data and modelling approach, there is just one other livestock farming property parcel on Maori owned land (whether general, customary or freehold). This is located in the Rural Production Zone and is 71ha in size.
- 100% of 2016 sector employment is located in the rural environment, based on the attribution of properties to rural zones. The Rural Production Zone accounts for 99% of workers (an estimated 37) in the sector. In general, employment density per hectare is very low given the land extensive nature of farming generally.
- Based on the approach taken by M.E, these employment shares flow through to shares of gross output and value added. The implication is that the average gross output per ha in the rural environment is estimated at \$1,050/ha for the other livestock farming sector in the Far North<sup>120</sup>.

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<sup>119</sup> The Council parcel file contained some overlap where parcels were assigned different land use codes. After cleaning (primarily removal of unit title properties), the sum of properties was approximately 110% of the total area of unique properties. This figure may therefore include some overlap with other land uses.

<sup>120</sup> The Northland Regional Council report ‘The Economic Value of Alternative Uses of Valuable Soils in Northland’ (Feb. 2012), does not contain any comparable figures for other livestock farming productivity. In the Berl report ‘Assessment of the Economic Value of Rural Productive Potential in the Greater Otaki Area’ (2011) – used as the basis of a 2013 report in Auckland (by Primary Focus NZ Ltd), deer farming, emu / ostrich farming and goat farming had an average productivity of \$1,000/ha but horse breeding and poultry farming had an average of \$10,000/ha and pig farming \$4000/ha.

Table 24: Summary Analysis of the Other Livestock Farming (Excluding Apiculture) Sector 2016

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Properties in Sector</b>									
Count of Total Properties	1	1	-	-	59	-	1	62	64
<i>Share of Total Properties by Zone</i>	2%	2%	0%	0%	92%	0%	2%	97%	100%
Hectares of Total Properties	1	0	-	-	1,916	-	50	1,968	1,975
<i>Share of Total Properties by Zone</i>	0%	0%	0%	0%	97%	0%	3%	100%	100%
Minimum Property Size (ha)	0.98	0.04	-	-	0.05	-	50.3		
Maximum Property Size (ha)	0.98	0.04	-	-	196.1	-	50.3		
Average Property Size (ha)	0.98	0.04	-	-	32.5	-	50.3	31.7	30.9
<b>Sector Use of Maori Land **</b>									
Count of Maori Freehold Properties	-	-	-	-	1	-	-	1	1
<i>Share of Maori Properties by Zone</i>	0%	0%	0%	0%	100%	0%	0%	100%	100%
Hectares of Maori Land	-	-	-	-	71	-	-	71	71
<i>Share of Maori Properties by Zone</i>	0%	0%	0%	0%	100%	0%	0%	100%	100%
<b>Sector Economic Activity</b>									
Sector Employment (MECs)	0	0	-	-	37	-	0	37	37
<i>Share of Sector MECs by Zone</i>	0%	0%	0%	0%	99%	0%	1%	100%	100%
Sector Gross Output (\$m) *	\$ 0.0	\$ 0.0	\$ -	\$ -	\$ 2.0	\$ -	\$ 0.0	\$ 2.1	\$ 2.1
<i>Share of Sector Gross Output by Zone</i>	0%	0%	0%	0%	99%	0%	1%	100%	100%
Sector Value Added (\$m) *	\$ 0.0	\$ 0.0	\$ -	\$ -	\$ 0.7	\$ -	\$ 0.0	\$ 0.7	\$ 0.7
<i>Share of Sector Value Added by Zone</i>	0%	0%	0%	0%	99%	0%	1%	100%	100%
Average MECs/ha	0.05	0.05	-	-	0.02	-	0.01	0.02	0.02
Average GO/ha (\$) *	\$ 2,810	\$ 2,810	\$ -	\$ -	\$ 1,070	\$ -	\$ 320	\$ 1,050	\$ 1,050
Average VA/(\$) ha *	\$ 960	\$ 960	\$ -	\$ -	\$ 360	\$ -	\$ 110	\$ 360	\$ 360

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

Figure 28 maps the general location of Other Livestock Farming sector properties across the District and also estimated employment levels in those properties. This is followed by a heat map showing the relative distribution of gross output per ha (Figure 29) and value added per ha for 2016 (Figure 30). Although difficult to see at a district-wide scale other livestock farming activity is spread (sparsely) throughout the Far North.

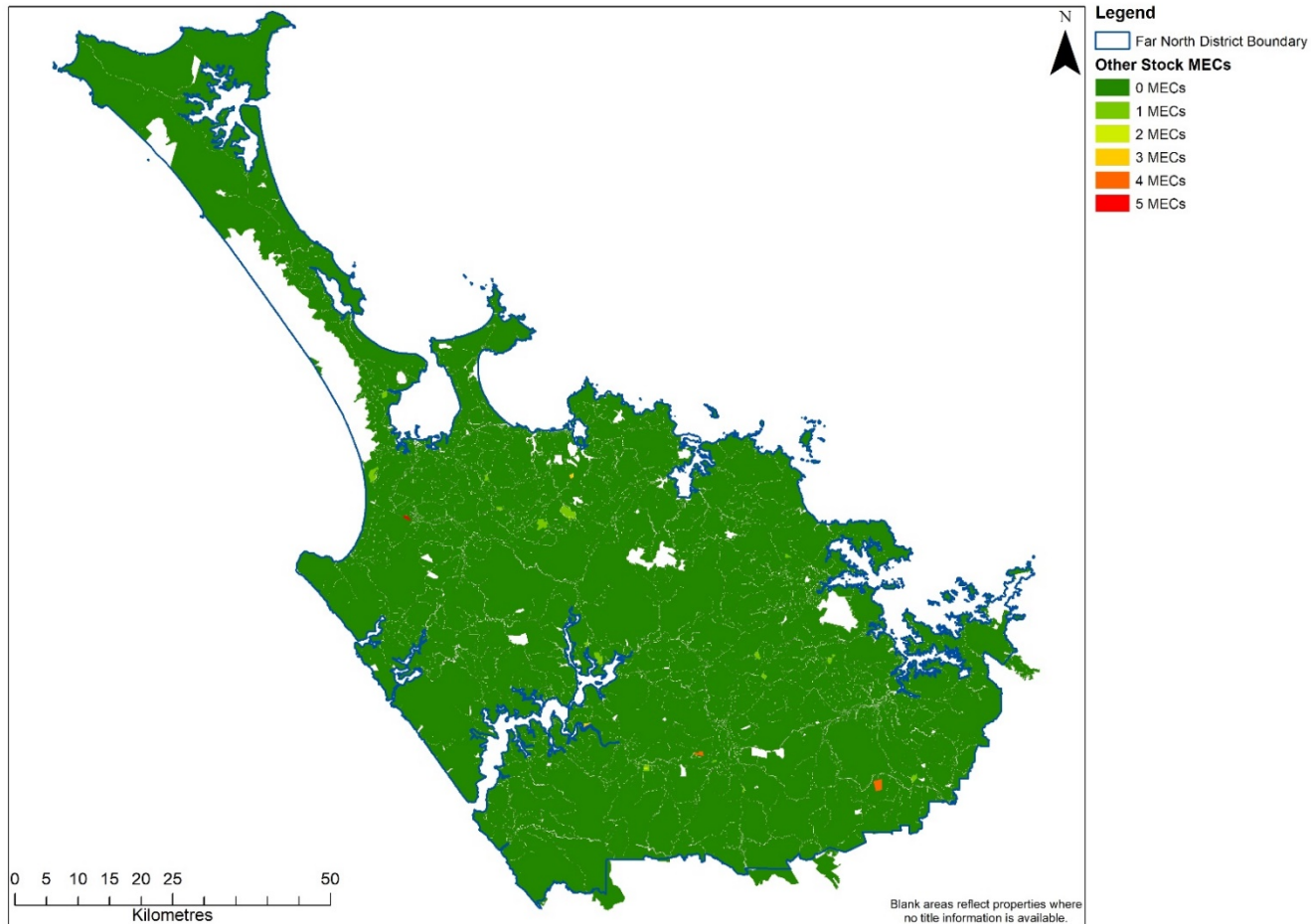


Figure 28: Employment by Estimated Other Livestock Farming (Excluding Apiculture) Property Parcels, 2016

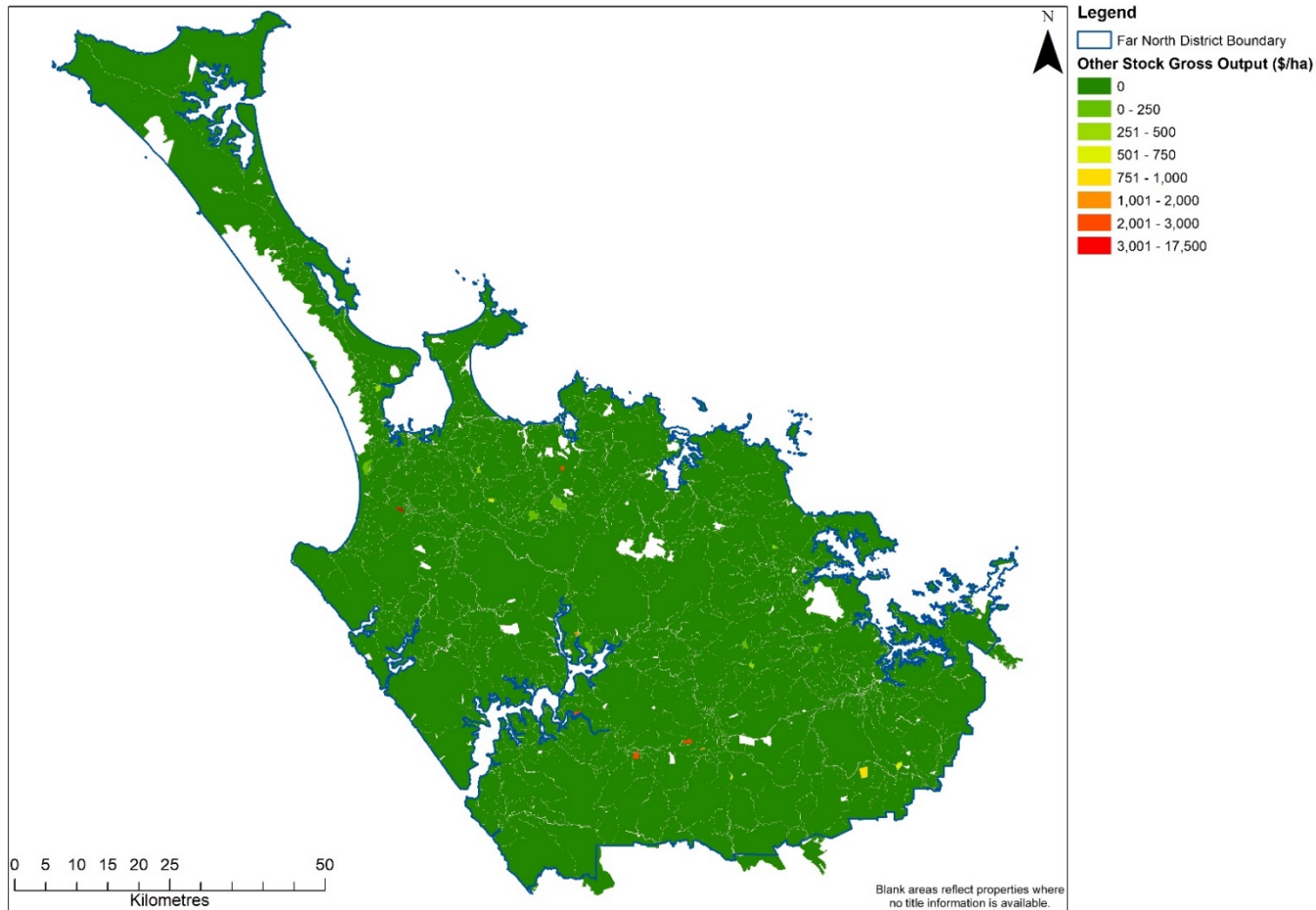


Figure 29: Estimated Other Livestock Farming (Excl. Apiculture) Gross Output per Hectare 2016

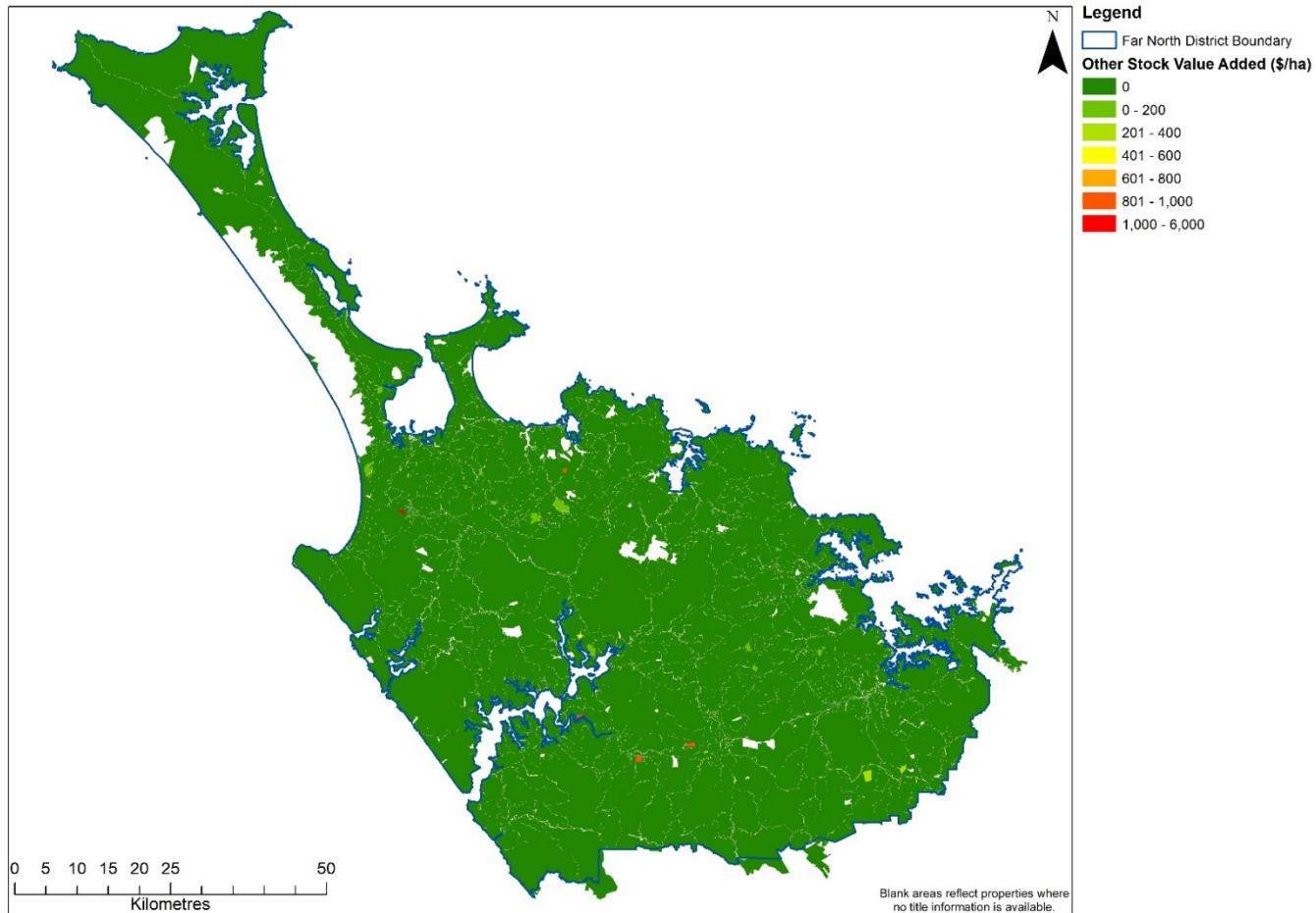


Figure 30: Estimated Other Livestock Farming (Excl. Apiculture) Value Added per Hectare 2016



Table 25 provides a breakdown of estimated other livestock farming property parcels by soil type – showing the count, area, gross output and value added on properties that include an area of highly versatile soils and those that do not (i.e. no intersect with soil class 1-3 areas).

Key findings include:

- Of the estimated 62 properties in the rural environment, 40% contain an area of highly versatile soils (25 properties) and 60% do not (37 properties).
- In the Rural Production Zone, where the majority of other livestock farming takes place, 42% of the total parcel land area includes areas of highly versatile soils. The average other livestock farm property (parcel) is slightly larger when located on an area of highly versatile soils – an average of 32.7ha across all zones compared to 29.6ha in the rest of the district.
- The average gross output per ha ratio of other livestock farming properties with highly versatile soils is moderately higher (at an estimated \$1,320/ha) compared to output per ha on properties with other soils (\$840/ha). The same applies to value added per ha outcomes.
- This implies that highly versatile soils sustain slightly higher returns (relative to costs), even though the sector as a whole does not specifically seek highly versatile soils as a location driver (and indeed, some farming types like caged chickens or barned pigs would not be a soil-based activity).

Table 25: Summary Analysis of the Other Livestock Farming (Excluding Apiculture) Sector 2016 by Soils

Variable (2016)	Zone/Sub-Zone								Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North			
<b>Sector Use of Versatile Soils **</b>										
Count of Properties with Versatile Soils	-	-	-	-	24	-	1	25	26	
Count of Properties with Other Soils	1	1	-	-	35	-	-	37	38	
Total Count of Properties	1	1	-	-	59	-	1	62	64	
Share of Properties with Versatile Soils	0%	0%	0%	0%	41%	0%	100%	40%	41%	
Share of Properties without Versatile Soils	100%	100%	0%	0%	59%	0%	0%	60%	59%	
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%	
Hectares of Properties with Versatile Soils	-	-	-	-	799	-	50	850	851	
Hectares of Properties with Other Soils	1	0	-	-	1,117	-	-	1,118	1,124	
Total Hectares of Properties	1	0	-	-	1,916	-	50	1,968	1,975	
Share of Properties with Versatile Soils	0%	0%	0%	0%	42%	0%	100%	43%	43%	
Share of Properties without Versatile Soils	100%	100%	0%	0%	58%	0%	0%	57%	57%	
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%	
Average Parcel Size (Ha) with Versatile Soils	-	-	-	-	33.3	-	50.3	34.0	32.7	
Average Parcel Size (Ha) without Versatile Soils	1.0	0.0	-	-	31.9	-	-	30.2	29.6	
Average Parcel Size (Ha) All Soils	1.0	0.0	-	-	32.5	-	50.3	31.7	30.9	
Output of Properties with Versatile Soils	\$ -	\$ -	\$ -	\$ -	\$ 1.1	\$ -	\$ 0.0	\$ 1.1	\$ 1.1	
Output of Properties with Other Soils	\$ 0.0	\$ 0.0	\$ -	\$ -	\$ 0.9	\$ -	\$ -	\$ 0.9	\$ 0.9	
Total Output of Properties	\$ 0.0	\$ 0.0	\$ -	\$ -	\$ 2.0	\$ -	\$ 0.0	\$ 2.1	\$ 2.1	
Share of Properties with Versatile Soils	0%	0%	0%	0%	54%	0%	100%	54%	54%	
Share of Properties without Versatile Soils	100%	100%	0%	0%	46%	0%	0%	46%	46%	
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%	
Average GO/ha with Versatile Soils	\$ -	\$ -	\$ -	\$ -	\$ 1,390	\$ -	\$ 320	\$ 1,320	\$ 1,320	
Average GO/ha without Versatile Soils	\$ 2,810	\$ 2,810	\$ -	\$ -	\$ 840	\$ -	\$ -	\$ 840	\$ 840	
Value Add. of Properties with Versatile Soils	\$ -	\$ -	\$ -	\$ -	\$ 0.4	\$ -	\$ 0.0	\$ 0.4	\$ 0.4	
Value Add. of Properties with Other Soils	\$ 0.0	\$ 0.0	\$ -	\$ -	\$ 0.3	\$ -	\$ -	\$ 0.3	\$ 0.3	
Total Value Added of Properties	\$ 0.0	\$ 0.0	\$ -	\$ -	\$ 0.7	\$ -	\$ 0.0	\$ 0.7	\$ 0.7	
Share of Properties with Versatile Soils	0%	0%	0%	0%	54%	0%	100%	54%	54%	
Share of Properties without Versatile Soils	100%	100%	0%	0%	46%	0%	0%	46%	46%	
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%	
Average VA/ha with Versatile Soils	\$ -	\$ -	\$ -	\$ -	\$ 470	\$ -	\$ 110	\$ 450	\$ 450	
Average VA/ha without Versatile Soils	\$ 960	\$ 960	\$ -	\$ -	\$ 290	\$ -	\$ -	\$ 290	\$ 290	

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 26 provides a breakdown of estimated other livestock farming property parcels with and without access to water resources.

Key findings include:

- Of the estimated 62 properties in the rural environment, just 2% are located wholly or partly within the defined Kerikeri Irrigation North Region (1 property) and none are located in the Kerikeri Irrigation South Region. This reflects the district wide spread of the sector (i.e. not concentrated near Kerikeri).
- The size of the one other livestock farm property (parcel) within the Kerikeri Irrigation North Region is 38.7ha compared to an average size of 30.7ha in the rest of the district (and a combined weighted average of 30.9ha). Care is however needed, as this is not a representative sample.

Table 26: Summary Analysis of the Other Livestock Farming (Excl. Apiculture) Sector 2016 by Water Resource

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Sector Relative to Kerikeri North Irrigation Region ***</b>									
Count of Properties within Kerikeri Irr. North	-	-	-	-	1	-	-	1	1
Count of Properties outside Kerikeri Irr. North	1	1	-	-	58	-	1	61	63
Total Count of Properties	1	1	-	-	59	-	1	62	64
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	2%	0%	0%	2%	2%
Share of Properties outside Kerikeri Irr. North	100%	100%	0%	0%	98%	0%	100%	98%	98%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%
Hectares of Properties within KI North	-	-	-	-	39	-	-	39	39
Hectares of Properties Outside KI North	1	0	-	-	1,878	-	50	1,929	1,936
Total Hectares of Properties	1	0	-	-	1,916	-	50	1,968	1,975
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	2%	0%	0%	2%	2%
Share of Properties outside Kerikeri Irr. North	100%	100%	0%	0%	98%	0%	100%	98%	98%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%
Average Parcel Size (Ha) within KI North	-	-	-	-	38.7	-	-	38.7	38.7
Average Parcel Size (Ha) outside KI North	1.0	0.0	-	-	32.4	-	50.3	31.6	30.7
Average Parcel Size (Ha) Total	1.0	0.0	-	-	32.5	-	50.3	31.7	30.9
<b>Sector Relative to Kerikeri South Irrigation Region ***</b>									
Count of Properties within Kerikeri Irr. South	-	-	-	-	-	-	-	-	-
Count of Properties outside Kerikeri Irr. South	1	1	-	-	59	-	1	62	64
Total Count of Properties	1	1	-	-	59	-	1	62	64
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. South	100%	100%	0%	0%	100%	0%	100%	100%	100%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%
Hectares of Properties within KI South	-	-	-	-	-	-	-	-	-
Hectares of Properties Outside KI South	1	0	-	-	1,916	-	50	1,968	1,975
Total Hectares of Properties	1	0	-	-	1,916	-	50	1,968	1,975
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. South	100%	100%	0%	0%	100%	0%	100%	100%	100%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%
Average Parcel Size (Ha) within KI South	-	-	-	-	-	-	-	-	-
Average Parcel Size (Ha) outside KI South	1.0	0.0	-	-	32.5	-	50.3	31.7	30.9
Average Parcel Size (Ha) Total	1.0	0.0	-	-	32.5	-	50.3	31.7	30.9
<b>Sector Relative to District Aquifers ***</b>									
Count of Properties within any Aquifer Area	-	-	-	-	9	-	1	10	11
Count of Properties outside Aquifer Area	1	1	-	-	50	-	-	52	53
Total Count of Properties	1	1	-	-	59	-	1	62	64
Share of Properties within any Aquifer Area	0%	0%	0%	0%	15%	0%	100%	16%	17%
Share of Properties outside Aquifer Area	100%	100%	0%	0%	85%	0%	0%	84%	83%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%
Hectares of Properties within any Aquifer Area	-	-	-	-	496	-	50	546	552
Hectares of Properties Outside Aquifer Area	1	0	-	-	1,421	-	-	1,422	1,423
Total Hectares of Properties	1	0	-	-	1,916	-	50	1,968	1,975
Share of Properties within any Aquifer Area	0%	0%	0%	0%	26%	0%	100%	28%	28%
Share of Properties outside Aquifer Area	100%	100%	0%	0%	74%	0%	0%	72%	72%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%
Average Parcel Size (Ha) within any Aquifer Area	-	-	-	-	55.1	-	50.3	54.6	50.1
Average Parcel Size (Ha) outside Aquifer Area	1.0	0.0	-	-	28.4	-	-	27.3	26.9
Average Parcel Size (Ha) Total	1.0	0.0	-	-	32.5	-	50.3	31.7	30.9
<b>Sector Relative to Bore Sites ***</b>									
Count of Properties with one or more Bore	-	-	-	-	2	-	1	3	3
Count of Properties without Bores	1	1	-	-	57	-	-	59	61
Total Count of Properties	1	1	-	-	59	-	1	62	64
Share of Properties with One or More Bores	0%	0%	0%	0%	3%	0%	100%	5%	5%
Share of Properties without Bores	100%	100%	0%	0%	97%	0%	0%	95%	95%
Total Properties	100%	100%	0%	0%	100%	0%	100%	100%	100%

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

- Of the estimated 62 properties in the rural environment, 16% are located wholly or partly above the defined district aquifers (10 properties) and 84% are not (52 properties). This includes both the Aupouri Aquifer and the several smaller aquifers, including those in and around the Kerikeri Irrigation North and South Regions.
- The average size of other livestock farm properties (parcels) within an aquifer area is almost double that in the rest of the district - 50.1ha compared to an average size of 26.9ha in areas not served by an aquifer. Care is again needed, as the sample of properties within aquifer areas is small.
- Of the total rural environment properties, just 5% contain one or more bores (3 properties) and 95% do not (59 properties).

Overall, access to aquifer resources does not appear to be a key feature or location driver of the other livestock farming sector.

The incidence of both highly versatile soils and a location within an aquifer area, and vice versa, has also been examined.

Figure 31 shows the average count of other livestock farming sector employment per hectare – a measure of how productive properties are<sup>121</sup>. It shows that on average, other livestock farming properties that have both highly versatile soils and an aquifer location sustain a higher ratio of employment per hectare than properties that have access to only one (or none) of these resources. The results confirm that other livestock farming properties are not materially influenced by soils or water resources but benefit from (can capitalise on) these resources when they occur in combination.

Care is needed with interpreting the results below (Figure 31) because the other livestock farming sector is very diverse and the presence of highly versatile soils and or plentiful water might determine what type of stock is farmed and these in turn may vary in terms of their employment needs or economic lot sizes. That is, there may be other factors that contribute to or help explain these trends.

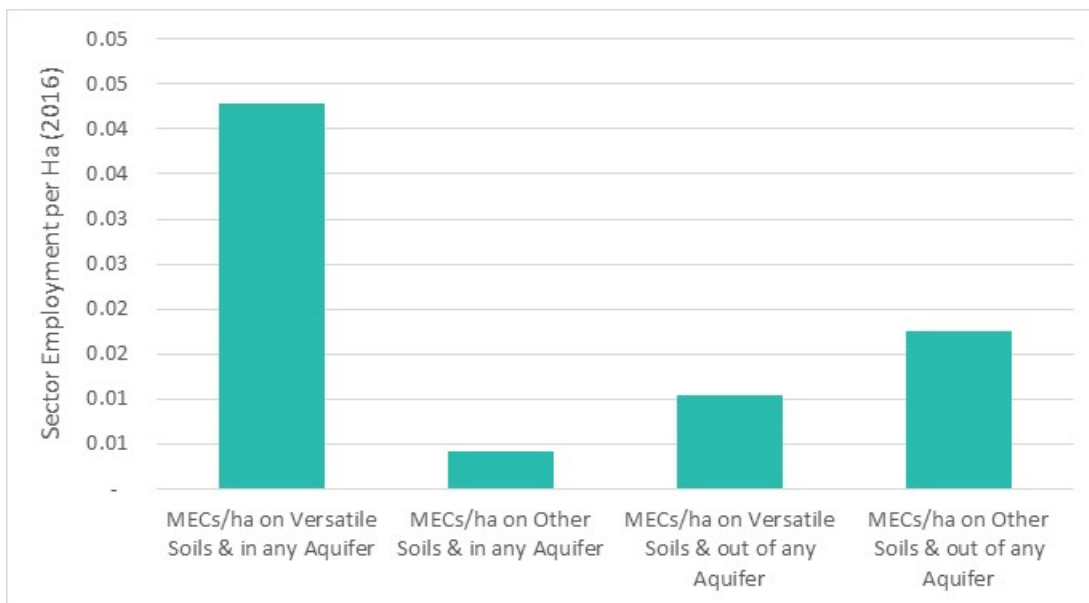


Figure 31: Analysis of Average Other Livestock Employment per Ha by Versatile Soils and Aquifer Locations

<sup>121</sup> Due to the approach taken by M.E, the same trend would be evident for gross output per hectare and value added per hectare.

## 3.9 Forestry and Logging

### 3.9.1 Industry Overview

While there is no single governing body for the forestry sector, the Ministry for Primary Industries (MPI) plays an important role in working with the sector to protect NZ's forestry resources. Other key industry bodies include, NZ Forest Growers Association and NZ Farm Foresters Association.

Forestry contributes \$3.55b to NZ's GDP, \$1.39b from forestry and logging and \$2.16b from downstream activity (Forest Owners Association, 2017)<sup>122</sup>. Nationally, the net stocked plantation forest area (at 1 April 2016), was estimated to be more than 1.7m hectares, more than 90% of which is privately owned<sup>123</sup>.

Forestry is the third largest primary sector in terms of export revenue (Ministry for Primary Industries, 2016)<sup>124</sup>, and logs, wood and wood articles are New Zealand's fourth highest export commodity<sup>125</sup>. Some 57% of harvested logs and varying percentages of processed forest products are destined for export, with China accounting for almost half (44%) of the total value of exports in 2016.

The export value of forest products for the year ending June 2017, was estimated at \$5.47b. The export earnings of forestry in NZ is estimated to be around \$2,800 per hectare. MPI anticipates the export returns from NZ forest products to be in excess of \$5.7b for the year ending June 2018, and \$6.3b by 2021. (Forest Owners Association, 2017).

Boasting a strong forestry and wood processing industry, Northland predominantly grows Radiata pine (also known as NZ pine or Monterey pine), a very versatile wood that is used in a wide range of industries from construction to furniture, and so forth. The wood produced in Northland has a reputation for being amongst the highest density wood in NZ, which is said to be mainly as a result of the warmer climate, allowing the trees to grow consistently year-round<sup>126</sup>.

The estimated total forest area in Northland is some 186,000 hectares, i.e. 11% of the total forestry area across the country. Forestry plays a significant and increasing role in the Northland economy, injecting around \$377m into the regional economy. Northland contributes on average 10% of the national forestry GDP, only topped by the Waikato (20%) and Bay of Plenty (13%). In Northland, forestry contributes approximately 2.5% of the regional GDP, only surpassed by Gisborne (5-6%) and Tasman/Nelson (3%) in terms of its regional role. The plantation forestry sector accounts for 1.5% of all employment in Northland, this excludes employment in sectors that supports forestry, such as transport (New Zealand Institute of Economic Research, 2017)<sup>127</sup>.

#### Issues/Challenges

**Sustainability and future supply:** The current harvest pace is higher than the long run wood availability projections published in 2014 (Ministry for Primary Industries, March 2018)<sup>128</sup>. If this trend continues, the average age of plantation forests will begin to decrease, resulting in lower quality and prices. The current high harvesting levels are partly driven by the high log prices. They are concerned that forests are being harvested at a younger age (some under 20 years) when the typical age of harvest for radiata pine is 28 years (Ministry for Primary Industries, 2016). The wood

<sup>122</sup> Forest Owners Association. (2017). Facts & Figures – NZ Plantation Forest Industry.

<sup>123</sup> Ownership is based solely on the ownership of the forest, irrespective of the ownership of the land.

<sup>124</sup> Ministry for Primary Industries. (2016). Briefing for incoming ministers – The forestry sector.

<sup>125</sup> <https://www.nzte.govt.nz/investment-and-funding/investment-statistics> (Retrieved 10/04/2018)

<sup>126</sup> <https://www.northlandnz.com/business/sectors/forestry-and-wood-processing-2/> (Retrieved 19/04/2018)

<sup>127</sup> New Zealand Institute of Economic Research. (2017). Plantation forestry statistics – Contribution of forestry to New Zealand. A report to NZ Forest Growers Association and NZ Farm Foresters Association funded by the Forest Growers Levy Trust.

<sup>128</sup> Ministry for Primary Industries. (March 2018). Situation and Outlook for Primary Industries.

council had received similar reports in 2016 of logs as young as 18 years being sold. While this practice is said to also be occurring in Southland and Canterbury, it is reported to be worst in Northland<sup>129</sup>.

**High domestic demand:** The Wood Processors and Manufacturers Association (WPMA), and in particular wood processors in Northland, have raised concerns about the availability of logs for processing by local manufacturers versus the amount of (unprocessed) logs being exported (Ministry for Primary Industries, 2016). Given the high demand from the construction sector, some industry players have even suggested introducing some regulation that would give domestic sawmills the option to buy logs before they go onto the export market.

**Health and Safety:** In 2017 Worksafe recorded 7 fatalities in the Forestry sector<sup>130</sup>, with only the Agriculture and Construction sectors faring worse (10 and 9 fatalities, respectively). One of these incidents occurred in Northland. Taking into consideration the size of the national workforce in the agriculture and construction industries, forestry has by far the worst safety record. In total, 35 workers have been killed in forestry related workplace incidents between 2011 and 2017. In addition, there were 40 notifiable incidents<sup>131</sup> in 2017. Despite an overhaul of legislation in 2013, ongoing monitoring by Worksafe and continued training, monitoring and reporting by the Forestry Industry Safety Council (FISC), the total injury frequency rate increased over the 2017 period. Similarly, the lost time incident frequency rate trended upwards over this period. However, severity (average days lost per lost time injury) has been progressively declining<sup>132</sup>. The FISC is committed to continue working with stakeholders in the forestry sector, to ensure improvements in health and safety, are ongoing.

**Labour shortage:** The Forest Industry Contractors Association (FICA) has been signalling the lack of suitable workers (“good people with the right skills”) in the forestry industry, for some time now. Media reports suggest a global demand for logs and competition for workers in primary industries have left Northland with an acute shortage of labourers in the forestry sector. Some forestry contractors are looking at the Pacific Islands and Philippines to fill available roles<sup>133</sup>. FICA says labour shortages are most prevalent in Northland and Gisborne. The safety record of the industry, general working conditions and remuneration have also been quoted as some of the reasons the industry has found it challenging to recruit labour.

## Outlook

The sector has an aspirational and ambitious goal to more than double export revenue to \$12 billion by 2022, primarily through increased processing and manufacturing of high-value wood products for export (Ministry for Primary Industries, 2016).

Through the Regional Economic Development programme, jointly led by MPI and MBIE, Northland has identified forestry as a key sector for growth in the region. Forestry related initiatives included in the Tai Tokerau Northland Action Plan are:

- Tai Tokerau Maori Forestry Collective;
- Establishing a Totara industry in Northland (pilot project);
- Establishment of a wood processors coalition (First Region Lumber); and
- Establishment of a Wood Processors working group.

Forestry exports have been trending upwards since 2012. According to MPI’s latest Situation and Outlook for Primary Industries (March 2018), timber demand from the US is expected to remain strong due to a range of factors, including continuing high housing start numbers, rebuilds from recent hurricanes, and trade disputes between the US and Canada. MPI forecasts that forestry exports will expand in 2018. Indonesia continues to be a growing market, especially for pulp.

<sup>129</sup> <https://www.stuff.co.nz/business/industries/83264710/forest-industry-fearful-as-farmers-sell-immature-logs>

<sup>130</sup> <https://worksafe.govt.nz/data-and-research/ws-data/fatalities/by-focus-area/>

<sup>131</sup> Someone has been exposed to a serious and immediate risk of harm because of a workplace incident.

<sup>132</sup> <https://safetree.nz/wp-content/uploads/2018/03/2017-IRIS-Q4.pdf>

<sup>133</sup> [http://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11849533](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11849533) (7 May 2017)

The government’s goal of planting a billion trees over the next ten years (2018-2027) will require new afforestation of approximately 500 million trees, as well as replanting of existing plantation forests after harvest. The planting is expected to include a mix of exotic and native species, planted for a variety of purposes, including environmental benefits (such as carbon sequestration, erosion control, and riparian planting) and commercial forestry. Original estimates suggest that up to one million hectares of land would be needed to plant a billion trees if all were commercial radiata pine<sup>134</sup>. However, native trees are planted at a much denser rate, so less land would be required. MPI is currently working on a range of options to support the government in reaching its goal. This initiative could drive an increase in forestry land in the Far North in the short-medium term.

Domestic consumption is expected to remain strong over the next few years, mainly driven by the construction sector boom. This is proving challenging for local sawmills as previously discussed.

### 3.9.2 Key Statistics

According to the SNZ Business directory, the Forestry and Logging sector in Far North District comprises of 280 businesses and 173 workers. Figure 32 shows that 92% of these businesses fall within the ‘Forestry’ industry, with the remaining 8% in the ‘Logging’ industry. The average number of workers per business is around 1 (2016) and the total turnover (gross output) of the sector is estimated at \$134m (from all sources of business income<sup>135</sup>), which contributes \$42m to the district economy (value added). The resulting district wide averages of gross output per worker and value added per worker are therefore estimated at \$785,200 and \$246,400 respectively (2016).



Figure 32: Forestry and Logging Sector Businesses 2016 by Industry

Table 27 summarises the spatial analysis of the forestry and logging sector in 2016 by zone based on a mix of Council, SNZ and M.E data sources.

*Importantly, while the parcel file supplied by Council does include parcels over the large area on the western side of the Aupouri Peninsula, there was no property data supplied that could be matched to these parcels. This land is primarily forestry land, as confirmed by aerial images. Once Crown licensed land, the land is now jointly owned by four*

<sup>134</sup> <https://www.mpi.govt.nz/funding-and-programmes/forestry/planting-one-billion-trees/>

<sup>135</sup> It is estimated that a portion of gross output and value added of all businesses registered as Sheep, Beef Cattle and Grain Farming as their primary activity comes from apiculture. There is also potential for other sources of compatible income and will vary from business to business.

*Treaty settlement parties as a result of commercial redress under Treaty settlement claims. This extensive area of forest is excluded from M.E's analysis. As such, the results below are expected to significantly under-represent the hectares of forestry land in the District. This has flow-on effects on the robustness of employment, output and value added densities and per hectare ratios and averages reported below. This is a key limitation of the analysis on the forestry sector, although the total district employment, gross output and valued added of the forestry sector is calculated independently by M.E and these estimates are considered robust.*

Key findings include:

- The sector is made up of an estimated 1,566 property parcels, 84% of which are in the rural environment. The major share of property parcels is located in the Rural Production Zone (an estimated 1,219 parcels), with 89 property parcels located in the General Coastal Zone.
- These properties cover an estimated 125,398ha. *By comparison, parcels coded to the Primary Industry – Forestry land use total 126,773ha<sup>136</sup>. The slight difference in properties (ha) in M.E's modelling arises from the removal of minor overlap of parcels with these land use codes.*
- 64% of total forestry and logging property land area falls within the Rural Production Zone (compared to 78% of the properties) and 12% falls within the General Coastal Zone (compared to just 6% of the properties). This reflects the average parcel size in different zones.
- The average parcel size across the rural environment is 72.7ha. The average is slightly smaller in the Rural Production Zone (estimated at 65.7ha). In the General Coastal Zone land parcels average an estimated 168.6ha.

Table 27: Summary Analysis of the Forestry and Logging Sector 2016

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<sup>136</sup> The Council parcel file contained some overlap where parcels were assigned different land use codes. After cleaning (primarily removal of unit title properties), the sum of properties was approximately 110% of the total area of unique properties. This figure may therefore include some overlap with other land uses.



Variable (2016)	Zone/Sub-Zone								
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North	Total Rural Environment	Total Far North District
<b>Properties in Sector</b>									
Count of Total Properties	-	89	-	-	1,219	-	-	1,308	1,566
Share of Total Properties by Zone	0%	6%	0%	0%	78%	0%	0%	84%	100%
Hectares of Total Properties	-	15,004	-	-	80,134	-	-	95,138	125,398
Share of Total Properties by Zone	0%	12%	0%	0%	64%	0%	0%	76%	100%
Minimum Property Size (ha)	-	0.00	-	-	0.00	-	-		
Maximum Property Size (ha)	-	5,878	-	-	6,241	-	-		
Average Property Size (ha)	-	168.6	-	-	65.7	-	-	72.7	80.1
<b>Sector Use of Maori Land **</b>									
Count of Maori Freehold Properties	-	41	-	-	261	-	-	302	302
Share of Maori Properties by Zone	0%	14%	0%	0%	86%	0%	0%	100%	100%
Hectares of Maori Land	-	8,085	-	-	29,928	-	-	38,013	38,013
Share of Maori Properties by Zone	0%	21%	0%	0%	79%	0%	0%	100%	100%
<b>Sector Economic Activity</b>									
Sector Employment (MECs)	-	20	-	-	109	-	-	130	171
Share of Sector MECs by Zone	0%	12%	0%	0%	64%	0%	0%	76%	100%
Sector Gross Output (\$m) *	\$ -	\$ 16.1	\$ -	\$ -	\$ 85.9	\$ -	\$ -	\$ 101.9	\$ 134.4
Share of Sector Gross Output by Zone	0%	12%	0%	0%	64%	0%	0%	76%	100%
Sector Value Added (\$m) *	\$ -	\$ 5.0	\$ -	\$ -	\$ 26.9	\$ -	\$ -	\$ 32.0	\$ 42.2
Share of Sector Value Added by Zone	0%	12%	0%	0%	64%	0%	0%	76%	100%
Average MECs/ha	-	0.00	-	-	0.00	-	-	0.00	0.00
Average GO/ha (\$) *	\$ -	\$ 1,070	\$ -	\$ -	\$ 1,070	\$ -	\$ -	\$ 1,070	\$ 1,070
Average VA/(\$) ha *	\$ -	\$ 340	\$ -	\$ -	\$ 340	\$ -	\$ -	\$ 340	\$ 340

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors.

- There are a significant 302 Forestry and Logging property parcels on Maori owned land (whether general, customary or freehold but excluding settlement land). These are largely located in the Rural Production Zone (261). In total, Maori owned forestry and logging property parcels cover a combined area of 38,013ha (30% of total sector land area).
- When employment is spread pro-rata by property area in this sector, 76% of 2016 sector employment would be located in the rural environment, based on the attribution of properties to rural zones. However, this assumption was made for the purpose of the M.E's modelling and is not a true reflection of where forestry employment in the Far North is actually based. Only a portion is tied to the land use itself, with the balance expected to be based in the urban towns.
- In general, implied employment density per hectare is very low given the land extensive nature of plantation forestry.
- Based on the approach taken by M.E, gross output and value added is distributed totally based on the distribution of land area (and equally employment) and assumes that 1ha is equal no matter what type of forestry is on each site, or where it is located in the district. As such, there are limitations to this approach. Nonetheless, the modelling implies that the average gross output per ha in the rural environment is estimated at \$1,070/ha for the forestry and logging sector in the Far North<sup>137</sup>. Due to the forestry land missing from the analysis (which is significant), this output ratio is expected to be considerably higher than the actual yield per hectare.

<sup>137</sup> The Northland Regional Council report 'The Economic Value of Alternative Uses of Valuable Soils in Northland' (Feb. 2012), does not provide a comparable regional average productivity for forestry. The Berl report 'Assessment of the Economic Value of Rural Productive Potential in the Greater Otaki Area' (2011) – used as the basis of a 2013 report in Auckland (by Primary Focus NZ Ltd), has an average productivity of \$500/ha for forestry.

Figure 33 maps the general location of forestry and logging sector properties across the District and also estimated employment levels in those properties (pro-rata). It includes an aerial photograph of typical forestry land use patterns (north west of Te Kao at the top of the Aupouri Peninsula), showing cleared and planted areas. Maps showing gross output and value added per hectare are not included in this section as the approach used results in the same ratio per ha for all parcels due to limitations in the data. It is evident at a district-wide scale that forestry and logging activity occurs extensively throughout the Far North but is more prevalent in the western half of the district, and with a strong concentration between Awanui and Cape Reinga.

Table 28 provides a breakdown of estimated forestry and logging property parcels by soil type – showing the count, area, gross output and value added on properties that include an area of highly versatile soils and those that do not (i.e. no intersect with soil class 1-3 areas).

Key findings include:

- Of the estimated 1,308 properties in the rural environment, 15% contain an area of highly versatile soils (200 properties) and 85% do not (1,108 properties).
- More importantly, an average of 28% of the land area of forestry and logging parcels across all rural zones contain highly versatile soils, compared to 72% that do not.
- In the Rural Production Zone, where the majority of forestry and logging activity takes place, a below average share (20%) of the total parcel land area includes areas of highly versatile soils.
- A significant 71% of the land area of forestry parcels in the Coastal Zone contain highly versatile soils compared to just 29% that do not.
- Across all rural zones, the average size of forestry and logging properties (parcels) with areas of highly versatile soils is more than double the average size in the rest of the district – 133.7ha compared to 61.7ha respectively. This trend is more extreme in the General Coastal Zone where the average size with highly versatile soils is 713ha compared to 58ha without.
- The average gross output per ha ratio of forestry and logging properties with highly versatile soils does not show up any differently from those without high-class soils because of M.E's allocation method. Generally, however, It is anticipated that highly versatile soils would sustain higher returns (relative to costs), even though the sector as a whole does not specifically seek highly versatile soils as a location driver.

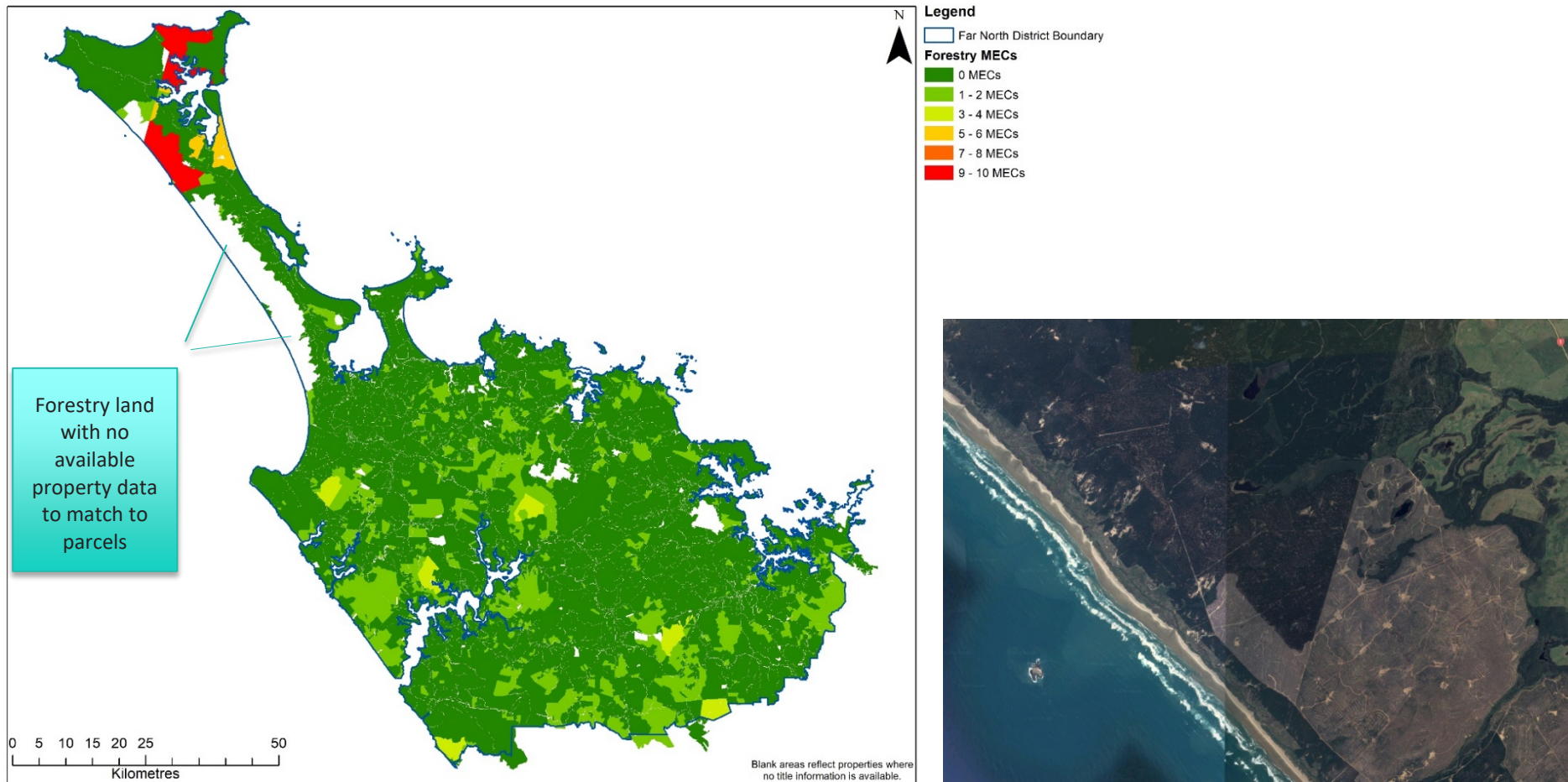


Figure 33: Employment by Estimated Forestry and Logging Parcels and Indicative Land Use Patterns, 2016

Table 28: Summary Analysis of the Forestry and Logging Sector 2016 by Soils

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Sector Use of Versatile Soils **</b>									
Count of Properties with Versatile Soils	-	15	-	-	185	-	-	200	210
Count of Properties with Other Soils	-	74	-	-	1,034	-	-	1,108	1,356
Total Count of Properties	-	89	-	-	1,219	-	-	1,308	1,566
Share of Properties with Versatile Soils	0%	17%	0%	0%	15%	0%	0%	15%	13%
Share of Properties without Versatile Soils	0%	83%	0%	0%	85%	0%	0%	85%	87%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Hectares of Properties with Versatile Soils	-	10,700	-	-	16,032	-	-	26,731	30,826
Hectares of Properties with Other Soils	-	4,304	-	-	64,103	-	-	68,407	94,572
Total Hectares of Properties	-	15,004	-	-	80,134	-	-	95,138	125,398
Share of Properties with Versatile Soils	0%	71%	0%	0%	20%	0%	0%	28%	25%
Share of Properties without Versatile Soils	0%	29%	0%	0%	80%	0%	0%	72%	75%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Average Parcel Size (Ha) with Versatile Soils	-	713.3	-	-	86.7	-	-	133.7	146.8
Average Parcel Size (Ha) without Versatile Soils	-	58.2	-	-	62.0	-	-	61.7	69.7
Average Parcel Size (Ha) All Soils	-	168.6	-	-	65.7	-	-	72.7	80.1
Output of Properties with Versatile Soils	\$ -	\$ 11.5	\$ -	\$ -	\$ 17.2	\$ -	\$ -	\$ 28.6	\$ 33.0
Output of Properties with Other Soils	\$ -	\$ 4.6	\$ -	\$ -	\$ 68.7	\$ -	\$ -	\$ 73.3	\$ 101.3
Total Output of Properties	\$ -	\$ 16.1	\$ -	\$ -	\$ 85.9	\$ -	\$ -	\$ 101.9	\$ 134.4
Share of Properties with Versatile Soils	0%	71%	0%	0%	20%	0%	0%	28%	25%
Share of Properties without Versatile Soils	0%	29%	0%	0%	80%	0%	0%	72%	75%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Average GO/ha with Versatile Soils	\$ -	\$ 1,070	\$ -	\$ -	\$ 1,070	\$ -	\$ -	\$ 1,070	\$ 1,070
Average GO/ha without Versatile Soils	\$ -	\$ 1,070	\$ -	\$ -	\$ 1,070	\$ -	\$ -	\$ 1,070	\$ 1,070
Value Add. of Properties with Versatile Soils	\$ -	\$ 3.6	\$ -	\$ -	\$ 5.4	\$ -	\$ -	\$ 9.0	\$ 10.4
Value Add. of Properties with Other Soils	\$ -	\$ 1.4	\$ -	\$ -	\$ 21.6	\$ -	\$ -	\$ 23.0	\$ 31.8
Total Value Added of Properties	\$ -	\$ 5.0	\$ -	\$ -	\$ 26.9	\$ -	\$ -	\$ 32.0	\$ 42.2
Share of Properties with Versatile Soils	0%	71%	0%	0%	20%	0%	0%	28%	25%
Share of Properties without Versatile Soils	0%	29%	0%	0%	80%	0%	0%	72%	75%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Average VA/ha with Versatile Soils	\$ -	\$ 340	\$ -	\$ -	\$ 340	\$ -	\$ -	\$ 340	\$ 340
Average VA/ha without Versatile Soils	\$ -	\$ 340	\$ -	\$ -	\$ 340	\$ -	\$ -	\$ 340	\$ 340

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

Table 29 provides a breakdown of estimated forestry and logging property parcels with and without access to water resources.

Key findings include:

- Of the estimated 1,308 properties in the rural environment, just 0.1% are located wholly or partly within the defined Kerikeri Irrigation North Region (1 property) and none are located in the Kerikeri Irrigation South Region. This, among other things, reflects the district wide spread of the sector, not limited to areas near Kerikeri.
- The size of forestry parcel within the Kerikeri Irrigation North Region is significantly larger than those in the rest of the rural environment – 632ha compared to 79.7ha (and a combined weighted average of 80.1ha).
- Of the estimated 1,308 properties in the rural environment, 5% are located wholly or partly above the defined district aquifers (65 properties) and 95% are not (1,243 properties). This includes both the Aupouri Aquifer and the several smaller aquifers, including those in and around the Kerikeri Irrigation North and South Regions.
- The average size of forestry parcels within an aquifer area is noticeable larger than those in the rest of the rural environment – 261ha compared to 63ha respectively.

- Of the total rural environment forestry properties, just 1% contain one or more bores (14 properties) and 99% do not (1,294 properties).

Access to water resources is not a key feature or location driver of the Forestry and Logging sector.

Table 29: Summary Analysis of the Forestry and Logging Sector 2016 by Water Resource

Variable (2016)	Zone/Sub-Zone							Total Rural Environment	Total Far North District
	Coastal Living	General Coastal	Minerals	Rural Living	Rural Production	South Kerikeri Inlet Zone ^	Waimate North		
<b>Sector Relative to Kerikeri North Irrigation Region ***</b>									
Count of Properties within Kerikeri Irr. North	-	-	-	-	1	-	-	1	1
Count of Properties outside Kerikeri Irr. North	-	89	-	-	1,218	-	-	1,307	1,565
Total Count of Properties	-	89	-	-	1,219	-	-	1,308	1,566
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. North	0%	100%	0%	0%	100%	0%	0%	100%	100%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Hectares of Properties within KI North	-	-	-	-	632	-	-	632	632
Hectares of Properties Outside KI North	-	15,004	-	-	79,503	-	-	94,507	124,766
Total Hectares of Properties	-	15,004	-	-	80,134	-	-	95,138	125,398
Share of Properties within Kerikeri Irr. North	0%	0%	0%	0%	1%	0%	0%	1%	1%
Share of Properties outside Kerikeri Irr. North	0%	100%	0%	0%	99%	0%	0%	99%	99%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Average Parcel Size (Ha) within KI North	-	-	-	-	631.6	-	-	631.6	631.6
Average Parcel Size (Ha) outside KI North	-	168.6	-	-	65.3	-	-	72.3	79.7
Average Parcel Size (Ha) Total	-	168.6	-	-	65.7	-	-	72.7	80.1
<b>Sector Relative to Kerikeri South Irrigation Region ***</b>									
Count of Properties within Kerikeri Irr. South	-	-	-	-	-	-	-	-	-
Count of Properties outside Kerikeri Irr. South	-	89	-	-	1,219	-	-	1,308	1,566
Total Count of Properties	-	89	-	-	1,219	-	-	1,308	1,566
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. South	0%	100%	0%	0%	100%	0%	0%	100%	100%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Hectares of Properties within KI South	-	-	-	-	-	-	-	-	-
Hectares of Properties Outside KI South	-	15,004	-	-	80,134	-	-	95,138	125,398
Total Hectares of Properties	-	15,004	-	-	80,134	-	-	95,138	125,398
Share of Properties within Kerikeri Irr. South	0%	0%	0%	0%	0%	0%	0%	0%	0%
Share of Properties outside Kerikeri Irr. South	0%	100%	0%	0%	100%	0%	0%	100%	100%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Average Parcel Size (Ha) within KI South	-	-	-	-	-	-	-	-	-
Average Parcel Size (Ha) outside KI South	-	168.6	-	-	65.7	-	-	72.7	80.1
Average Parcel Size (Ha) Total	-	168.6	-	-	65.7	-	-	72.7	80.1
<b>Sector Relative to District Aquifers ***</b>									
Count of Properties within any Aquifer Area	-	12	-	-	53	-	-	65	83
Count of Properties outside Aquifer Area	-	77	-	-	1,166	-	-	1,243	1,483
Total Count of Properties	-	89	-	-	1,219	-	-	1,308	1,566
Share of Properties within any Aquifer Area	0%	13%	0%	0%	4%	0%	0%	5%	5%
Share of Properties outside Aquifer Area	0%	87%	0%	0%	96%	0%	0%	95%	95%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Hectares of Properties within any Aquifer Area	-	5,700	-	-	11,286	-	-	16,986	17,612
Hectares of Properties Outside Aquifer Area	-	9,304	-	-	68,848	-	-	78,152	107,786
Total Hectares of Properties	-	15,004	-	-	80,134	-	-	95,138	125,398
Share of Properties within any Aquifer Area	0%	38%	0%	0%	14%	0%	0%	18%	14%
Share of Properties outside Aquifer Area	0%	62%	0%	0%	86%	0%	0%	82%	86%
Total Properties	0%	100%	0%	0%	100%	0%	0%	100%	100%
Average Parcel Size (Ha) within any Aquifer Area	-	475.0	-	-	213.0	-	-	261.3	212.2
Average Parcel Size (Ha) outside Aquifer Area	-	120.8	-	-	59.0	-	-	62.9	72.7
Average Parcel Size (Ha) Total	-	168.6	-	-	65.7	-	-	72.7	80.1

Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

\*\* Based on properties that include an area of class 1-3 soils or general, customary or freehold Maori owned land. This may cover all or only a portion of tagged properties. \*\*\* Based on properties that include an area of the Kerikeri Irrigation Region or defined aquifers. This may cover all or only a portion of the tagged properties. Also includes properties that contain one or more existing registered bores somewhere on the property.

## 3.10 Apiculture

### 3.10.1 Industry Overview

In 2016 the National Beekeepers Association (NBA) was restructured and renamed Apiculture New Zealand (ApiNZ), which included a rebranding to reflect its broad membership, namely NZ beekeepers, NZ honey packers and exporters, the Bee Products Standards Council, and industry-related supply companies. ApiNZ is the peak industry body for apiculture in New Zealand, representing all sectors of the industry. Their aims are to create a positive industry profile, business environment and opportunities for its members, as well as advocating on behalf of their members on a range of issues<sup>138</sup>.

One of the things that makes the New Zealand apicultural sector unique, is that New Zealand's most important monofloral honey, mānuka, commands significant price premiums due to its medicinal use<sup>139</sup>. A trans-Tasman fight broke out in 2017 over which country has the right to claim mānuka honey as its own, when the UK trademark registry granted NZ a certification mark for the term 'mānuka honey'. Australian beekeepers have challenged the ruling.

New Zealand's mānuka honey export industry is worth hundreds of millions of dollars a year<sup>140</sup>. Apiculture contributes an estimated \$5.1 billion per year to New Zealand's economy, providing pollination services, exports of live bees, honey and honeydew, and other bee products including beeswax, propolis and venom. In the 2016/17 season, the annual honey yield (all types) amounted to around 14,855 tonnes (compared to a 5-year average of 17,977 tonnes). The lower than average yield was attributed to the poor weather conditions over the season. More than half (57%) of this is exported, at a value of approximately \$329 million per year, up 5% from the previous season despite the lower volumes. The honey yield for the Far North District was estimated by M.E to be approximately 1,050 tonnes in the 2016/17 season.

Although the New Zealand bee industry is not regulated as such, all New Zealand beekeepers are required by law to register the number and location of their hives. A national Apiary database is maintained by the government-owned commercial companyASUREQuality. This database shows that despite increasing challenges, the apiculture industry in New Zealand continues to thrive. The number of registered beekeepers continues its upward trajectory, with 1,079 beekeeping enterprises added to the register in the 2016/17 reporting year. As of June 2017, a total of 7,814 beekeepers were registered (5,509 North Island; 2,305 South Island), owning around 795,578<sup>141</sup> hives in over 49,800 apiaries across the country.

Roughly 475 beekeepers are registered in the Far North District, owning some 77,570 hives in over 4,440 apiaries. Hives are however relatively easy to relocate, and this count of registered hives may not accurately represent the number of hives situated in the Far North at any one time (particularly over summer during the mānuka flowering season). Beekeeping enterprises registered in the Far North District account for about 9% of the total number of beekeepers on the North Island, and about 6% of the total beekeeping enterprises across the country.

Over the past 4 years, the industry has seen significant growth (12%-19% per annum) in the number of hives registered across NZ. Close to 7,600 additional apiaries were registered over the 2016/17 season to accommodate 111,532 additional hives. Most of these new apiaries are in the North Island, due to the distribution of mānuka forage.

#### Issues/Challenges

In view of such strong growth, apiary density is becoming a very real concern for beekeepers, landowners and other stakeholders. While there is no definitive data available on actual beehive stocking rates, it is possible that **overstocking**, along with the **inclement weather** and other factors, contributed to the lowest honey yield per hive for the North Island in the past decade.

<sup>138</sup> Apiculture New Zealand website - <http://apinz.org.nz/about/> (Retrieved on 14 March 2018).

<sup>139</sup> Ministry for Primary Industries. (2016). Apiculture: 2016 apiculture monitoring programme. Retrieved from <http://www.mpi.govt.nz>

<sup>140</sup> <https://www.theguardian.com/world/2018/jan/12/australia-and-new-zealand-at-loggerheads-over-manuka-honey-trademark>

<sup>141</sup> Source: MPI. Apiculture New Zealand (ApiNZ) puts the total registered hives at 811,357 in June 2017, with 7,836 registered beekeepers.

Northland and Coromandel had particularly poor honey crops in 2016/17. Difficult spring weather coupled with significant rainfall over the mānuka flowering period resulted in some hive yields dipping below 10 kilograms in these regions. On top of this, some beekeepers also reported high overwintering losses, thought to be due to late varroa treatment the previous autumn.

For those investing in their own manuka plantations, there is little or no ability to ensure that the resource is utilised exclusively by their own bees unless that plantation is sufficiently isolated and not close (i.e. beyond 5km) to other property boundaries where **competing hives** could be located. Significant competition could impact on expected yields (returns) while also generating income for other hive owners. These are likely to be relevant concerns for those considering investing in manuka plantations on private land.

**Bee health and hive theft** remain as the most significant issues that concern the sector. Organised crime groups are reported to be involved in the theft of hives and more recently, bees. It is said to be a problem New Zealand wide, but is particularly prevalent in the Bay of Plenty and Northland. In a recent case, a 46-year old Western Bay of Plenty man was arrested after the police recovered stolen beehives from a property in the Far North<sup>142</sup>. This is not an isolated incident, and the sector fears that the occurrence of such incidents are increasing, as the value of particularly mānuka honey, increases. According to results from the second New Zealand Colony Loss Survey, capturing a third of registered beekeepers and 40 percent of registered hives, the estimated colony losses over winter 2016 were 9.8%, statistically the same as the previous year (winter 2015) at 10.7%.

The Department of Conservation (DOC) has seen an unprecedented demand from beekeepers wanting to **place hives on public conservation land (PCL)** in recent times<sup>143</sup>. Demand is said to exceed supply, particularly for mānuka honey production. The total number of hives on PCL was estimated at 14,850, in July 2015. DOC regulates beekeeping activities on PCL within a concessions framework.

### 3.10.2 Key Statistics

The Statistics New Zealand Business Directory provides detail on business counts and employment in the beekeeping industry – that is, GST registered businesses for which beekeeping is their primary activity. This does not capture businesses for which beekeeping is a secondary activity (or not-for-profit/hobby beekeeping or those very small operations which are not registered for GST).

Table 30 compares activity in the Far North District with the rest of the region and New Zealand overall. It shows that while the Far North accounts for 8% of national businesses<sup>144</sup> and 5% of national employment in the industry, it has accounted for an above average share of growth since 2000. Businesses have increased by 41 (214%) and employment has increased by 75 (189%) during that period. This contrasts with growth in the rest of Northland Region of 99% and 73% respectively, and total national growth of 101% and 142% respectively.

<sup>142</sup> <http://www.police.govt.nz/news/release/beehives-recovered-following-search-warrant-far-north>

<sup>143</sup> Catherine Beard for the Department of Conservation. Honeybees (*Apis mellifera*) on public conservation lands (2015).

<sup>144</sup> This is similar to the share of beekeeping operators based in Far North District registered withASUREQuality (8% of the national total).



Table 30: Employment and Business Growth 2000-2016 – Beekeeping Industry

Area	Businesses											Share 2016	Growth 2006-16	Share of Growth 2006-16
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			
Far North District	19	22	22	22	25	32	33	31	35	35	60	8%	41	10%
Rest of Northland Region	13	14	11	13	12	14	14	16	17	20	26	3%	13	3%
Total Northland Region	32	36	33	35	37	46	47	47	52	55	86	11%	54	14%
Rest of New Zealand	360	356	371	398	410	430	446	463	493	599	701	89%	341	86%
Total New Zealand	392	392	404	433	447	476	493	510	545	654	786	100%	394	100%

Area	Employment (modified employee count)											Share 2016	Growth 2006-16	Share of Growth 2006-16
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016			
Far North District	40	54	60	53	61	81	64	100	94	92	115	5%	75	6%
Rest of Northland Region	33	35	29	36	34	27	27	35	35	51	58	3%	24	2%
Total Northland Region	73	88	89	89	96	108	91	135	129	143	173	8%	99	8%
Rest of New Zealand	850	883	893	967	1,013	1,005	1,082	1,219	1,428	1,711	2,066	92%	1,216	92%
Total New Zealand	923	971	982	1,056	1,109	1,113	1,172	1,354	1,557	1,854	2,238	100%	1,315	100%

Source: Statistics New Zealand, Business Directory, M.E

Between 2015 and 2016, the beekeeping industry in the Far North grew by a significant 70% for businesses and 26% for employment, while nationally the growth in that year was just 20% and 21% respectively.

Taking into account the wider apiculture sector within the Far North (i.e. not limited to those businesses for which it is their primary activity), M.E estimates that total gross output in 2016 was close to \$36.6m. This is expected to have contributed \$13.1m of value added to the district economy.

#### Spatial Analysis

Unlike the other primary production sectors, M.E is unable to present a spatial analysis of the apiculture sector by zone or other physical resource area. This is because beekeeping does not utilise ‘land’ in the same way as pastoral farming, horticulture or forestry. As such, it cannot be easily tied to specific land parcels in the district. A number of factors are relevant:

- Hives are a point source activity (a bit like oil wells). M.E was unable to source map-based data of hives in the Far North.
- Hives do not necessarily stay in the same place but are moved as needed to maximise foraging potential.
- Hive owners may not own the land that they put their hives on. They may have agreement to place their hives on private or public (conservation) land.
- Hive colonies can draw from a wide range (up to a 5km radius) and so are not constrained to the land parcel on which the hive is located.
- This implies that a bee keeping enterprise cannot necessarily be linked to the location of its hives.

While a lot of manuka honey is likely to draw from naturally occurring stands of manuka, it is likely that there will be a growing amount of purpose-planted manuka plantations in the future as more and more land owners look to enter the honey industry or derive further income from their rural land.

For example, Manuka Farming New Zealand (the commercial arm of Manuka Research Partnership Limited) was established in 2001 to help move the apiculture industry from “wild harvest to science-based farming of manuka plantations to increase the yield and reliability of supply”. They supply four varieties of manuka seedlings and growth in seedling sales has been exponential – 305,000 seedlings sold in 2015, 1 million sold in 2016 and they are releasing 2 million for planting in 2018. Their minimum order is 5,000 seedlings. The company suggests that<sup>145</sup>:

- 20ha of land was considered the minimum size for a viable commercial plantation (this equates to approximately 22,000 trees at a suggested density of 1,100 plants/ha).
- Hill country is ideally suited to growing Manuka, with the added benefit of erosion control.

<sup>145</sup> <https://www.stuff.co.nz/business/farming/90208028/millions-of-manuka-seedlings-released-to-boost-honey-industry>

- The commercial return on the plantation is likely to take 10 years from planting time.
- The cost of the seedlings is approximately \$825/ha (based on a unit cost of 75c).
- Gross output per hectare from such plantations could be as high as \$4,300/ha (this equates to annual turnover of \$86,000 from a 20ha block).
- Funding from MPI is available (Afforestation Grant Scheme) which could significantly contribute to planting and labour costs.

M.E has not located any data that identifies the extent of existing manuka plantations in the Far North. M.E suspects that it is unlikely that an increase in manuka plantations will stimulate a notable pattern of rural subdivision activity. Although these plantations may be fenced to keep stock out, it is more likely that they will occur on existing rural properties on the least productive land areas, without the need to generate specific allotments.

## 4 ECONOMIC VIABILITY OF PRIMARY PRODUCTION

### 4.1 Economic Viability and Parcel Size

#### 4.1.1 Estimated Distribution of Primary Production Property Sizes

Section 3 of the report has provided detail on the average parcel size for each of the primary production sectors (including average sizes in specific locations such as areas of highly versatile soils and aquifers). This section takes the same underlying data and displays the full range of sizes around those averages to help understand both the variation that exists across the rural property estate and also to see if any trends exist between land area (ha) and estimated gross output (determined as a function of employment allocated to each parcel).

Unlike in Section 3, this analysis aggregates parcels tagged to each sector to rateable properties based on valuation numbers. This recognises that farms or businesses can comprise multiple freehold parcels of land which may, or may not, be adjacent to each other. The income from a farm or business is derived from the sum of all owned or utilised land parcels (some could be leased), hence it was considered more appropriate to aggregate parcels tagged to the same sector as an indicator of economic operations.

Key limitations to this approach include (but are not limited to):

- Under each valuation number, there may be parcels tagged to other sectors/land uses – hence the *total* property may not be reflected in the aggregated areas reported below.
- Rural businesses may span several properties (i.e. multiple rateable properties) – this is not accounted for.
- Parcels leased but not owned are not accounted for.
- There is no presumption made about what sized land area is economic or viable. This is discussed further below.
- The limitations associated with the allocation of employment to parcels in each primary production sector and application of a single average ratio of gross output per employee applies here also.

Each graph below is a scatter plot of combined property area (ha – in so far as each land use sector is concerned) and the combined estimated gross output (2016) generated from that property area (in either thousands or millions of dollars). In some cases, large outliers (either much larger properties or much higher turnovers, or both) are not displayed to focus the graph on the main body of data points. Included on each graph is a line showing the median property size for that sector (green line), and the average property size (red line).

Generally, there is no clear relationship between minimum lot sizes in the rural environment zones (subdivision rules) and the rural property sizes present in the district. That is, rural productive properties generally far exceed the minimums (with the exception of horticulture) but may be made up of several parcels (that may or may not have a relationship with the minimum subdivision rules).

Figure 34 shows that the median sized horticultural and market garden property is 7ha and the average across all unique rateable properties in this sector is 17ha<sup>146</sup>. Gross output stays generally low for properties less than 4ha in size, but properties 4ha or greater start to show greater variability in gross output, and greater potential for higher output. Some of the highest outputs are for properties at or above 11ha. However, there is no clear correlation between size and gross output of horticultural properties that can be discerned.

Figure 35 shows that the median sized dairy farming property is 94ha and the average across all unique rateable properties in this sector is 126ha<sup>147</sup>. Gross output stays generally low for properties less than 75ha in size, but properties 75ha or greater start to show greater variability in gross output, and greater potential for higher output. Some of the highest outputs are for properties at or above the average of 126ha. There is some evidence of a

<sup>146</sup> This compares to the average size of horticultural land ‘parcels’ across the rural environment of 10.6ha (section 3.5.2). This suggests that many horticultural properties comprise of more than one land parcel.

<sup>147</sup> This compares to the average size of dairy farming ‘parcels’ across the rural environment of 28.6ha (section 3.7.2). This shows that dairy properties comprise of more than one land parcel.

correlation between property size and output (within a clearer range) and this is not unexpected given that the dairy sector is one land use type, compared to the variability of land uses within the horticultural sector (for example)

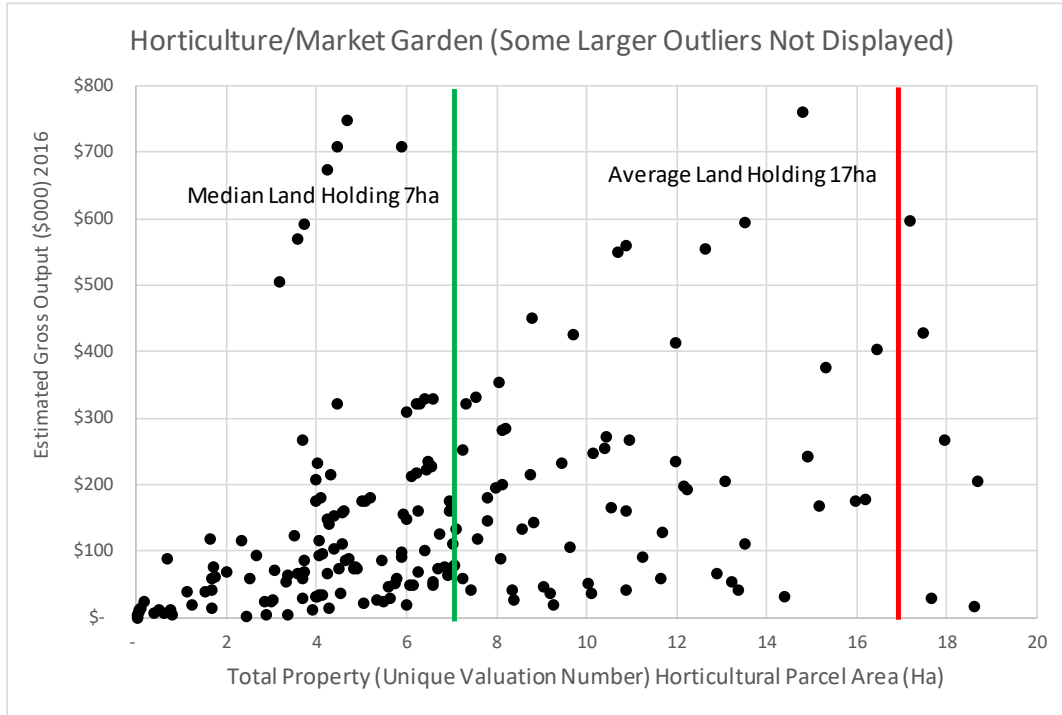


Figure 34: Horticultural & Market Garden Property Size and Estimated Gross Output Distribution (2016)

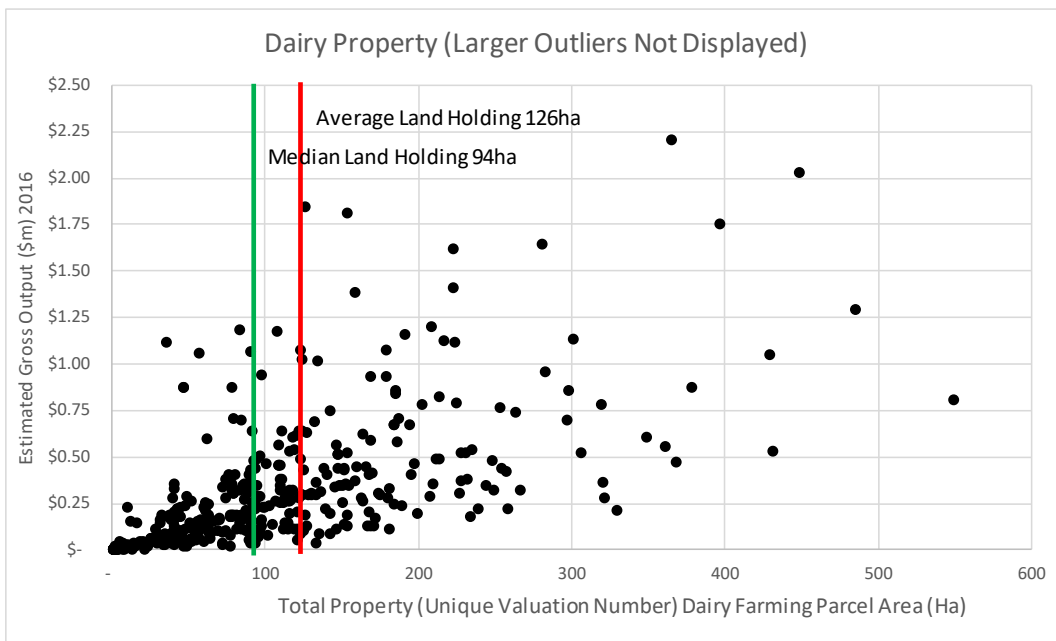


Figure 35: Dairy Farming Property Size and Estimated Gross Output Distribution (2016)

Figure 36 shows that the median sized sheep, beef and grain farming property is 52ha and the average across all unique rateable properties in this sector is 113ha<sup>148</sup>. Gross output is highly varied – there is no clear trend evident in terms of property size-output relationships.

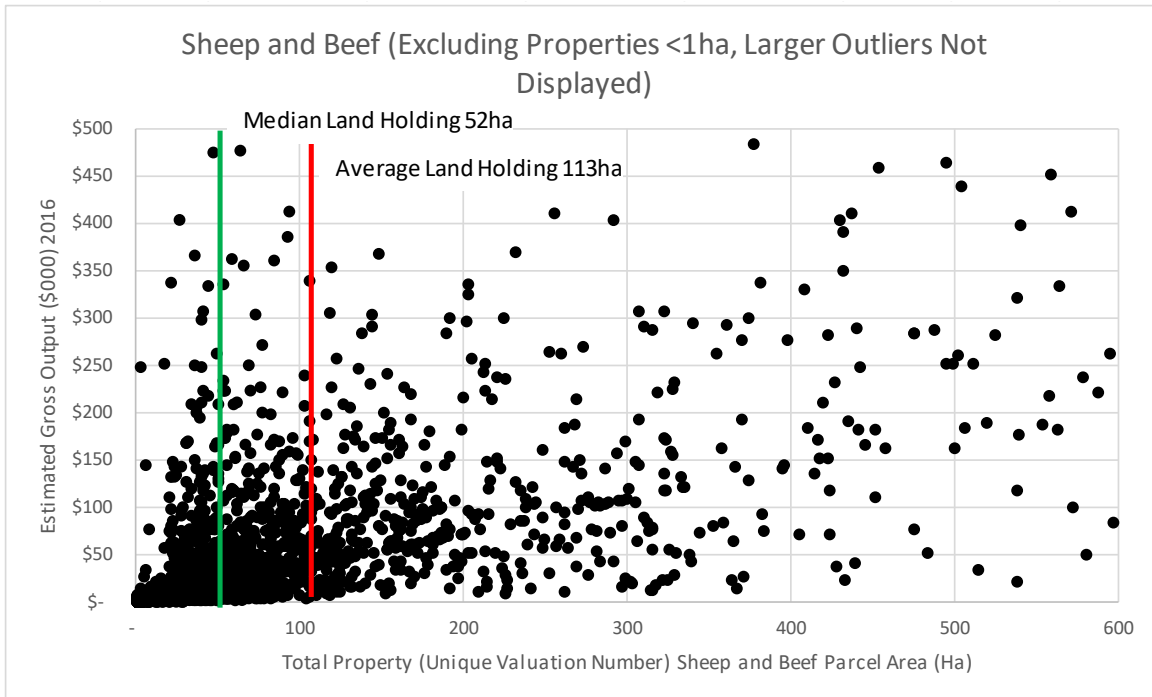


Figure 36: Sheep, Beef and Grain Property Size and Estimated Gross Output Distribution (2016)

Figure 37 shows that the median sized other livestock property is 43ha and the average across all unique rateable properties in this sector is 73ha<sup>149</sup>. Gross output is highly varied – there is no clear trend evident in terms of size-output correlations. This is likely driven by the vast array of property types in this sector (i.e. horses, deer, pigs, chickens etc).

Figure 38 shows that the median sized forestry and logging property is 37ha (meaning there are a lot of relatively small forestry blocks) and the average across all unique rateable properties in this sector is 168ha<sup>150</sup>. There are however some very large forestry land holdings in the Far North District – most likely owned by Maori or large corporations in the forestry sector. Care is needed in interpreting trends associated with estimated gross output for this sector, as the linear relationship is simply a function of the pro-rata approach of allocating employment and gross output on a per-hectare basis. In reality, M.E would expect to see some variability across different parcels to reflect natural variations in climate, soils, topography and forestry management as well as any changes in forest species.

<sup>148</sup> Calculated exclusive of properties that had an area of less than 1ha. This compares to the average size of sheep and beef farming ‘parcels’ across the rural environment of 38.9ha (section 3.6.2). This shows that sheep and beef properties comprise of more than one land parcel.

<sup>149</sup> This compares to the average size of other livestock farming ‘parcels’ across the rural environment of 31.7ha (section 3.8.2). This suggests that most other livestock properties comprise of more than one land parcel.

<sup>150</sup> This compares to the average size of forestry ‘parcels’ across the rural environment of 72.7ha (section 3.9.2). This shows that forestry properties comprise of more than one land parcel.

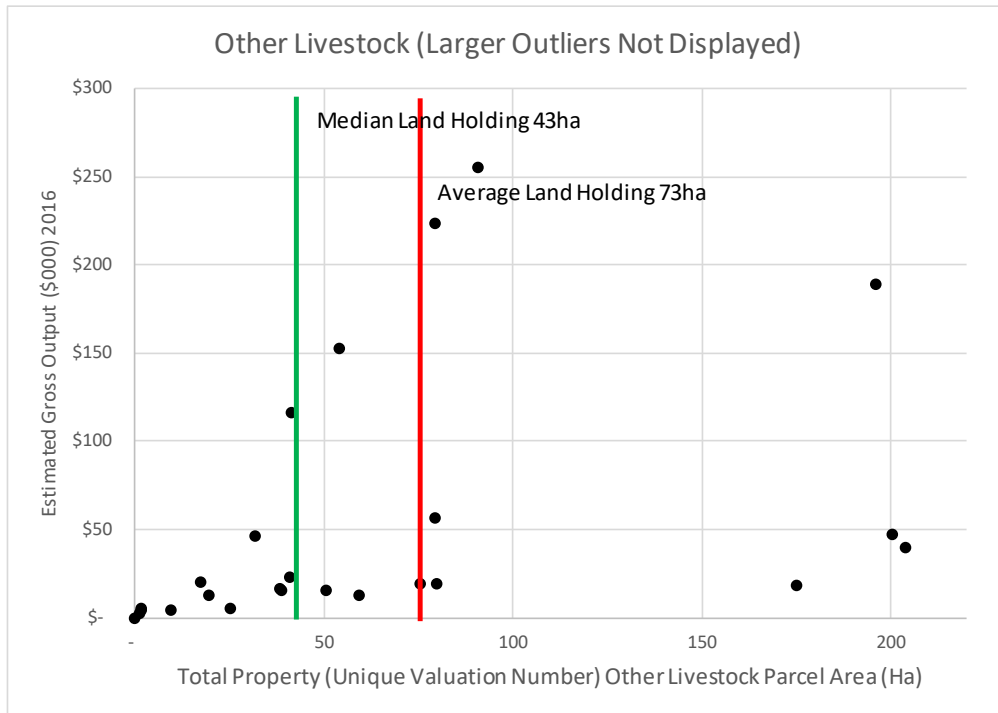


Figure 37: Other Livestock (Excluding Apiary) Property Size and Estimated Gross Output Distribution (2016)

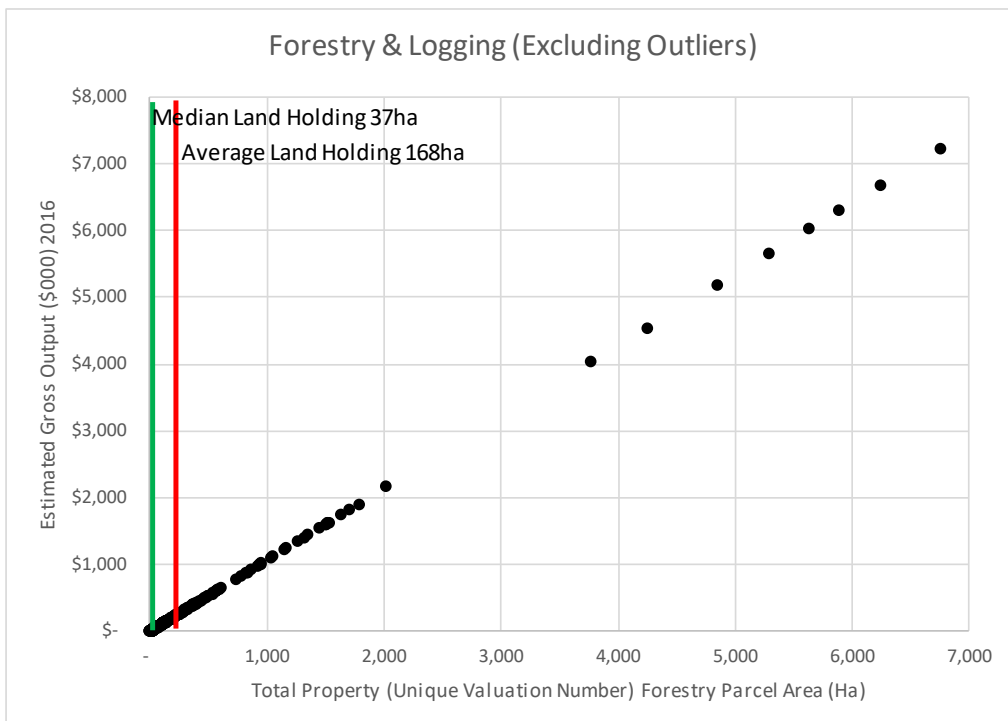


Figure 38: Forestry Property Size and Estimated Gross Output Distribution (2016)

#### 4.1.2 Understanding Economic Viability in the Primary Production Sector

In order to properly inform the District Plan review and to enable Council to give effect to the higher order policy framework under the Northland Regional Policy Statement 2016, an understanding of the economic viability of primary production is required. This is more than just an assessment of total economic output, it is important to understand at the individual farm level how changes in the plan may impact on farm viability. The key issue Council is seeking to understand is how small individual farms can become, whilst still remaining viable. This is especially important to understand around the main centres where pressure is being brought to bear on production land to develop into residential land uses. This may happen through a number of mechanisms including entire farms or orchards being sold to developers for redevelopment, or (as is potentially more common), a farmer looking to subdivide off a portion of their orchard or farm to develop for residential uses and leaving a balance lot to remain as orchard or farm.

This becomes an issue if the balance lot is no longer a viable orchard/farming unit size. While it may be viable for the current farmer – due to ownership and debt levels, it may not be viable for any other farmer in future looking to purchase the balance unit as a productive unit (and thereby taking on debt to do so), particularly if they do not already own other parcels to farm in combination with the new lot. If the balance lot is too small, there will be more pressure brought to bear to change its land use to residential and result in far more reduction of productive capital than originally intended. This will have the effect of reducing the productive base of the District (as discussed in Section 4.2 below).

The focus of this section is to assess the likely minimum viable farm size for a range of primary productive land uses.

#### 4.1.3 Approach and Limitations

All farms are different. Any given farm may or may not be carrying debt, may or may not be applying the latest in farm management practices and technology and therefore may or may not be viable. In addition, viability limits are likely to differ between households and therefore across farms. A nearly retired couple on an orchard may be able to remain viable with a final return to the household of \$50,000, but a young family may not. In order to provide guidance as to viability, average levels of production, return and costs of production have been sourced from MPI’s farm monitoring reports, Beef and Lamb New Zealand and Statistics New Zealand’s Agricultural Production Statistics at the regional level.

Average levels of production per Ha have been extracted along with either pay out information (for Dairy) or price information for Kiwifruit and other horticultural products. This is then combined with Farm expense information either on a per kg or per hectare basis to generate EBITD<sup>151</sup> per hectare totals. Estimates of Tax are then removed to produce a post-tax total return per hectare for each farm type. Note that the returns make allowance for reinvestment in the farm (where possible) (Figure 39).

Farm Type	Productivity (measure in Description)	Post tax returns \$/Ha
Dairy - kg MS/ha	721	\$ 970
Sheep and Beef - stock units/ha	6.14	\$ 190
Other Livestock - stock units/Ha	10.3	\$ 360
Arable - Maize tonnes/ha	10.9	\$ 650
Kiwifruit - trays /ha	9,140	\$ 6,150
Viticulture - tonnes/ha	11.6	\$ 3,960

Figure 39: Base Productivity and Post Tax Returns/Ha – Averages Applied

Note also, that these averages are indicative and there is likely to be significant variation across both the District and within each farm type. Note also, that returns vary from year to year. The numbers presented here are averages of the past 5 years (where possible) or the past 2 years if that is all that is available.

<sup>151</sup> Earnings before interest, tax and depreciation.

Once the average returns to the farmer per hectare have been identified, it is possible to determine the amount of productive land required for returns of different amounts. From here Council can make an assessment as to the degree to which land can be sub-divided off productive properties while still leaving a residual productive unit.

#### 4.1.4 Results and Discussion

Table 31 shows the results of the analysis. The table identifies the productive property area that would be required to achieve a range of annual household returns (per annum). Care is needed in applying the averages for other livestock farming as the results are based largely on deer farming operations and may not be applicable to the wide variety of livestock farming that takes place in this sector in the Far North. Similarly, indicative kiwifruit orchard sizes may not apply directly to citrus or avocado orchards for example. The results are indicative only and based on a number of assumptions. Last, 'annual household return' is not the same as gross output, so direct comparisons with the section 4.1.1 above are not appropriate.

In summary, in order to get a return of between \$45,000 and \$100,000 per annum (being the lower and upper limit tested):

- Kiwifruit orchards would need to have a productive area of between 7ha and 16ha respectively. These align closely with the current median sized horticultural property (7ha) and average sized horticultural property (17ha) (Figure 34).
- Vineyards would need to have a productive area of between 11ha and 25ha respectively.
- Dairy farming properties would need to have a productive area of between 46ha and 103ha respectively. The upper value is not dissimilar to the current median and average dairy farm property size (94ha and 126ha respectively) (Figure 35).

Table 31: Estimated Annual Return (\$) by Primary Production Property Size (ha)

Annual Household Return (\$)	Required Productive Property Area (ha)					
	Sheep, Beef and Grain Farming		Other Livestock Farming (Deer Focussed)	Dairy Farming	Horticulture	
	Sheep and Beef	Arable Crops (Grain Focussed)			Kiwifruit	Viticulture
\$ 45,000	242	70	126	46	7	11
\$ 50,000	269	77	140	52	8	13
\$ 55,000	296	85	154	57	9	14
\$ 60,000	323	93	168	62	10	15
\$ 65,000	350	101	182	67	11	16
\$ 70,000	377	108	196	72	11	18
\$ 75,000	404	116	210	77	12	19
\$ 80,000	431	124	224	83	13	20
\$ 85,000	458	132	238	88	14	21
\$ 90,000	484	139	252	93	15	23
\$ 95,000	511	147	266	98	15	24
\$ 100,000	538	155	280	103	16	25

\* Source: M.E (based on available industry data and M.E assumptions)

- Sheep and beef properties would need to have a productive area of between 242ha and 538ha respectively. This is considerable larger than the estimated median and average sheep and beef property sizes currently in the district (Figure 36). This implies that the majority of the current sheep and beef properties may be making even smaller household returns (i.e. less than \$45,000 per annum). Other income sources may be relevant.



- Arable crop/grain farming properties would need to have a productive area of between 70ha and 155ha respectively.
- Other livestock farms (but particularly deer farming properties) would need a productive area of between 126ha and 280ha.

These viable property sizes are not constrained to single freehold parcels (and could be an aggregation of several parcels). However, they provide useful context when evaluating the viability of minimum lot sizes. A 20ha lot size in the Rural Production and General Coastal Zone is not expected to sustain an economically viable farming property (unless there are other sources of income not captured). A 12ha lot size could sustain an economic kiwifruit orchard based on the assumptions applied (or a low returning vineyard) but not an economic farm unit. A 4ha lot size is expected to generate an even lower return than tested for kiwifruit growing and is highly unviable for other farming activities seeking a return.

## 4.2 Modelling the Economic Impact of Changing Land Use Scenarios

Altering land uses, moving from productive activities to urban residential activities, can have significant effects and impacts on the economies of small towns and the district overall. Converting productive land to residential is nearly always a permanent change. This means that the land will never again be able to produce agricultural output so is lost to the sector. Differences in soil types and nature of the land lead to different levels of impact. Highly versatile and productive soils are rare – covering approximately 9% of Northland’s total area and 10% of Far North District’s total land area and generally sustain the highest levels of value added or GDP contribution from primary production to the economy. The loss of these soils will obviously have a greater impact in the short and long term than the consumption of less productive land.

Approximately 72% of horticultural production in the Far North District rural environment occurs on highly versatile soils (by area), equating to 86% of estimated horticultural gross output<sup>152</sup>, compared with 58% of dairy production (61% of estimated gross output) and 42% of sheep and beef production (50% of estimated gross output). This means loss of those soils to residential uses impacts the horticultural sector much harder than other sectors, as the alternative soil types are less suitable for horticultural production (although plentiful water supply can help counter that).

It is also important to understand that agricultural production generates significant downstream effects as well as the traditional upstream impacts (usually the ones captured in an Economic Impact Assessment). For example, a Kiwifruit orchard purchases goods and services in order to ensure it can produce fruit, but the fruit it produces also drives significant downstream businesses – such as kiwifruit-based product manufacturing – confectionary, beverages, beauty products etc. These effects also need to be considered when assessing the potential impacts of highly versatile soil loss and productive land generally.

### 4.2.1 Residential Land Consumption

Part of the assessment process is to establish an appropriate counterfactual against which the effects of converting primary production land (but particularly highly versatile soils) to residential use can be measured. A key question to be answered is this;

*“In the absence of development opportunities on highly versatile soils around Far North District townships, would household growth still occur?”*

The answer to this question has the major bearing on the assessment outcomes. If the answer to this question is yes, then Council has it within its power to achieve the benefits that arise from population growth around its major townships – higher rates take, more ability to provide sustainable services, retail and service sustainability and therefore community focal points become stronger. In addition, the minor (short term) economic benefits that arise from the construction effect will still occur.

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<sup>152</sup> Refer analysis contained in Section 3.5.

If, however, the answer to this question is no, that population and household growth will not otherwise occur, that it will only occur if farmers and orchardists on highly versatile soils provide a portion of these soils for conversion, then the economic assessment outcomes are very different.

The approach to comparing district value added with and without residential development occupying highly versatile soils and primary production land generally is outlined in the next section with results in the following section.

#### 4.2.2 Approach

The economic impact assessment is based on understanding the productive capacity of different land uses in relation to highly versatile and other soils and aquifer/irrigation resources and comparing on a per hectare basis the contribution to value added generated by horticultural production, dairy production and other types of farming. These differences are key because there is no combination of rural productive activities that generate more contribution to value added than urban land uses.

It is not valid to simply compare the value added generated by rural production with that generated by the construction and maintenance of housing stock on that land, because dwellings accommodate households who are engaged in work, business ownership, and spend money and invest every year. A direct comparison of *all* this activity (if able to be captured) with rural production will show that the urban land uses generate much higher contributions to value added on a per hectare basis, with the exception of some horticultural growing areas relative to certain rural development densities.

The most important measure is to compare the alternatives to accommodate residential activity. By comparing the principal alternatives – loss of highly versatile soils, loss of ordinary soils or the loss of horticultural activity versus the loss of dairy or other forms of farming activity, provides more realistic alternatives for Council.

To do this a number of assumptions need to be made;

- Agricultural output can be measured based on levels of agricultural employment by type in different locations.
- Differences in productivity between soil types is reflected in different levels of employment/hectare within each activity type by location.
- Productivity in terms of contribution to value added is constant across each location and soil type within each activity type.
- Contribution to value added is limited to contribution to Far North District value added.

By applying these assumptions to land on highly versatile soils in and outside of any aquifer area it is possible to quantify the differences in contribution to value added from each land use in each location. This has been discussed in section 3 of this report.

Residential land use contribution to value added is made up from the building of houses and their upkeep as well as the operation of the households who reside within the homes. To quantify this, other assumptions have been made, including;

- Application of the minimum lot sizes under the different operative zone rules in the rural environment that result in rural residential, rural lifestyle and papakainga developments.
- Assuming that approximately 30% of land converted to lots less than 1ha in size is lost to roading, footpaths and open space contributions. i.e. applies to rural residential and papakainga type subdivisions only but does not apply to rural lifestyle type subdivisions.
- Under each development type, different average house sizes and qualities have been assumed based on location and intensity of development. The average size applied to rural residential dwellings on 4,000sqm or 2,000sqm lots is 175sqm and the average house size for rural lifestyle dwellings on 4ha or 2ha lots is 200sqm.
- Construction costs draw from National Policy Statement – Urban Development Capacity Work M.E developed for Hamilton City and Future Proof Partners (Waikato and Waipa Districts). These may not reflect exactly the build costs in Far North District, however, they will be close approximations and are based on 2017 data from Core Logic.
- Papakainga housing is expected to be smaller and lower cost to build than other forms (on average 90sqm dwellings and \$1,600/sqm).

- Site preparation costs are based on a percentage of total build costs and vary between 8% and 15% depending on the quality of the build.
- Property maintenance costs are based on the Household Economic Survey. This captures average weekly household spend on property maintenance goods and services. This has been multiplied by 52 weeks in the year and the average number of dwellings that will fit on a hectare under each development scenario.
- One household per dwelling.
- Land converted to residential use is assumed to be bare land and not include any existing dwellings.
- All other household expenditure – other than costs associated with mortgage repayments, investments and paying back other loans and insurances, totals \$55,630 for an average New Zealand household. While the average in the Far North is likely to be lower, it is important to understand that the households that are seeking to locate on the rural lifestyle or rural residential land will be wealthier than the average Far North household – they are likely to be wealthier than the average New Zealand household). This is discussed further in section 6.1 of this report. However, in order to provide a conservative assessment, the national average has been assumed.
- For the purposes of this comparison, it is assumed that contribution to value added over 50 years reflects the forever loss of productive capacity on these soils.
- A discount rate of 3% has been assessed to align broadly with economic growth and price change.

#### 4.2.3 Results

The first step is to establish the value of production on a per hectare basis for horticultural production by different soil types and water resource locations. Total employment per hectare is multiplied by total horticultural contribution to district value added ratios (refer section 3 results) for each of the next 50 years (assuming no change in productivity over that time). These totals are discounted back to current dollar terms to provide a Net Present Value of production per hectare for each combination of soil and aquifer types (at a 3% discount rate).

Two estimates are provided, the first captures the direct effects and all effects arising from backward linkages (suppliers to the horticultural sector). The second adds in the forward linkages. These arise if an industry drives further production prior to the products reaching the final consumer. This is especially important for the primary sector, where the outputs are often used to manufacture other higher value products.

These ratios (\$/ha) can then be compared with developing the same hectare of land for residential purposes. This has been done in 2 ways. First, only construction and ongoing property maintenance contribution to value added has been included, second all household expenditure (except finance and insurance spend) has been included over the next 50 years. M.E consider the second approach to be more appropriate. This provides an accurate basis for comparison between the alternative land uses.

Note that the loss of highly versatile soils is forever as once established as urbanised land it will not become productive again.

Table 32: Horticultural & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years

Sector Productivity Relative to Versatile Soils and/or Any Aquifer (VA\$/Ha)	Average / Ha		Including Forward Linkages	
	Total excl. forward linkages	Include HHLD Spend	Total including forward linkages	Include HHLD Spend
<i>VA/ha on Versatile Soils &amp; in any Aquifer</i>	\$ 445,800	\$ 445,800	\$ 1,084,700	\$ 1,084,700
<i>VA/ha on Other Soils &amp; in any Aquifer</i>	\$ 485,200	\$ 485,200	\$ 1,180,500	\$ 1,180,500
<i>VA/ha on Versatile Soils &amp; out of any Aquifer</i>	\$ 256,500	\$ 256,500	\$ 624,100	\$ 624,100
<i>VA/ha on Other Soils &amp; out of any Aquifer</i>	\$ 42,700	\$ 42,700	\$ 103,800	\$ 103,800
<i>Average VA\$/ha</i>	\$ 247,000	\$ 247,000	\$ 601,000	\$ 601,000
Residential Land Use Productivity (VA \$/Ha)	Const. & Maint. only	Include HHLD Spend	Const. & Maint. only	Include HHLD Spend
<i>Rural Residential Average (4,000sqm average lot)</i>	\$ 184,000	\$ 888,300	\$ 184,000	\$ 888,300
<i>Rural Residential Average (2,000sqm average lot)</i>	\$ 319,100	\$ 1,727,700	\$ 319,100	\$ 1,727,700
<i>Rural Lifestyle Average (4ha average lot)</i>	\$ 31,400	\$ 132,000	\$ 31,400	\$ 132,000
<i>Rural Lifestyle Average (2ha average lot)</i>	\$ 62,000	\$ 263,200	\$ 62,000	\$ 263,200
<i>Papakaianga Average (3,000sqm average lot)</i>	\$ 112,200	\$ 1,051,300	\$ 112,200	\$ 1,051,300

This assessment tells us that horticultural production on highly versatile soils in any aquifer area (over 50 years) generates a total of \$445,800/ha in NPV<sub>3%</sub> for the Far North District economy. If forward linkages are added, this figure rises to \$1,084,700/ha in NPV<sub>3%</sub> terms (Table 32). These figures can then be compared with the contribution to value added from developing 1ha of land for residential purposes (under 5 different density scenarios currently achievable in the rural environment). This results in contributions of \$184,000/ha-\$319,100/ha for the construction and maintenance over the next 50 years (NPV<sub>3%</sub>) for rural residential type development (average lot size of 4,000sqm and 2,000sqm respectively), \$31,400/ha-\$62,000/ha for rural lifestyle type development (average lot of 4ha and 2ha respectively) (due to lower densities) and \$112,200/ha for papakainga housing (average lot size of 3,000sqm adopted)<sup>153</sup>. Household contributions rise if household expenditure is also included to \$888,300/ha-\$1,727,700/ha over 50 years as household spending flows through the district economy for rural residential scenarios, \$132,000/ha-\$263,200/ha for rural lifestyle and over \$1,051,300/ha for papakainga housing based on higher densities and therefore more families spending money/ha.

It is important to note that even including all household expenditure, does not see residential development's contribution to District value added exceed the horticultural production on any type of soils inside an aquifer area when density is less than 2,000sqm per lot (once the forward linkages are included they rise to between \$1,084,700 and \$1,180,500 VA/ha). Only at a density of 2,000sqm (or higher) is the residential contribution to District value added higher than aquifer-based horticulture on a per ha basis according to the averages applied. However, there are other aspects of residential and urban development that are not included such as the establishment of businesses by residents and the value added that they might generate for Far North District that may bring other lower residential densities above the horticulture contribution over a 50-year period.

Table 33 to Table 36 present the same comparisons with other primary productive land use types. Note that for all these options residential land uses of all modelled residential densities generate significantly more contribution to District value added than primary production when household spend is included.

**Table 33: Sheep and Beef & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years**

Sector Productivity Relative to Versatile Soils and/or Any Aquifer (VA\$/Ha)		Average / Ha		Including Forward Linkages	
		Total Excluding any Flow on effects	Include HHLD Spend	Total including forward linkages	Versus all HHLD Spend
	<i>VA/ha on Versatile Soils &amp; in any Aquifer</i>	\$ 15,900	\$ 15,900	\$ 69,000	\$ 69,000
	<i>VA/ha on Other Soils &amp; in any Aquifer</i>	\$ 8,400	\$ 8,400	\$ 36,400	\$ 36,400
	<i>VA/ha on Versatile Soils &amp; out of any Aquifer</i>	\$ 8,000	\$ 8,000	\$ 34,600	\$ 34,600
	<i>VA/ha on Other Soils &amp; out of any Aquifer</i>	\$ 7,300	\$ 7,300	\$ 31,700	\$ 31,700
	<i>Average VA\$/ha</i>	\$ 8,500	\$ 8,500	\$ 36,600	\$ 36,600
Residential Land Use Productivity (VA \$/Ha)		Const. & Maint. only	Include HHLD Spend	Const. & Maint. only	Include HHLD Spend
	<i>Rural Residential Average (4,000sqm average lot)</i>	\$ 184,000	\$ 888,300	\$ 184,000	\$ 888,300
	<i>Rural Residential Average (2,000sqm average lot)</i>	\$ 319,100	\$ 1,727,700	\$ 319,100	\$ 1,727,700
	<i>Rural Lifestyle Average (4ha average lot)</i>	\$ 31,400	\$ 132,000	\$ 31,400	\$ 132,000
	<i>Rural Lifestyle Average (2ha average lot)</i>	\$ 62,000	\$ 263,200	\$ 62,000	\$ 263,200
	<i>Papakainga Average (3,000sqm average lot)</i>	\$ 112,200	\$ 1,051,300	\$ 112,200	\$ 1,051,300

<sup>153</sup> For simplicity this average does not factor in the balance lot for Papakainga development.

Table 34: Dairy Farming & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years

Sector Productivity Relative to Versatile Soils and/or Any Aquifer		Average / Ha		Including Forward Linkages	
		Total Excluding any Flow on effects	Include HHLD Spend	Total including forward linkages	Versus all HHLD Spend
VA/ha on Versatile Soils & in any Aquifer		\$ 61,100	\$ 61,100	\$ 84,600	\$ 84,600
VA/ha on Other Soils & in any Aquifer		\$ 45,800	\$ 45,800	\$ 63,300	\$ 63,300
VA/ha on Versatile Soils & out of any Aquifer		\$ 34,500	\$ 34,500	\$ 47,700	\$ 47,700
VA/ha on Other Soils & out of any Aquifer		\$ 37,900	\$ 37,900	\$ 52,400	\$ 52,400
Average VA\$/ha		\$ 42,200	\$ 42,200	\$ 58,400	\$ 58,400
Residential Land Use Productivity (VA \$/Ha)		Const. & Maint. only	Include HHLD Spend	Const. & Maint. only	Include HHLD Spend
Rural Residential Average (4,000sqm average lot)		\$ 184,000	\$ 888,300	\$ 184,000	\$ 888,300
Rural Residential Average (2,000sqm average lot)		\$ 319,100	\$ 1,727,700	\$ 319,100	\$ 1,727,700
Rural Lifestyle Average (4ha average lot)		\$ 31,400	\$ 132,000	\$ 31,400	\$ 132,000
Rural Lifestyle Average (2ha average lot)		\$ 62,000	\$ 263,200	\$ 62,000	\$ 263,200
Papakainga Average (3,000sqm average lot)		\$ 112,200	\$ 1,051,300	\$ 112,200	\$ 1,051,300

Table 35: Other Livestock Farming & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years

Sector Productivity Relative to Versatile Soils and/or Any Aquifer		Average / Ha		Including Forward Linkages	
		Total Excluding any Flow on effects	Include HHLD Spend	Total including forward linkages	Versus all HHLD Spend
Average VA\$/ha		\$ 16,100	\$ 16,100	\$ 45,800	\$ 45,800
Residential Land Use Productivity (VA \$/Ha)		Const. & Maint. only	Include HHLD Spend	Const. & Maint. only	Include HHLD Spend
Rural Residential Average (4,000sqm average lot)		\$ 184,000	\$ 888,300	\$ 184,000	\$ 888,300
Rural Residential Average (2,000sqm average lot)		\$ 319,100	\$ 1,727,700	\$ 319,100	\$ 1,727,700
Rural Lifestyle Average (4ha average lot)		\$ 31,400	\$ 132,000	\$ 31,400	\$ 132,000
Rural Lifestyle Average (2ha average lot)		\$ 62,000	\$ 263,200	\$ 62,000	\$ 263,200
Papakainga Average (3,000sqm average lot)		\$ 112,200	\$ 1,051,300	\$ 112,200	\$ 1,051,300

Table 36: Forestry & Residential Land Use Contribution to District Value Added, NPV at 3% over 50 years

Sector Productivity Relative to Versatile Soils and/or Any Aquifer		Average / Ha		Including Forward Linkages	
		Total Excluding any Flow on effects	Include HHLD Spend	Total including forward linkages	Versus all HHLD Spend
Average VA\$/ha		\$ 12,100	\$ 12,100	\$ 26,100	\$ 26,100
Residential Land Use Productivity (VA \$/Ha)		Const. & Maint. only	Include HHLD Spend	Const. & Maint. only	Include HHLD Spend
Rural Residential Average (4,000sqm average lot)		\$ 184,000	\$ 888,300	\$ 184,000	\$ 888,300
Rural Residential Average (2,000sqm average lot)		\$ 319,100	\$ 1,727,700	\$ 319,100	\$ 1,727,700
Rural Lifestyle Average (4ha average lot)		\$ 31,400	\$ 132,000	\$ 31,400	\$ 132,000
Rural Lifestyle Average (2ha average lot)		\$ 62,000	\$ 263,200	\$ 62,000	\$ 263,200
Papakainga Average (3,000sqm average lot)		\$ 112,200	\$ 1,051,300	\$ 112,200	\$ 1,051,300

The key difference is the level of intensity of production, all other types of primary productive activity – regardless of the soil types they operate on, are far more land extensive than horticultural production and residential activities. They are therefore far less susceptible to incursion of residential land uses on their land, as it causes a much lower loss of productive capacity for these industries.

#### 4.2.4 Conclusions

Productive capacity of highly versatile soils generally, and especially in aquifer or irrigation areas should be protected. The direct, indirect and downstream effects of horticultural production on these soils contribute strongly to value added and provide a diversity of employment and economic activity that the Far North District economy requires in order to be resilient to future shocks. The productivity assessment presented in Table 32 highlights that for horticultural land uses on highly versatile soils in an aquifer/irrigation area, contribution to district value added exceeds residential land uses at all but the 2,000sqm rural environment density tested<sup>154</sup> (excluding the additional employment opportunities households generate through establishment of new businesses).

Council have the ability to preserve the highly versatile soils and aquifer/irrigation areas for horticultural production by not allowing rural residential and rural lifestyle development to displace other rural production land uses for a net gain in value added terms to the District economy. By holding firm on highly versatile soils, including in aquifer/irrigation areas for productive uses, Council can maximise District value added, while still providing development and growth opportunities.

*Please note, the above analysis should not be relied upon to assess land use alternatives of individual properties. The purpose of this analysis is to inform high level policy options only.*

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<sup>154</sup> i.e. densities of 4ha, 2ha, 4,000sqm, 2,000sqm and 3,000sqm (Papakainga) lot sizes, with associated (and varied) dwelling size and quality assumptions.

## 5 RURAL-RESIDENTIAL AND RURAL-LIFESTYLE CONTEXT

### 5.1 Statutory and Literature Review

#### 5.1.1 Statutory review

This section highlights the statutory planning instruments that govern growth in the Far North District. Key statutory instruments include the:

- 1) Local Government Act (2002) (LGA).
  - Far North Long-Term Plan (2018-28),
  - 30 Year Infrastructure Strategy (2018-48).
- 2) Resource Management Act (1991) (RMA).
  - National Policy Statement on Urban Development Capacity 2016 (NPSUDC),
  - Northland Regional Policy Statement (RPS),
  - Far North District Plan (District Plan).

Each is addressed further below.

##### 5.1.1.1 Local Government Act 2002

The purpose of the LGA, as set out in Part 1 is detailed below:

***“Purpose***

*The purpose of this Act is to provide for democratic and effective local government that recognises the diversity of New Zealand communities; and, to that end, this Act—*

*(a) states the purpose of local government; and*

*(b) provides a framework and powers for local authorities to decide which activities they undertake and the manner in which they will undertake them; and*

*(c) promotes the accountability of local authorities to their communities; and*

*(d) provides for local authorities to play a broad role in meeting the current and future needs of their communities for good-quality local infrastructure, local public services, and performance of regulatory functions.”*

The LGA places emphasis on taking a sustainable management approach, taking into account:

*“(i) the social, economic, and cultural interests of people and communities; and*

*(ii) the need to maintain and enhance the quality of the environment; and*

*(iii) the reasonably foreseeable needs of future generations.”*

The LGA requires local authorities to consult with communities determine what public goods and services the community wants provided. Through this process Council adopts 'community outcomes' that form part of the Long-Term Plan.

##### Far North Long-Term Plan 2018-28

This LTP is currently under review. Submissions and hearings have occurred and the 2018-28 LTP will be adopted in June 2018. The community outcomes in the draft LTP (as at 27 June 2018) of most relevant to this project include:

- *Liveable communities that are healthy, safe, connected and sustainable.*
- *Prosperous communities supported by a growing economy.*
- *A wisely managed and treasured environment.*

It is noted that the Far North does not charge development contributions.

30 Year Infrastructure Strategy (2018-48)

Under the LGA local authorities, as part of their LTP, must prepare and adopt an infrastructure strategy for a period of at least 30 consecutive financial years.

The Far North 30 Year Infrastructure Strategy (2018-48) covers:

- All assets;
- Transport;
- Water;
- Wastewater;
- Stormwater; and
- Community facilities.

The goal for this strategy is *“Affordable Council Infrastructure meeting the needs of people, communities and the environment –now and into the future”*.

Generally, Council intends to maintain reasonable levels of service throughout the region to ensure affordability.

In terms of the transport network, the strategy notes *“the unsealed network, however, is an ongoing issue. There are considerable concerns around the possible health implications of dust generated by traffic, and pressure to mitigate this through sealing or the application of dust suppression measures”*. This issue is likely exacerbated by increased levels of residential development in rural areas.

In terms of wastewater, the strategy states that the *“limited network capacity and treatment plant capacity is affecting development in the key growth area of Kerikeri”*. Strategic priorities to address this include expanding the Kerikeri reticulated area to service the central urban area. It is understood there are no plans to extend this further into Rural Living Zoned areas. However, it is noted that some Coastal Living and Rural Living land has been given access to the new wastewater scheme.

**5.1.1.2 Resource Management Act 1991**

The purpose of the RMA is to promote the sustainable management of natural and physical resources. The RMA, in its purpose (Section 5) seeks sustainable management of natural and physical resources while *“safeguarding the life-supporting capacity of air, water, soil, and ecosystems”*. Section 6 sets out the *“matters of national importance”*. Of particular relevance is the preservation of the natural character of the coastal environment, protection of outstanding natural features and landscapes, protection of significant indigenous vegetation and habitats of indigenous fauna, protection of historic heritage, and the management of significant risks from natural hazards.

Section 7 of the RMA sets out *“other matters”* that when managing the use, development, and protection of natural and physical resources, all persons shall have particular regard to. Of particular relevance to managing rural residential development are:

- *the efficient use and development of natural and physical resources:*
- *the maintenance and enhancement of amenity values:*
- *maintenance and enhancement of the quality of the environment:*
- *any finite characteristics of natural and physical resources:*

The RMA provides the overarching framework which is then implement through regulations and local government policies and plans.



### National Policy Statement – Urban Development Capacity

The National Policy Statement on Urban Development Capacity 2016 (NPSUDC) sets out the objectives and policies for providing development capacity under the RMA.

Development capacity refers to the amount of development allowed by zoning and regulations in plans that is supported by infrastructure. This development can be ‘outwards’ (on greenfield sites) and/or ‘upwards’ (by intensifying existing urban environments).

The Far North District is not identified as a medium-growth or high-growth area. However, all objectives and the following policies apply to the district:

- **PA1:** Sufficient development capacity in the short, medium and long term.
- **PA2:** Other infrastructure required to support urban development.
- **PA3:** Provide choice; promote efficient use of land and infrastructure; limit adverse effects on competition.
- **PA4:** Take into account the benefits and costs of urban development at a national, interregional, regional, district and local scale.

The NPSUDC directs local authorities to provide sufficient development capacity in their resource management plans, supported by infrastructure, to meet demand for housing and business space, and therefore has implications for rural-residential type development on the fringes of townships.

### Iwi Management Plans

The following Iwi/Hapu Management Plans have been prepared and lodged with FNDC:

- Ngāti Kuta ki Te Rawhiti Hapu Management Plan (fifth edition);
- Ngati Rangī Hapu Management Plan (March 2016);
- Ngati Torehina Hapu Environmental Management Plan (2007 First edition);
- Te Iwi NgaiTakoto Environmental Plan; Ngāti Rehia Environmental Management Plan (second edition 2014);
- Te Iwi o Ngātiwai Iwi Environmental Policy Document (2007);
- Nga tikanga o te taiao o Ngāti Hine Environmental Management Plan (2008);
- Nga ture mo te taiao o Te Roroa, Te Roroa Iwi Environmental Policy Document (2008 reviewed September 2011);
- Kia matau, kia mohio e ora ana Te U Kai Po Iwi Environmental Management Plan o Nga Iwi o Whaingāroa (2011);
- Te Kahukura a Ngati Korokoro, Ngati Wharara me Te Pouka. Nga hapū o Te Wahapū o Te Hokianga-nui o Kupe (2008); and
- Kororareka Marae Society Hapu Environmental Management Plan.

These iwi/ Hapu Management Plans set out Rohe areas, key values, issues within the region and objectives and policies around the identified issues. Key themes throughout the plans are around iwi engagement and involvement, protecting land and water resources, sustainable management of resources, protection of cultural landscapes and sites of value.

### Northland Operative RPS

The RPS provides a broad direction and framework for managing Northland's natural and physical resources. These include land, water, air, soil, minerals, plants, animals and all built structures. The RPS was made operative on 9 May 2016.

Key issues, objectives and policies are listed below.

Issues:

1) Economic potential and social wellbeing

*“Northland has not effectively and sustainably managed its natural and physical resources to fully realise its economic potential and social wellbeing. Limiting factors include:*

- i) Common natural resources not being used and allocated efficiently, particularly where there is significant demand;*
- j) Subdivision, use and development, particularly residential development, that compromise either:
 
  - i. existing and future productive activities and use of land; or*
  - ii. regionally significant infrastructure;**
- k) Regionally significant infrastructure not available or sufficient to support development and community needs;*
- l) Poor security of energy supply;*
- m) Degraded state and availability of natural resources;*
- n) Regulation and compliance costs deterring investment; and*
- o) Unjustified and inconsistent application of the Resource Management Act 1991 in district and regional plans.”*

The RPS notes:

*“The land is Northland’s most significant economic asset and there is only so much of it. Subdivision, use and development, particularly residential, can have the effect of making it difficult for existing and future productive uses and infrastructure to operate (reverse sensitivity) or develop (sterilising the land). Productive activities include economic activities that use the soil and/or minerals in the ground (such as mining, farming and horticulture), those that use the space the land provides (like intensive farming, processing, manufacturing and oil refining) and other industrial and commercial uses.*

*Reverse sensitivity describes the effect that new use and development can have on existing activities in an area. It usually results from the people involved in a newly established activity (such as residential development) complaining about the effects of existing activities (for example, noise, smells or agrichemical sprays from an established horticultural operator). This can have the effect of imposing economic burdens, or operational limitations, on the existing activities that can reduce their viability.*

*The sterilising of land for future productive uses from residential development occurs in two ways. Firstly, subdivision invariably increases the value of the land. Often this increases the value of the land to a point where it’s uneconomical to use it in any other way, other than for residential purposes. Secondly, the more people living in an area, the more difficult it is to undertake new activities, especially where the effects are greater or different from the existing activity. Essentially, the more people live in an area, the less likely that the area can be used for any new productive purposes.*

2) Regional form

*“Unplanned and un-coordinated development and poor urban design can lead to reduced levels of amenity, higher infrastructure costs, and reduced community wellbeing.”*

The RPS notes:

- Ad-hoc subdivision use and development has resulted in *“reduced levels of service, unplanned infrastructure extensions / upgrades and reduced the viability of business through reverse sensitivity”*.
- There is demand for rural residential or lifestyle type development, particularly in rural locations surrounding our larger towns and in rural areas near the coast.
- The productive use of rural areas is important.

These issues are addressed through Objectives 3.1, 3.5, 3.11. Of particular note, Objective 3.6 states:

*“The viability of land and activities important for Northland’s economy is protected from the negative impacts of new subdivision, use and development, with particular emphasis on either:*

- a) *Reverse sensitivity for existing:*
  - i. *Primary production activities;*
  - ii. *Industrial and commercial activities;*
  - iii. *Mining<sup>155</sup>; or*
  - iv. *Existing and planned regionally significant infrastructure; or*
- b) *Sterilisation of:*
  - i. *Land with regionally significant mineral resources; or*
  - ii. *Land which is likely to be used for regionally significant infrastructure.”*

In summary the key reasons for this objective relate to:

- The importance of protecting versatile soils for Northland’s economy;
- Managing reverse sensitivity on rural land uses; and
- The need for planned regionally significant infrastructure.

The RPS emphasises that the focus is on protecting the “viability” of land and activities important for Northland’s economy.

The key policies are set out in 5.1 which relate to regional form. Of relevance are Policy 5.1.1 and Policy 5.1.3:

Policy 5.1.1 – Planned and coordinated development:

*“Subdivision, use and development should be located, designed and built in a planned and co-ordinated manner which:*

- c) *Is guided by the ‘Regional Form and Development Guidelines’ in Appendix 2;*
- d) *Is guided by the ‘Regional Urban Design Guidelines’ in Appendix 2 when it is urban in nature;*
- e) *Recognises and addresses potential cumulative effects of subdivision, use, and development, and is based on sufficient information to allow assessment of the potential long-term effects;*
- f) *Is integrated with the development, funding, implementation, and operation of transport, energy, water, waste, and other infrastructure;*
- g) *Should not result in incompatible land uses in close proximity and avoids the potential for reverse sensitivity;*
- h) *Ensures that plan changes and subdivision to / in a primary production zone, do not materially reduce the potential for soil-based primary production on land with highly versatile soils<sup>156</sup>, or if they do, the net public benefit exceeds the reduced potential for soil-based primary production activities; and*
- i) *Maintains or enhances the sense of place and character of the surrounding environment except where changes are anticipated by approved regional or district council growth strategies and / or district or regional plan provisions.*
- j) *Is or will be serviced by necessary infrastructure.*

<sup>155</sup> Includes aggregates and other minerals.

<sup>156</sup> Highly versatile soils are Land Use Capability Classes 1c1, 2e1, 2w1, 2w2, 2s1, 3e1, 3e5, 3s1,3s2, 3s4 - as mapped in the New Zealand Land Resource Inventory

*Note: in determining the appropriateness of subdivision, use and development (including development in the coastal environment – see next policy), all policies and methods in the Regional Policy Statement must be considered, particularly policies relating to natural character, features and landscapes, heritage, natural hazards, indigenous ecosystems and fresh and coastal water quality.”*

Policy 5.1.3. - Avoiding the adverse effects of new use(s) and development

*“Avoid the adverse effects, including reverse sensitivity effects of new subdivision, use and development, particularly residential development on the following:*

- k) Primary production activities in primary production zones (including within the coastal marine area);*
- l) Commercial and industrial activities in commercial and industrial zones;*
- m) The operation, maintenance or upgrading of existing or planned<sup>157</sup> regionally significant infrastructure<sup>158</sup>; and*
- n) The use and development of regionally significant mineral resources<sup>159</sup>.”*

The objectives and policies in the RPS are required to be given effect to when developing the next generation Far North District Plan.

Importantly, unlike other RPSs in New Zealand, for example the Operative Canterbury Regional Policy Statement, the Northland RPS does not provide guidance or define rural residential development.

#### Far North District Plan

The current Far North District Plan has directed the scale and nature of rural residential/lifestyle development in the Far North.

The District Plan encapsulates a number of rural zones within which rural living opportunities are recognised. Two specific zones are recognised as forming part of the Rural Environment Section of the District Plan. Within the Rural Environment Section, key objectives seek to *“ensure that the life supporting capacity of soils is not compromised by inappropriate subdivision, use or development”<sup>160</sup>* and to *“avoid, remedy or mitigate the adverse and cumulative effects of activities on the rural environment”<sup>161</sup>*. Policy 8.4.5 states:

*“That plan provisions encourage the avoidance of adverse effects from incompatible land uses, particularly new developments adversely affecting existing land-uses (including by constraining the existing land-uses on account of sensitivity by the new use to adverse effects from the existing use – i.e. reverse sensitivity).”*

The Rural Production Zone applies over the majority of the rural part of the District other than those areas defined as Coastal, Rural Living or set aside for Recreation, Conservation or Minerals. The zone is predominantly a working productive rural zone. Key issues the plan seeks to manage are the recognition that some activities have a functional need to be located in a rural zone, managing incompatible activities, and inappropriate subdivision.

The Rural Living Zone is an area of transition between town and country. The transition is expressed in terms mainly of residential intensity and lot sizes. The District Plan potential for the adverse effects of farming to be of concern for residential zones and vice versa, is reduced by the presence of the Rural Living Zone. As an area of transition, the District Plan acknowledges that parts of the Rural Living Zone may from time to time be proposed for rezoning to urban purposes (via plan change processes that introduce structure plan/s). This zone seeks to *“achieve a style of*

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<sup>157</sup> In this instance, planned means the infrastructure has been identified and provided for in a; notice of requirement designation, resource consent, a regional or district plan, the Northland Regional Land Transport Strategy or a document prepared using the special consultative process under the Local Government Act 2002.

<sup>158</sup> See also Policy 5.3.1.

<sup>159</sup> See also Policy 5.1.4.

<sup>160</sup> Objective 8.3.2

<sup>161</sup> Objective 8.3.3

*development on the urban periphery where the effects of the different types of development are compatible” and provide for “low density residential development”.* Policies seek sufficient lot sizes to provide for outdoor space, and on-site effluent disposal in non-reticulated areas. Unlike the Rural Productive Zone, objectives and policies do not focus on rural productivity or managing reverse sensitivity.

The General Coastal Zone covers the largest area of all the zones in the coastal environment. This zone is generally rural with a coastal focus and natural character predominates. The General Coastal Zone includes controls on development to preserve the natural character of the coastal environment and protect it from inappropriate subdivision and use.

The Coastal Living Zone is similar in purpose to the Rural Living Zone. It is distinguished from the Rural Living Zone by its coastal location. The zone provides an area of transition between residential settlement on the coast and the General Coastal Zone. The difference is expressed mainly in residential intensity and lot sizes.

The District Plan sets out minimum lot sizes for subdivision in Chapter 13 – Subdivision. The minimum lot sizes required are set out in Table 13.7.2.1 of the District Plan. Of note are the minimum lot sizes in the following zones as these have been used to inform our definition of the Rural Environment, as set out in Section 2.2. above:

- Rural Production Zone;
- Rural Living Zone;
- General Coastal Zone;
- Coastal Living Zone;
- Minerals Zone;
- Waimate North Zone;
- South Kerikeri Inlet Zone.

Of particular note is the variability in minimum lot sizes. For example, within the Rural Production Zone the minimum lot size ranges from 20ha to 2000m<sup>2</sup>. It is understood this variance has largely been driven by a number of historical development rules. For example, in the Rural Production Zone, as a restricted discretionary activity, the following minimum lot sizes apply:

- 1) The minimum lot size is 12ha; or
- 2) A maximum of 3 lots in any subdivision, provided that the minimum lot size is 4,000m<sup>2</sup> and there is at least 1 lot in the subdivision with a minimum lot size of 4ha, and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000; or
- 3) A maximum of 5 lots in a subdivision (including the parent lot) where the minimum size of the lots is 2ha, and where the subdivision is created from a site that existed at or prior to 28 April 2000;
- 4) Rules under points 2 and 3 provide two alternative options for the creation of a specified number of small lots from sites existing at 28 April 2000. Where an application under one of these clauses takes up only part of the total allowance, a subsequent application to take up the remainder of that particular allowance may be considered by Council, notwithstanding that the subsequent application involves a lot which no longer meets the existing at 28 April 2000 criterion.

The District Plan also allows smaller lot sizes as the activity status of the proposal increases, for example in the Rural Production Zone residential development is a permitted activity at a density of one unit per 12ha of land, a restricted discretionary activity at one unit per 4ha of land, a discretionary activity at a density of one unit per 2ha of land. Conversely, the Rural Living Zone provides for residential development as a permitted activity at a density of one unit per 4,000m<sup>2</sup> of land, and a discretionary activity at a density of one unit per 3,000m<sup>2</sup> of land.

The Waimate North Zone also has similar “grandfathering clauses” and allows smaller lot sizes as the activity status of the proposal increases. This zone provides for the following as a controlled activity:

- A maximum of 3 lots in any subdivision, provided that the minimum lot size is 4,000m<sup>2</sup> and there is at least 1 lot in the subdivision with a minimum size of 4ha and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000 – controlled activity.

As a discretionary activity, the following is provided for:

- A maximum of 3 lots in any subdivision, provided that the minimum lot size is 2,000m<sup>2</sup> and there is at least 1 lot in the subdivision with a minimum size of 4ha, and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000; or
- A subdivision in terms of a management plan as per Rule 13.9.2 may be approved.

In sensitive areas of the Far North District, such as the coastal environment, the District Plan provides for a more restrictive level of controls on development intensification. In the General Coastal Zone, for example, residential development is a permitted activity at a density of one unit per 20ha of land, dropping down to a density of one unit per 6ha of land as a discretionary activity. Further, in the Coastal Living Zone residential development is a permitted activity at a density of one unit per 4ha of land and as a discretionary activity at a density of one unit per 5,000m<sup>2</sup> of land.

In the South Kerikeri Inlet Zone, which seeks to “*maintain the combination of open, rural, coastal and natural characteristics of the Zone*”, resource consent is required for any subdivision, with the minimum lot size being 4ha in non-sensitive areas, provided for as a restricted discretionary activity.

Given the purpose of the Minerals Zone, which seeks to “*enable the efficient extraction and processing of mineral resources*”, any subdivision (regardless of lot size) is a discretionary activity.

An important point is that the District Plan does not provide for a higher level of protection of highly versatile soils, including in areas such as the Kerikeri Irrigation North and South Regions, which has been found to be a finite resource.

### 5.1.2 Literature review

There has been much discussion, research and literature produced around rural residential/living and the associated economic, environmental and social benefits and costs. Below we set out a summary review of this key literature with a focus on defining what rural residential and rural lifestyle is and identify key issues, constraints and opportunities around this style of living. With population growth across New Zealand and increasing pressures on urban limits and rural land, there has been much research undertaken in this space by other councils across New Zealand who are also exploring the potential implications of rural residential intensification in order to assist in informing their future planning framework.

We have undertaken this literature review to gauge whether rural residential/lifestyle development varies in the shape, form and general characteristics across different districts in New Zealand. We recognise that the Far North District Plan already encapsulates a Rural Living Zone, which may already emulate many of the rural residential/lifestyle characteristics found elsewhere in New Zealand.

#### 5.1.2.1 Rural residential and rural lifestyle

Rural residential living is often referred to as ‘lifestyle blocks’ and reflect smaller parcels of subdivided rural land. There are various characteristics to rural residential living and research has identified the following key characteristics:

- Residential living as the primary activity (as opposed to production activities from the land);
- Proximity to urban areas and centres for schooling and employment; and
- Proximity to natural features such as bush and the coast, privacy, amenity, outlook and providing a quiet and peaceful environment<sup>162</sup>.

These characteristics are reflected in the reasons why people seek to live in these places; seeking a rural lifestyle, peace and quiet, clean air, privacy, openness and quality environments for raising children<sup>163</sup>.

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<sup>162</sup> Paterson, J. (2005). *A paper presented to ‘Focus on Rural Research’ an evening sponsored by the Waikato Branch of the NZ Geographical Society*, Hamilton, 17 November 2005.

<sup>163</sup> Fairweather J. R., and Robertson N. J., (2000). *Smallholders in Canterbury: Characteristics, Motivations, Land use and Intentions to Move*, Research Report No. 245, Agribusiness and Economics Research Unit.

Surveys that have been undertaken of people who live in such rural residential environments illustrate that they comprise of a mixture of people (including but not limited to; families, hobby farmers, wealthy professionals and foreigners and farmers) and it is evident that the majority of people gain their main income from nearby centres, as opposed to directly off the land<sup>164</sup>. In comparison, rural lifestyle or small rural farms tend to be more focused on production from the land, but occupiers do not necessarily earn their main income off the property<sup>165</sup>. The occupiers of these smallholders are also diverse. A survey undertaken by the Ministry of Agriculture and Fisheries<sup>166</sup> in 2004 demonstrates that the average age of occupiers in the smallholdings sampled was 52<sup>167</sup>, with similar results found in a survey of rural residential land occupiers in the Kapiti Coast District (57.1% where more than 55 years of age and 42.9% were 60 years of age or older)<sup>168</sup>.

From a review of the literature there is no set size for a lifestyle block, however Quotable Value NZ has defined lifestyle blocks as a rural or semi-rural zoned piece of land that is greater than one hectare and used for a rural, semi-rural or residential activity<sup>169</sup>. Considering rural residential development and its context within the Canterbury Plains, the Selwyn District Council Rural Residential Strategy 2014<sup>170</sup> sets out that rural residential activities are generally recognised as developments that have both rural and residential components<sup>171</sup> and that land holdings that range in size from between 0.3ha to 2ha, are better able to demonstrate the residential and rural character elements that typify rural residential environments.<sup>172</sup> Properties that are greater than 2ha in size generally continue to be productive and are predominantly retained for rural purposes, smallholdings, or hobby farms.<sup>173</sup>

In broad terms, rural residential development is likely to fall within a range of property sizes from 0.3ha to 2ha in area, with 0.3ha being the minimum size provided for in the Rural Living Zone under the Far North District Plan. Beyond 2ha in area, land holdings are more likely to be termed rural lifestyle. The Queenstown Lakes Proposed District Plan reinforces this and adopts a rural residential zone density per residential dwelling of 0.4ha and rural lifestyle zone provides for a minimum lot size per dwelling of 2ha on average.

Rural lifestyle in the context of the literature review undertaken above is likely to sit between 2ha to 10ha in area for land holdings, which by their very nature are large enough to maintain productive potential. Rural productive holdings are likely to sit between 20ha to 30ha property size or greater, however in the context of the Far North District, productive potential of land is clearly influenced by farm/land use type, underlying soils as well as having access to water resources such as in the Kerikeri Irrigation North and South Regions or with land contained within aquifer areas.

Information from New Zealand's national property valuation data and research undertaken by Andrew and Dymond (2012) illustrates that the number of lifestyle blocks in New Zealand have been increasing since the late 1990's, from 100,000 in 1998 to 175,000<sup>174</sup>. It is anticipated that this trend is likely to continue as a result of population growth and

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<sup>164</sup> Fairweather J. R., and Robertson N. J., (2000).

<sup>165</sup> Paterson, J. (2005).

<sup>166</sup> Hereafter referred to as 'MAF'.

<sup>167</sup> Cook, A. and Fairweather J. (2004). *A Study of Smallholdings and their owners*, Ministry of Agriculture and Forestry, Paper No: 53. This research was around small holdings focused on land between 0.4 – 30 hectares in size.

<sup>168</sup> Kapiti Coast District Council (2009). *Rural Residential Living in the Kapiti Coast District*, p21.

<sup>169</sup> N.Z Herald, 1999 as seen Paterson (2005).

<sup>170</sup> Selwyn District Council (2014) '*Selwyn Rural Residential Strategy 2014*'.

<sup>171</sup> The elements that define rural residential activities are determined by factors such as outlook, site and building densities, open space, design vernacular and land uses. The resulting semi-rural character is quite distinct from the comparatively high densities typical of suburban forms of development.

<sup>172</sup> Selwyn District Council (2014), para 4.45.

<sup>173</sup> Selwyn District Council (2014) , para 4.46.

<sup>174</sup> Andrew and Dymond (2012), *Expansion of lifestyle blocks in urban areas onto high-class land an update for planning and policy*, Journal of the Royal Society of New Zealand.

people seeking a more rural residential living environment<sup>175</sup>, particularly in areas that are within easy access to urban areas<sup>176</sup>.

#### 5.1.2.2 Rural residential and rural lifestyle in the Far North District

We note that in the case of the Selwyn District Council Rural Residential Strategy 2014<sup>177</sup>, the study differentiated between land holdings that range in size between 0.3ha to 2ha as rural residential, being distinct from those land holdings greater than 2ha in area, which better reflected rural lifestyle and rural in nature. As noted already, both the Rural Living Zone and Coastal Living Zone of the Far North District Plan reflect permitted development standards that fall within the range of rural residential lot sizes discussed within the Selwyn District Council Study, which is unsurprising given their specific purpose. The size of rural lifestyle land holdings are reflected in the standards of the Coastal Living Zone and Rural Production Zone.

It is evident that the Far North District has been experiencing growth from residential development and subdivisions in the rural residential and rural lifestyle space. Coastal settlements, especially on the eastern and north-eastern coasts, are growing at a faster rate than the district average. Areas where substantial growth in residential development is occurring and is expected to continue include; the Coopers Beach and Cable Bay area, Kerikeri, and Paihia<sup>178</sup>. Future growth is anticipated in the coastal areas between Whangaroa and Matauri Bay and in the Tokerau Beach area as redevelopment of roads and other infrastructure in these areas makes them more accessible<sup>179</sup>. Most inland settlements, such as Kawakawa, Moerewa and Kaikohe, have relatively stable populations<sup>180</sup>. Development in some of these areas reflects the literature that people are seeking rural residential and rural lifestyle environments in proximity to natural features, such as the coast.

#### 5.1.2.3 Key Constraints

The literature acknowledged that rural residential and rural lifestyle subdivision and development can create a number of issues and is subject to a number of constraints. The more prevalent of which are discussed in turn below.

##### Dispersed built form

- Rural residential living results in a more dispersed and a less compact urban form. This can result in inefficiencies in service provisions (infrastructure, transportation and social services), less resilience for communities and less sustainable built forms<sup>181</sup>.

##### Loss of rural amenity and changes to the rural landscape

- Rural residential development can result in a loss of rural amenity and changes to traditional rural landscapes through more built structures, impervious surfaces, roading and other infrastructure, earthworks and vegetation removal<sup>182</sup>. This has been referred to as 'domestication' of farmland and can result in blurring the line between rural and urban forms<sup>183</sup>.
- The Ministry for the Environment has confirmed that the pattern of subdivision continues to have a determining influence on amenity conflicts especially where subdivision results in an increase in the number of small blocks located close together<sup>184</sup>.

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<sup>175</sup> Andrew and Dymond (2012).

<sup>176</sup> Hereafter referred to as 'REINZ'

<sup>177</sup> Selwyn District Council (2014), para 4.46.

<sup>178</sup> Far North District Council (2006). *Far North Future Plan*.

<sup>179</sup> Far North District Council (2006).

<sup>180</sup> Far North District Council (2006).

<sup>181</sup> Selwyn District Council (2014). *Rural Residential Strategy*.

<sup>182</sup> Kapiti Coast District Council (2009). *Rural Residential Living in the Kapiti Coast District* and Selwyn District Council (2004).

<sup>183</sup> Selwyn District Council (2014).

<sup>184</sup> Ministry for the Environment (2000). *Managing Rural Amenity Conflicts*. Report. Ref. ME372.



- One of the main issues of rural residential subdivision comes from the cumulative effects of numerous subdivisions, with rural character and amenity being progressively diminished as subdivision and development intensification increases.

#### Infrastructure capacity

- Increased development and intensification of development results in increased demand for infrastructure services (water, wastewater, stormwater and roading) which requires investment, often at large costs, from developers and / or councils. There is also pressure on digital infrastructure such as internet (broadband and fibre) provision, which can be challenging to provide due to local topography, sightlines and more remote locations.
- Growth that has been occurring in the district over recent years has been putting pressure on existing infrastructure, as well as creating new demand and ongoing maintenance and upgrading works<sup>185</sup>. The provision of new infrastructure has to be balanced with investing in and upgrading existing and establish infrastructure.
- Rural sites are often not connected to public infrastructure and instead utilise onsite wastewater disposal (via septic tanks), ground soakage or rainwater tanks due to the larger lot sizes. In accordance with the policies of the Rural Living Zone in the Far North District Plan, lots in this zone should be of sufficient size to provide for on-site wastewater where public reticulation is not feasible. Subdividing rural land into smaller lots can put pressure on these onsite services or make them unfeasible to service onsite.
- Increases in rural residential living can also result in increased demand for social infrastructure (such as education and healthcare services) in smaller rural communities<sup>186</sup>.

#### Loss of productive rural land

- Fragmentation of irrigated areas within the Far North District, particularly those used in support of the horticultural sector results in permanent loss of irrigated land away from productive uses in future.
- As rural residential and rural lifestyle blocks are located in rural zoned land there is the potential for the loss of productive rural land, land sterilisation and highly versatile soils. It is not the subdivision themselves that results in this loss, but the works around this which results in fragmented land, smaller lots sizes and a reduction in efficiencies<sup>187</sup>.
- According to De Luca (2009)<sup>188</sup>, three surveys conducted in Western Bay of Plenty between 1996 and 2005 showed a consistent relationship between new lot sizes and primary production loss: up to 66% of properties less than 4ha and up to 82% of those less than 1.5ha were not being used for any productive purpose at all.
- Andrew and Dymond (2012) state that 10% of New Zealand's high-class soils are covered in lifestyle blocks.

#### Natural hazard effects

- The location of rural residential living in proximity to coastal areas or along streams and rivers to maximise outlook over natural features can result increased risks of natural hazards to people and structures (such as coastal inundation, flooding and effects of sea level rise)<sup>189</sup> and can impact on natural processes. Increased impervious services and earthworks activities can result in changes or exasperating natural hazards.

#### Reverse sensitivity

- More sensitive activities (such as residential, retirement villages, childcare activities) locating adjacent to or in proximity of established rural activities can result in reverse sensitivity effects around spray drift, noise, smells, visual amenity etc.

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<sup>185</sup> Far North District Council (2006).

<sup>186</sup> Kapiti Coast District Council (2009).

<sup>187</sup> Andrew and Dymond (2012).

<sup>188</sup> De Luca R (2009). *District plan review planner's report: Section 16 – rural – general strategy*, p20.

<sup>189</sup> Kaipiti Coast District Council (2009).

- Surveys of people living in rural residential environments has identified conflicts between rural farmers and residential activities<sup>190</sup>. This has the potential to impact on legitimate long-standing farming activities and permitted activities under the relevant planning framework, as well as creating tension between people in these local communities. This may also result in legitimate farming activities not wanting to further develop primary activities for the fear and / or hassles associated with effects on more sensitive neighbouring uses.

#### Land values

- Rural residential and rural lifestyle typically results in increased land values when compared to purely productive land<sup>191</sup>. This can make it financially difficult to maintain land for productive uses when compared to/competing with rural residential and rural lifestyle demand.

### **5.1.3 Examples of other Council approaches to rural residential and rural lifestyle development**

A review of Councils facing considerable 'lifestyle' growth pressure (e.g. Waikato District Council), and ones of similar population and topography diversity (e.g. Gisborne District Council and Selwyn District Council) has been undertaken to gain an understanding of the scale of rural residential and/or rural lifestyle zones in these areas; their locations compared to urban and commercial areas; if there are commonalities between lot sizes; and what effects are being managed across the districts for example reverse sensitive, and access to service infrastructure. This is attached as **Appendix I**. In summary, lot sizes vary depending on the intent of the zone. However, all zones had some commonality in terms of the effects they sought to manage when allowing rural residential and rural lifestyle subdivision to occur. In particular key effects included:

- Amenity and visual values;
- Rural character;
- Reverse sensitivity;
- Efficient use of soils; and
- Infrastructure and servicing.

## **5.2 'Rural Residential and Rural Lifestyle' and 'Rural Production' Interface Methodology**

This section sets out a methodology for addressing the interface between the rural residential/lifestyle and rural production zones. This methodology has been created to address potential interface issues between these zones and associated activities. It will focus on reverse sensitivity, a key constraint for such development as addressed in section 5.1.2.3 above.

Reverse sensitivity effects arise when incompatible or conflicting activities are located within proximity to each other resulting in effects of new activities impacting on permitted and lawful activities operating in the zone. Due to the nature of some rural activities, in particular farming and horticulture activities, adverse effects often extend beyond the boundary even if mitigated on site (such as spray drift and dust nuisance). Introducing more residential activities or residential activities at higher densities in and adjacent to rural zones can increase reverse sensitivity effects.

Councils across New Zealand address this interface issue in a variety of ways, and specific research has been undertaken as it relates to the winegrowing industry. This research prepared for the New Zealand Winegrowers Association<sup>192</sup> provides a summary of different methods employed across district councils and learnings can be taken from this report due to similarities with horticulture and other rural production uses. Key methodologies from this research are outlined below and comprise of both regulatory and non-regulatory methods:

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<sup>190</sup> Fairweather and Robertson (2000).

<sup>191</sup> Andrew and Dymond (2012).

<sup>192</sup> Hill Young Cooper (2006), *New Zealand Winegrowers Background Issues Paper*.

- **Objective and policy framework:** establishing areas that provide for specific objectives, policies and methods to address the interface issues and / or incorporating more generic objectives, policies and methods throughout the plan framework.
- **Activities and rules:** considering the nature of permitted activities in rural and surrounding zones, minimum lot sizes, bulk and location controls associated with permitted activities (specific setbacks for new buildings or between particular uses), assessment criteria and activity status if permitted standards cannot be met.
- **Resource consent:** consent notices on underlying subdivisions identifying suitable building platforms in relation to surrounding rural activities at the time of development, no compliant covenants, use of design guidelines (considering the design and layout of subdivisions to minimise future effects and the overall appropriateness of the development).
- **Non-regulatory methods:** these are typically used in conjunction with regulatory tools, reference to best practice industry guidelines, notices on Land Information Memorandums of surrounding land uses and uses permitted in the zone.

Looking specifically at the use of rules and setback requirements in rural residential and rural lifestyle and rural production zones across other Councils it is evident that there are a range of setback requirements across councils with some setbacks being dependant on lot sizes and adjacent zoning. For example, in the Gibbston Character Zone of the Queenstown Lakes District Council, which reflects rural residential living, a 6m setback from internal site boundaries is required and in the Proposed Marlborough Environmental Plan sites that are larger than 4000m<sup>2</sup> (rural residential) require minimum setbacks of 8m from the front and rear boundaries and 5m from the side boundaries. The Proposed Whangarei District Council's Rural Living Zone has a dwelling setback requirement of 30m from the Rural Production Zone and 3m for all other boundaries (excluding the road) and the Proposed Rural Production Zone has a setback requirement for buildings of 8m from a site boundary. In comparison with the existing Rural Living Zone in the Far North District Plan requires a minimum setback of 10m from the Rural Production Zone and 3m setbacks from all other zones (except the Minerals Zone). Furthermore, within the 10m setback there is the requirement for the planting of a shelter belt.

It is evident that smaller setbacks between rural residential and rural lifestyle are appropriate (6-10m), with greater setbacks required with adjoining rural production zones to assist in mitigating reverse sensitivity effects. It is noted that depending on the level of setback provided this can have implications on the lot sizes required (particularly if adjacent to rural production zones), built form characteristics and site coverage thresholds (potential increase in impervious surfaces to access dwellings). We note that the Environment Court in Decision No 2016 NZEnvC 047, in considering Plan Change 15 to the Far North District Plan did not support a setback distance of 30 metres for residential dwellings against productive land uses. Given the importance of rural productive activities to the Far North District, the interface between the district's key Rural Production Zoned areas and adjoining urban edge and rural residential and rural lifestyle zoned properties will need to be very carefully considered by Council as part of its District Plan Review.

### 5.3 Definition of Rural Residential and Rural Lifestyle Development

This section draws together key elements of the assessment to assist in determining a definition for rural residential and rural lifestyle development. It sets out key characteristics of this type of living and what differentiates it from other forms of living.

#### Rural Residential

Based on the literature review there is demand for rural residential lots of between 0.3 – 2ha, however in the context of the Far North District considering subdivision development and trends, rural residential lots have been identified to have a lower lots size that reaches as low as 0.2ha. Furthermore, survey analysis that has been undertaken as part of this report also reflects these findings, whereby there appears to be market demand for large lot urban properties, with minimum lots sizes commensurate with 0.2ha.

We consider the following as key characteristics of rural residential development:

- Residential dwelling with land for outlook, amenity, hobby gardening or a few animals as opposed to productive rural uses.

- Higher proportion of built form to open space.
- Demand for reticulated infrastructure services, however generally provided onsite.
- Located on the fringe of urban areas.
- Expectation to be close to services, urban areas and urban employment opportunities.

The characteristics of rural residential living is not dissimilar to the existing Rural Living Zone provided in the Far North District Plan.

#### Rural Lifestyle

Based on the literature review there is demand for rural lifestyle living of between 2ha – 10ha. However, in the context of the Far North District considering subdivision development and trends, rural lifestyle lots have been identified between 2ha – 8ha.

We consider the following as key characteristics of rural lifestyle development:

- Residential dwellings with productive potential (horticulture or animals).
- Small holdings, hobby farms maintaining a rural purpose, much smaller scale relative to traditional rural activities and productive farms.
- Often located between rural residential and rural productive areas or in areas of high visual amenity. Increased rural lifestyle lot sizes can create a greater buffer and transition to traditional rural production activities.
- Onsite servicing for three waters.
- Production from the land not necessarily the key income generator for those living on lifestyle lots, but due to the size of these lots there is the potential for small incomes to be generated off the land.

## **5.4 Audit of Rural Zones**

This section provides a summary analysis of the District's rural zones in terms of the mix of parcel sizes that have been given title to-date. This provides insight on how effective the operative plan has been over time (noting that subdivision is not limited to the period covered by the operative plan but includes subdivision (cumulatively) over all years) to deliver the outcomes sought for each part of the rural environment.

Table 37 shows a summary of parcel sizes across all rural environment zones. Key trends include:

- As expected, the majority of small sections (<1,000sqm) are in the urban environment (80%), although 11% are located in the Rural Production Zone and 3% in the Coastal Living and Rural Living Zones combined<sup>193</sup>.
- At the other end of the scale, the majority (90%) of large lots (>20ha) are in the rural environment (Rural Production Zone 82% and General Coastal Zone 7%), although 10% are in special zones (predominantly large blocks of conservation land).
- Just over a third (37%) of all parcels in the rural environment are less than or equal to 1ha in size. Nearly all parcels in the urban environment are less than or equal to 1ha in size (98%).
- 21% of all parcels in the rural environment are between 1ha and 4ha in size (6,075 parcels). This is greater than the share of parcels that are 20ha or larger (5,547 parcels, 19%).

Table 38 summarises total district parcels (all zones) by year of title and size bracket. Key trends include:

- 63% of all titles were issued in 2000 or earlier.
- 15% of all titles were issued between 2001 and 2007 (7,108 parcels or an average of 1,015 per annum).
- 15% of all titles were issued between 2008 and 2018 (7,396 parcels or an average of 740 per annum).
- This suggests that during the period of 2001-2007 there was significant subdivision activity. This continued at a high rate until 2009, when a significant 2,350 titles were issued.
- In the last 10 years, 2014 had the least number of titles issued.

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<sup>193</sup> Small size land parcels can relate to a range of land uses (including infrastructure or road related activity) and are not limited to small residential lots.

Table 37: Matrix of Total Far North District Property Parcels by Size Bracket and Estimated Operative Zone (2017/2018)

	Up to 1,000sqm	1,001 - 2,000sqm	2,001 - 2,500sqm	2,501 - 3,000sqm	3,001 - 3,500sqm	3,501 - 4,000sqm	4,001 - 5,000sqm	5,001 - 8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Approximate Zone Location</b>																	
Coastal Living	239	191	69	53	77	88	160	224	210	240	145	70	18	17	14	15	1,830
General Coastal	160	204	59	31	31	68	88	155	98	254	283	315	131	176	188	449	2,690
Minerals	-	-	-	-	1	1	-	2	1	6	10	4	2	3	7	12	49
Rural Living	172	284	154	184	362	186	289	203	73	138	94	45	17	13	8	14	2,236
Rural Production	1,329	1,045	472	318	316	356	778	1,378	728	2,305	2,567	1,619	929	1,390	2,013	5,051	22,594
South Kerikeri Inlet Zone	-	1	-	-	-	-	-	1	-	6	4	4	1	1	5	2	25
Waimate North	2	1	-	1	-	3	-	5	4	7	16	4	5	8	5	4	65
<b>Total Rural Environment</b>	<b>1,902</b>	<b>1,726</b>	<b>754</b>	<b>587</b>	<b>787</b>	<b>702</b>	<b>1,315</b>	<b>1,968</b>	<b>1,114</b>	<b>2,956</b>	<b>3,119</b>	<b>2,061</b>	<b>1,103</b>	<b>1,608</b>	<b>2,240</b>	<b>5,547</b>	<b>29,489</b>
Total Special Zone Area (Excl Outside and Coastal Marine)	550	294	99	58	47	52	78	170	64	180	180	88	46	70	113	623	2,712
Total Urban Environment	9,548	4,713	524	249	205	139	230	248	92	197	94	25	11	12	6	5	16,298
<b>Total Far North District</b>	<b>12,000</b>	<b>6,733</b>	<b>1,377</b>	<b>894</b>	<b>1,039</b>	<b>893</b>	<b>1,623</b>	<b>2,386</b>	<b>1,270</b>	<b>3,333</b>	<b>3,393</b>	<b>2,174</b>	<b>1,160</b>	<b>1,690</b>	<b>2,359</b>	<b>6,175</b>	<b>48,499</b>
<b>Share of Parcels by Zone for Each Parcel Size</b>																	
Coastal Living	2%	3%	5%	6%	7%	10%	10%	9%	17%	7%	4%	3%	2%	1%	1%	0%	4%
General Coastal	1%	3%	4%	3%	3%	8%	5%	6%	8%	8%	8%	14%	11%	10%	8%	7%	6%
Minerals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rural Living	1%	4%	11%	21%	35%	21%	18%	9%	6%	4%	3%	2%	1%	1%	0%	0%	5%
Rural Production	11%	16%	34%	36%	30%	40%	48%	58%	57%	69%	76%	74%	80%	82%	85%	82%	47%
South Kerikeri Inlet Zone	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Waimate North	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Total Rural Environment</b>	<b>16%</b>	<b>26%</b>	<b>55%</b>	<b>66%</b>	<b>76%</b>	<b>79%</b>	<b>81%</b>	<b>82%</b>	<b>88%</b>	<b>89%</b>	<b>92%</b>	<b>95%</b>	<b>95%</b>	<b>95%</b>	<b>95%</b>	<b>90%</b>	<b>61%</b>
Total Special Zone Area (Excl Outside and Coastal Marine)	5%	4%	7%	6%	5%	6%	5%	7%	5%	5%	5%	4%	4%	4%	5%	10%	6%
Total Urban Environment	80%	70%	38%	28%	20%	16%	14%	10%	7%	6%	3%	1%	1%	1%	0%	0%	34%
<b>Total Far North District</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for each Zone</b>																	
Coastal Living	13%	10%	4%	3%	4%	5%	9%	12%	11%	13%	8%	4%	1%	1%	1%	1%	100%
General Coastal	6%	8%	2%	1%	1%	3%	3%	6%	4%	9%	11%	12%	5%	7%	7%	17%	100%
Minerals	0%	0%	0%	0%	2%	2%	0%	4%	2%	12%	20%	8%	4%	6%	14%	24%	100%
Rural Living	8%	13%	7%	8%	16%	8%	13%	9%	3%	6%	4%	2%	1%	1%	0%	1%	100%
Rural Production	6%	5%	2%	1%	1%	2%	3%	6%	3%	10%	11%	7%	4%	6%	9%	22%	100%
South Kerikeri Inlet Zone	0%	4%	0%	0%	0%	0%	0%	4%	0%	24%	16%	16%	4%	4%	20%	8%	100%
Waimate North	3%	2%	0%	2%	0%	5%	0%	8%	6%	11%	25%	6%	8%	12%	8%	6%	100%
<b>Total Rural Environment</b>	<b>6%</b>	<b>6%</b>	<b>3%</b>	<b>2%</b>	<b>3%</b>	<b>2%</b>	<b>4%</b>	<b>7%</b>	<b>4%</b>	<b>10%</b>	<b>11%</b>	<b>7%</b>	<b>4%</b>	<b>5%</b>	<b>8%</b>	<b>19%</b>	<b>100%</b>
Total Special Zone Area (Excl Outside and Coastal Marine)	20%	11%	4%	2%	2%	2%	3%	6%	2%	7%	7%	3%	2%	3%	4%	23%	100%
Total Urban Environment	59%	29%	3%	2%	1%	1%	1%	2%	1%	1%	1%	0%	0%	0%	0%	0%	100%
<b>Total Far North District</b>	<b>25%</b>	<b>14%</b>	<b>3%</b>	<b>2%</b>	<b>2%</b>	<b>2%</b>	<b>3%</b>	<b>5%</b>	<b>3%</b>	<b>7%</b>	<b>7%</b>	<b>4%</b>	<b>2%</b>	<b>3%</b>	<b>5%</b>	<b>13%</b>	<b>100%</b>

Source: M.E based on FNDC data. Special Zone includes roads, lakes, conservation and special purpose zones. Urban includes residential (including coastal residential), commercial, industrial, recreation, horticulture processing.



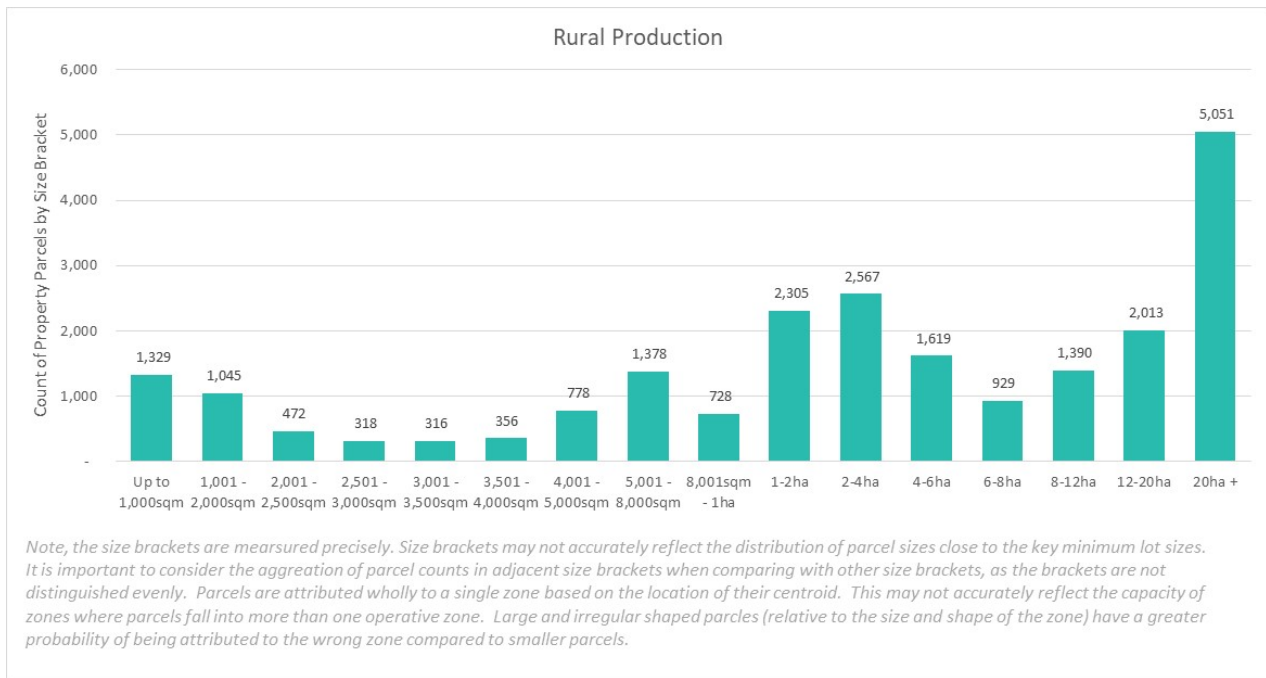


Figure 40: Distribution of Property Parcels by Size Bracket in the Rural Production Zone 2017/18

Table 39: Summary of Property Parcels by Size and Title Date in Rural Production Zone 2017/18

	Up to 1,000sqm	1,001-2,000sqm	2,001-2,500sqm	2,501-3,000sqm	3,001-3,500sqm	3,501-4,000sqm	4,001-5,000sqm	5,001-8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	756	693	307	204	188	205	410	744	393	1,219	1,305	867	573	886	1,366	3,346	13,462
2001-2007	124	88	34	31	44	69	170	273	160	485	489	334	128	210	227	524	3,390
2008-2018	140	140	83	49	53	56	165	268	130	468	664	373	197	270	378	1,083	4,517
Unmatched	309	124	48	34	31	26	33	93	45	133	109	45	31	24	42	98	1,225
<b>Total Parcels</b>	<b>1,329</b>	<b>1,045</b>	<b>472</b>	<b>318</b>	<b>316</b>	<b>356</b>	<b>778</b>	<b>1,378</b>	<b>728</b>	<b>2,305</b>	<b>2,567</b>	<b>1,619</b>	<b>929</b>	<b>1,390</b>	<b>2,013</b>	<b>5,051</b>	<b>22,594</b>
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	57%	66%	65%	64%	59%	58%	53%	54%	54%	53%	51%	54%	62%	64%	68%	66%	60%
2001-2007	9%	8%	7%	10%	14%	19%	22%	20%	22%	21%	19%	21%	14%	15%	11%	10%	15%
2008-2018	11%	13%	18%	15%	17%	16%	21%	19%	18%	20%	26%	23%	21%	19%	19%	21%	20%
Unmatched	23%	12%	10%	11%	10%	7%	4%	7%	6%	6%	4%	3%	3%	2%	2%	2%	5%
<b>Total Parcels</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	6%	5%	2%	2%	1%	2%	3%	6%	3%	9%	10%	6%	4%	7%	10%	25%	100%
2001-2007	4%	3%	1%	1%	1%	2%	5%	8%	5%	14%	14%	10%	4%	6%	7%	15%	100%
2008-2018	3%	3%	2%	1%	1%	1%	4%	6%	3%	10%	15%	8%	4%	6%	8%	24%	100%
Unmatched	25%	10%	4%	3%	3%	2%	3%	8%	4%	11%	9%	4%	3%	2%	3%	8%	100%
<b>Total Parcels</b>	<b>6%</b>	<b>5%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>6%</b>	<b>3%</b>	<b>10%</b>	<b>11%</b>	<b>7%</b>	<b>4%</b>	<b>6%</b>	<b>9%</b>	<b>22%</b>	<b>100%</b>

Source: M.E based on FNDC and LINZ data.

### 5.4.2 General Coastal Zone

The General Coastal Zone is currently characterised by a mix of very large properties and moderate properties (many of which broadly fall within a scale akin to rural residential or rural lifestyle lots). Of the size brackets considered, the second most common lot size after the 20+ha bracket, is the 4-6ha size. There has also been strong supply of properties in the 2-4ha and 1-2ha size brackets (Figure 41).

Table 40 shows that in the last 10 years (2008-2018) 27% of the parcels created in the General Coastal Zone were between 1ha and 6ha. This was a much stronger feature of the period between 2000 and 2007 where 40% of all titles created were in this size bracket. There were an estimated 82 2-4ha titles issued in the last 10 years (29% of all titles created in this size bracket over time). The other key trend in the General Coastal Zone relates to sections that are 1,000-2,000sqm in size. While this size bracket makes up 8% of all parcels in the zone, it makes up 14% of all parcels created in the last 10 years (107 in total). This means that 52% of all of these small rural residential type lots were created recently (under the operative plan).



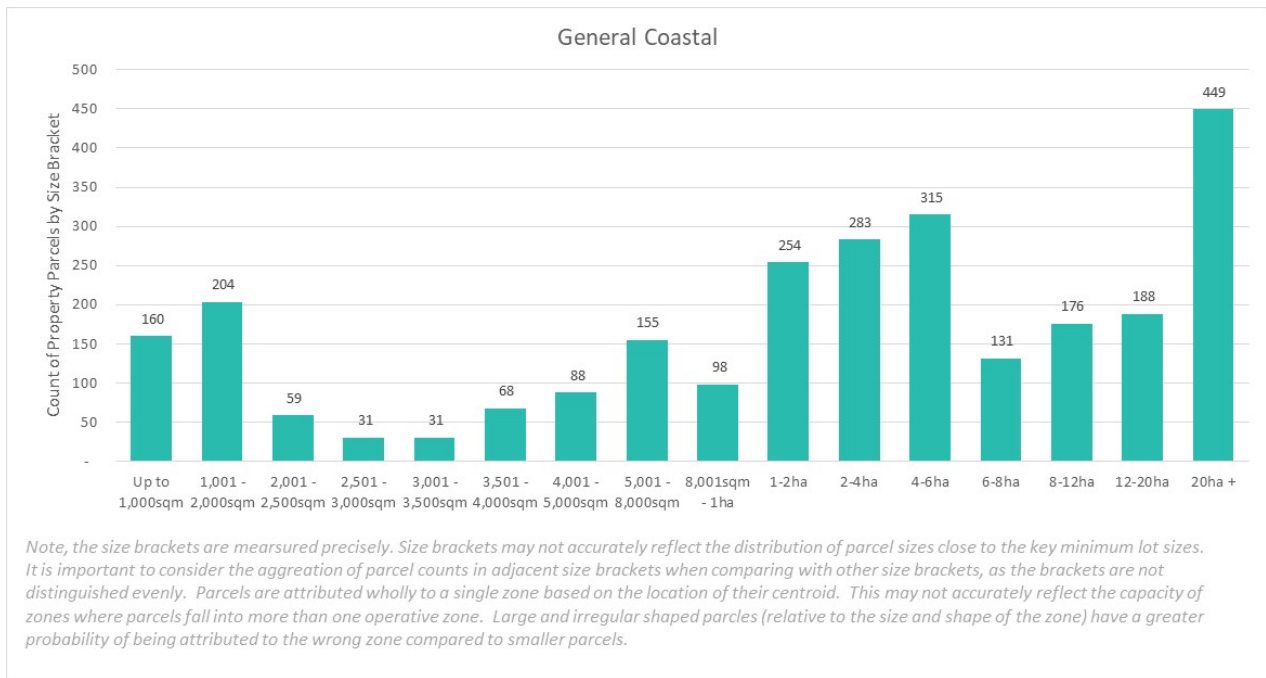


Figure 41: Distribution of Property Parcels by Size Bracket in the General Coastal Zone 2017/18

Table 40: Summary of Property Parcels by Size and Title Date in General Coastal Zone 2017/18

	Up to 1,000sqm	1,001 - 2,000sqm	2,001 - 2,500sqm	2,501 - 3,000sqm	3,001 - 3,500sqm	3,501 - 4,000sqm	4,001 - 5,000sqm	5,001 - 8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	65	62	28	17	12	20	40	58	41	98	128	167	62	92	99	225	1,214
2001-2007	14	16	7	4	8	14	10	37	19	63	55	73	29	35	36	60	480
2008-2018	34	107	17	4	8	29	28	42	28	67	82	59	34	40	43	143	765
Unmatched	47	19	7	6	3	5	10	18	10	26	18	16	6	9	10	21	231
<b>Total Parcels</b>	<b>160</b>	<b>204</b>	<b>59</b>	<b>31</b>	<b>31</b>	<b>68</b>	<b>88</b>	<b>155</b>	<b>98</b>	<b>254</b>	<b>283</b>	<b>315</b>	<b>131</b>	<b>176</b>	<b>188</b>	<b>449</b>	<b>2,690</b>
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	41%	30%	47%	55%	39%	29%	45%	37%	42%	39%	45%	53%	47%	52%	53%	50%	45%
2001-2007	9%	8%	12%	13%	26%	21%	11%	24%	19%	25%	19%	23%	22%	20%	19%	13%	18%
2008-2018	21%	52%	29%	13%	26%	43%	32%	27%	29%	26%	29%	19%	26%	23%	23%	32%	28%
Unmatched	29%	9%	12%	19%	10%	7%	11%	12%	10%	10%	6%	5%	5%	5%	5%	5%	9%
<b>Total Parcels</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	5%	5%	2%	1%	1%	2%	3%	5%	3%	8%	11%	14%	5%	8%	8%	19%	100%
2001-2007	3%	3%	1%	1%	2%	3%	2%	8%	4%	13%	11%	15%	6%	7%	8%	13%	100%
2008-2018	4%	14%	2%	1%	1%	4%	4%	5%	4%	9%	11%	8%	4%	5%	6%	19%	100%
Unmatched	20%	8%	3%	3%	1%	2%	4%	8%	4%	11%	8%	7%	3%	4%	4%	9%	100%
<b>Total Parcels</b>	<b>6%</b>	<b>8%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>3%</b>	<b>3%</b>	<b>6%</b>	<b>4%</b>	<b>9%</b>	<b>11%</b>	<b>12%</b>	<b>5%</b>	<b>7%</b>	<b>7%</b>	<b>17%</b>	<b>100%</b>

Source: M.E based on FNDC and LINZ data.

### 5.4.3 Rural Living Zone

The Rural Living Zone is currently characterised by a mix of sections sizes generally less than 8,000sqm in size (ranging from low density residential (under 2,000sqm) to larger rural-residential type lots), with very few large lots remaining. Rural lifestyle blocks (say 1-4ha) are not a feature of this zone – as intended by the subdivision rules. Of the size brackets considered, the most common lot size is the 3,000-3,500sqm size, followed by 4,000-5,000sqm. There has also been strong supply of properties in the 1,000-2,000sqm size bracket (Figure 42).

Table 41 shows that in the last 10 years (2008-2018) 40% of the parcels created in the Rural Living Zone were between 3,000sqm and 5,000sqm. This was a stronger feature of subdivision activity in the period between 2000 and 2007 where 50% of all titles created were in this size bracket. There were an estimated 85 3,000-3,500sqm titles issued in the last 10 years (23% of all titles created in this size bracket over time). A significant 49% of sections of this size were created between 2000-2007. Overall, subdivision activity in the Rural Living Zone is slowing down. This reflects rapid growth in the most popular locations, which are now nearing capacity (discussed later in the report), with little change

occurring where the zone has been provided in slower growth areas within the District and where there is expected to be large amounts of capacity remaining.

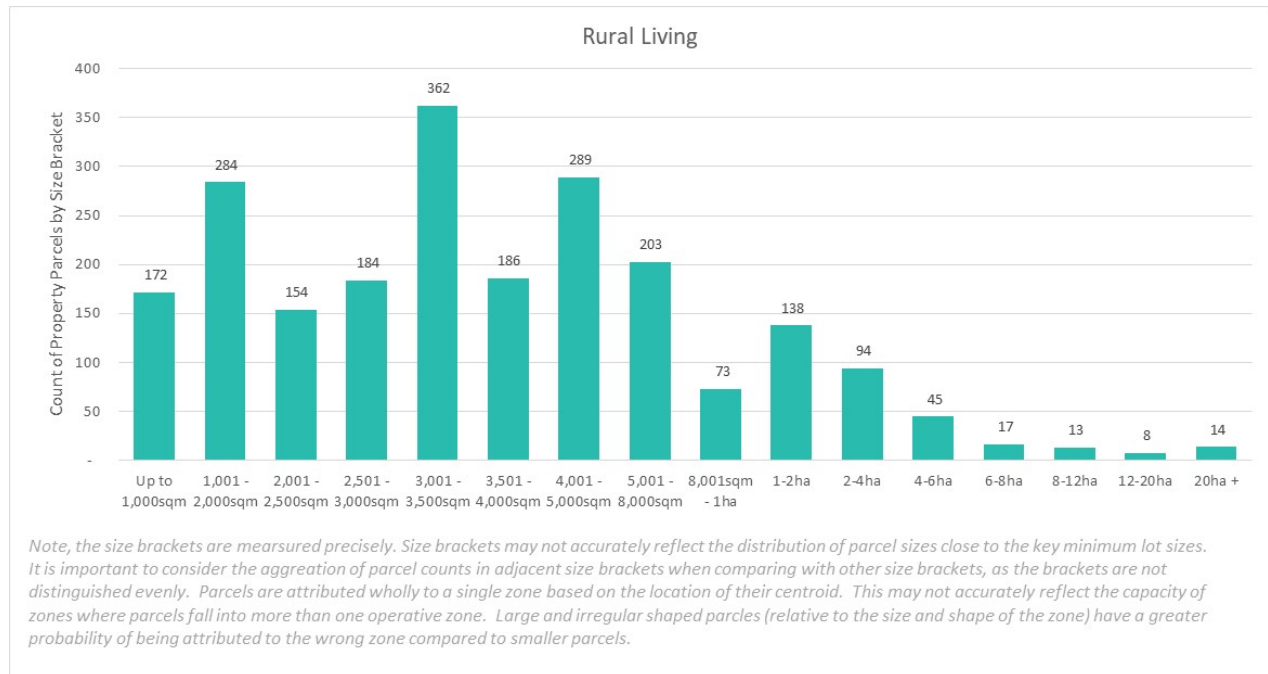


Figure 42: Distribution of Property Parcels by Size Bracket in the Rural Living Zone 2017/18

Table 41: Summary of Property Parcels by Size and Title Date in Rural Living Zone 2017/18

	Up to 1,000sqm	1,001-2,000sqm	2,001-2,500sqm	2,501-3,000sqm	3,001-3,500sqm	3,501-4,000sqm	4,001-5,000sqm	5,001-8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	96	235	85	69	99	88	140	97	33	72	43	21	11	8	6	9	1,112
2001-2007	25	18	52	70	178	60	99	68	26	33	28	7	3	2	-	-	669
2008-2018	36	29	17	45	85	38	50	37	14	32	20	16	3	2	2	4	430
Unmatched	15	2	-	-	-	-	-	1	-	1	3	1	-	1	-	1	25
<b>Total Parcels</b>	<b>172</b>	<b>284</b>	<b>154</b>	<b>184</b>	<b>362</b>	<b>186</b>	<b>289</b>	<b>203</b>	<b>73</b>	<b>138</b>	<b>94</b>	<b>45</b>	<b>17</b>	<b>13</b>	<b>8</b>	<b>14</b>	<b>2,236</b>
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	56%	83%	55%	38%	27%	47%	48%	48%	45%	52%	46%	47%	65%	62%	75%	64%	50%
2001-2007	15%	6%	34%	38%	49%	32%	34%	33%	36%	24%	30%	16%	18%	15%	0%	0%	30%
2008-2018	21%	10%	11%	24%	23%	20%	17%	18%	19%	23%	21%	36%	18%	15%	25%	29%	19%
Unmatched	9%	1%	0%	0%	0%	0%	0%	0%	0%	1%	3%	2%	0%	8%	0%	7%	1%
<b>Total Parcels</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	9%	21%	8%	6%	9%	8%	13%	9%	3%	6%	4%	2%	1%	1%	1%	1%	100%
2001-2007	4%	3%	8%	10%	27%	9%	15%	10%	4%	5%	4%	1%	0%	0%	0%	0%	100%
2008-2018	8%	7%	4%	10%	20%	9%	12%	9%	3%	7%	5%	4%	1%	0%	0%	1%	100%
Unmatched	60%	8%	0%	0%	0%	0%	0%	4%	0%	4%	12%	4%	0%	4%	0%	4%	100%
<b>Total Parcels</b>	<b>8%</b>	<b>13%</b>	<b>7%</b>	<b>8%</b>	<b>16%</b>	<b>8%</b>	<b>13%</b>	<b>9%</b>	<b>3%</b>	<b>6%</b>	<b>4%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>0%</b>	<b>1%</b>	<b>100%</b>

Source: M.E based on FNDC and LINZ data.

#### 5.4.4 Coastal Living Zone

The Coastal Living Zone is currently characterised by low density residential lots (under 2,000sqm) and sections between 5,000sqm and 2ha, with very few larger lots remaining. This profile differs slightly from the Rural Living Zone in that there is evidence of rural lifestyle blocks (say 1-4ha). This may suggest less pressure (demand) to maximise the density of this land compared to the more popular Rural Living Zone areas. Of the size brackets considered, the most common lot size is the 1,000sqm or less, or, 1-2ha (at around 240 lots parcels each). This is followed by 5,000-8,000sqm. There has also been strong supply of properties either side of these brackets, but supply drops off above 2ha (Figure 43)

Table 42 shows that in the last 10 years (2008-2018) 35% of the parcels created in the Coastal Living Zone were between 5,000sqm and 1ha. This was less of a feature of subdivision activity in the period between 2000 and 2007 where 26% of all titles created were in this size bracket. There were an estimated 71 8,000-1ha titles issued in the last

10 years (34% of all titles created in this size bracket over time). A similar share (32%) of sections of this size were created between 2000-2007. The rate of lots being created that are 1,000sqm or less has slowed right down (from an annual average of 12 lots between 2000-2007 to just 4 lots on average per annum since 2008). Overall, subdivision activity in the Coastal Living Zone is slowing down. As with the Rural Living Zone, this may reflect rapid growth in the most popular locations, which may now be nearing capacity (discussed later in the report), with little change occurring where the zone has been provided in slower growth areas within the District and where there is expected to be large amounts of capacity remaining.

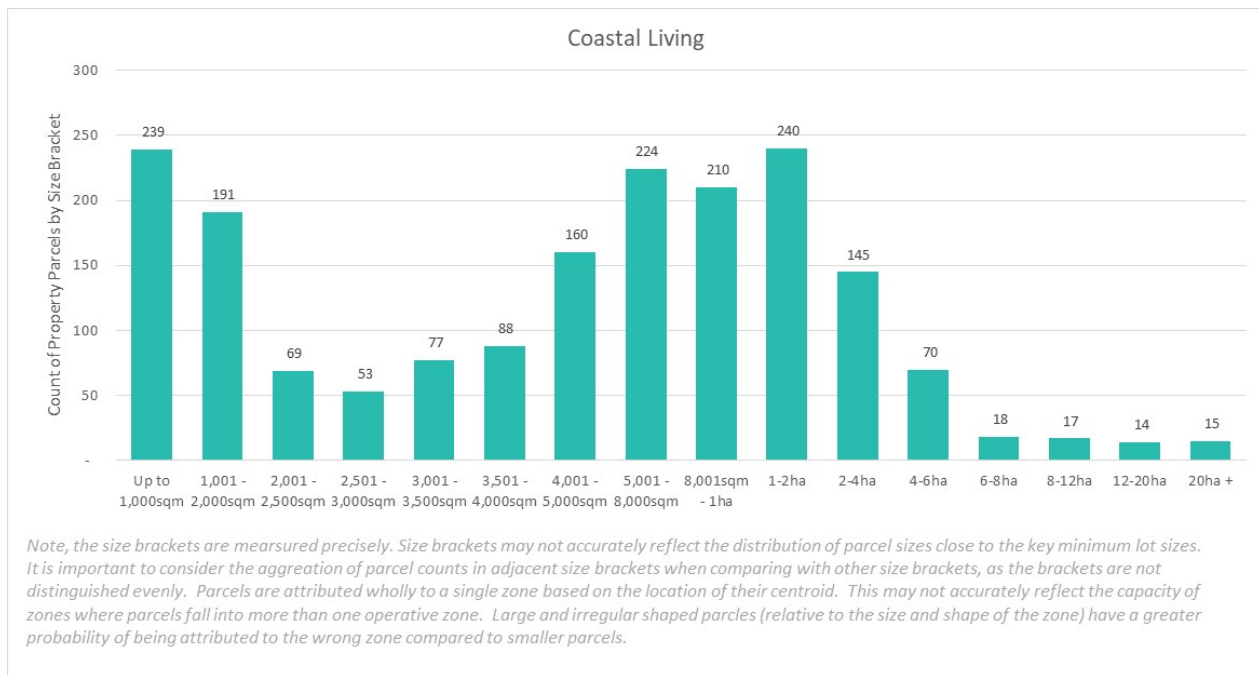


Figure 43: Distribution of Property Parcels by Size Bracket in the Coastal Living Zone 2017/18

Table 42: Summary of Property Parcels by Size and Title Date in Coastal Living Zone 2017/18

	Up to 1,000sqm	1,001- 2,000sqm	2,001- 2,500sqm	2,501- 3,000sqm	3,001- 3,500sqm	3,501- 4,000sqm	4,001- 5,000sqm	5,001- 8,000sqm	8,001sqm- 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha+	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	90	134	50	36	45	46	95	100	67	94	79	42	7	10	10	7	912
2001-2007	83	37	13	8	19	29	36	62	68	86	35	11	5	6	1	5	504
2008-2018	44	16	6	8	12	12	27	60	71	59	29	16	5	-	3	3	371
Unmatched	22	4	-	1	1	1	2	2	4	1	2	1	1	1	-	-	43
<b>Total Parcels</b>	<b>239</b>	<b>191</b>	<b>69</b>	<b>53</b>	<b>77</b>	<b>88</b>	<b>160</b>	<b>224</b>	<b>210</b>	<b>240</b>	<b>145</b>	<b>70</b>	<b>18</b>	<b>17</b>	<b>14</b>	<b>15</b>	<b>1,830</b>
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	38%	70%	72%	68%	58%	52%	59%	45%	32%	39%	54%	60%	39%	59%	71%	47%	50%
2001-2007	35%	19%	19%	15%	25%	33%	23%	28%	32%	36%	24%	16%	28%	35%	7%	33%	28%
2008-2018	18%	8%	9%	15%	16%	14%	17%	27%	34%	25%	20%	23%	28%	0%	21%	20%	20%
Unmatched	9%	2%	0%	2%	1%	1%	1%	1%	2%	0%	1%	1%	6%	6%	0%	0%	2%
<b>Total Parcels</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	10%	15%	5%	4%	5%	5%	10%	11%	7%	10%	9%	5%	1%	1%	1%	1%	100%
2001-2007	16%	7%	3%	2%	4%	6%	7%	12%	13%	17%	7%	2%	1%	1%	0%	1%	100%
2008-2018	12%	4%	2%	2%	3%	3%	7%	16%	19%	16%	8%	4%	1%	0%	1%	1%	100%
Unmatched	51%	9%	0%	2%	2%	2%	5%	5%	9%	2%	5%	2%	2%	2%	0%	0%	100%
<b>Total Parcels</b>	<b>13%</b>	<b>10%</b>	<b>4%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>9%</b>	<b>12%</b>	<b>11%</b>	<b>13%</b>	<b>8%</b>	<b>4%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>100%</b>

Source: M.E based on FNDC and LINZ data.

### 5.4.5 Waimate North Zone

The Waimate North Zone is only small but is currently characterised by a mix of moderately large properties (8ha or greater) and small-moderate sized properties (which broadly fall within a scale akin to rural lifestyle lots – although the presence or otherwise of dwellings on those lots is not included in the available data). Of the size brackets considered, the most common lot size is the 2-4ha size. There has also been moderate supply of properties in the 8-12ha size range (Figure 44).

Table 43 shows that in the last 10 years (2008-2018) there have been no parcels created within the zone that are less than 8,000sqm. A notable 22% of the parcels created in the Waimate North Zone in that period were between 8,000sqm and 1ha. This was not a key feature of the subdivision activity in the earlier period of 2000 to 2007 where just 5% of all titles created were in that size bracket (and 25% were smaller). There were an estimated 9 titles issued of any size in the last 10 years (an average of 1 a year). This compares with an average of nearly 3 per year between 2000 and 2007. This suggest that the land use within the zone is relatively stable at present and is not undergoing much change.

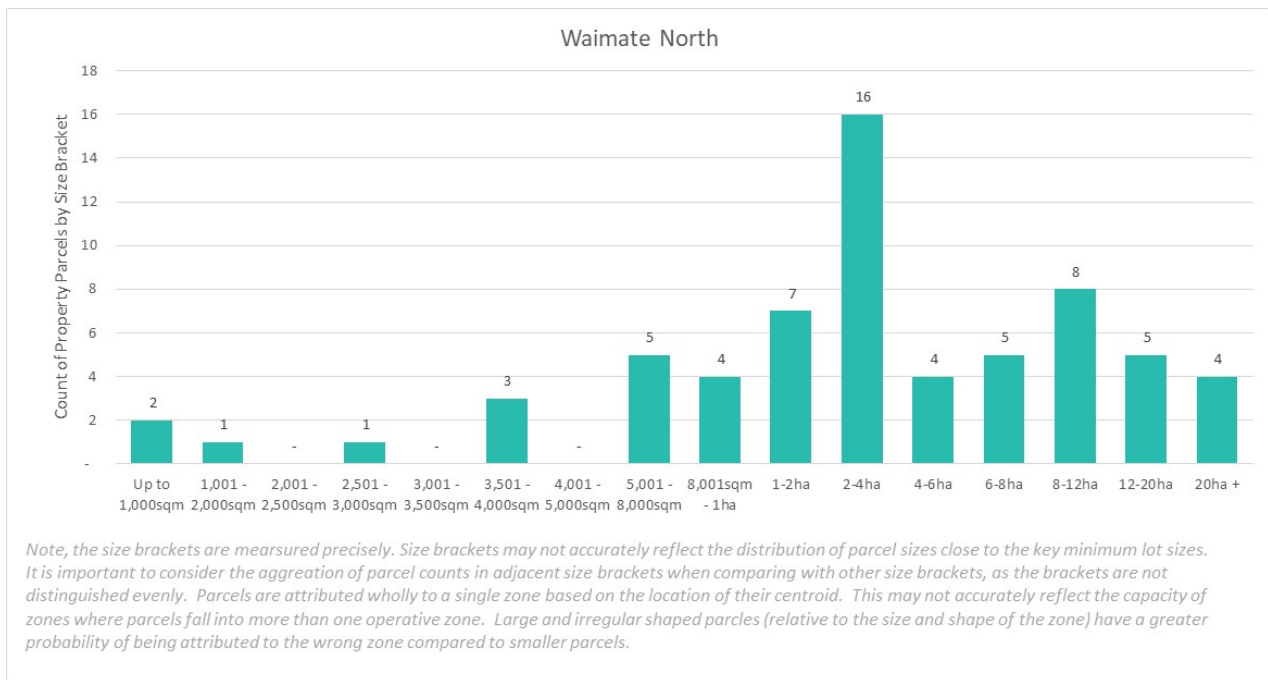


Figure 44: Distribution of Property Parcels by Size Bracket in the Waimate North Zone 2017/18

Table 43: Summary of Property Parcels by Size and Title Date in Waimate North Zone 2017/18

	Up to 1,000sqm	1,001 - 2,000sqm	2,001 - 2,500sqm	2,501 - 3,000sqm	3,001 - 3,500sqm	3,501 - 4,000sqm	4,001 - 5,000sqm	5,001 - 8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	1	1	-	1	-	1	-	2	1	4	10	2	3	5	3	2	36
2001-2007	1	-	-	-	-	2	-	3	1	2	4	1	2	2	1	1	20
2008-2018	-	-	-	-	-	-	-	-	2	1	2	1	1	1	1	1	9
Unmatched	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Parcels</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>16</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>5</b>	<b>4</b>	<b>65</b>
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	50%	100%	0%	100%	0%	33%	0%	40%	25%	57%	63%	50%	60%	63%	60%	50%	55%
2001-2007	50%	0%	0%	0%	0%	67%	0%	60%	25%	29%	25%	25%	40%	25%	20%	25%	31%
2008-2018	0%	0%	0%	0%	0%	0%	0%	0%	50%	14%	13%	25%	0%	13%	20%	25%	14%
Unmatched	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Total Parcels</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	3%	3%	0%	3%	0%	3%	0%	6%	3%	11%	28%	6%	8%	14%	8%	6%	100%
2001-2007	5%	0%	0%	0%	0%	10%	0%	15%	5%	10%	20%	5%	10%	10%	5%	5%	100%
2008-2018	0%	0%	0%	0%	0%	0%	0%	22%	11%	22%	11%	0%	11%	11%	11%	11%	100%
Unmatched	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Total Parcels</b>	<b>3%</b>	<b>2%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>5%</b>	<b>0%</b>	<b>8%</b>	<b>6%</b>	<b>11%</b>	<b>25%</b>	<b>6%</b>	<b>8%</b>	<b>12%</b>	<b>8%</b>	<b>6%</b>	<b>100%</b>

Source: M.E based on FNDC and LINZ data.

#### 5.4.6 Minerals Zone

The Minerals Zone is relatively small and is currently characterised by a mix of large properties (12ha or greater) and small-moderate sized properties (which broadly fall within a scale akin to rural lifestyle lots – although the presence or otherwise of dwellings on those lots is not included in the available data). Of the size brackets considered, the most common lot size is the 20+ha size. There has also been moderate supply of properties in the 2-4ha size range but supply drops off below 1ha (Figure 45).

Table 44 shows that in the last 10 years (2008-2018) there have been only four parcels created within the zone that are less than 12ha. The total number of titles issued in that period was 9. This was 3 times more titles issued than in the previous period of 2001-2007. By far the majority of titles that occur in the zone existed prior to 2000. Overall, the Minerals Zone is relatively stable and is not undergoing much change in terms of land parcel boundaries.

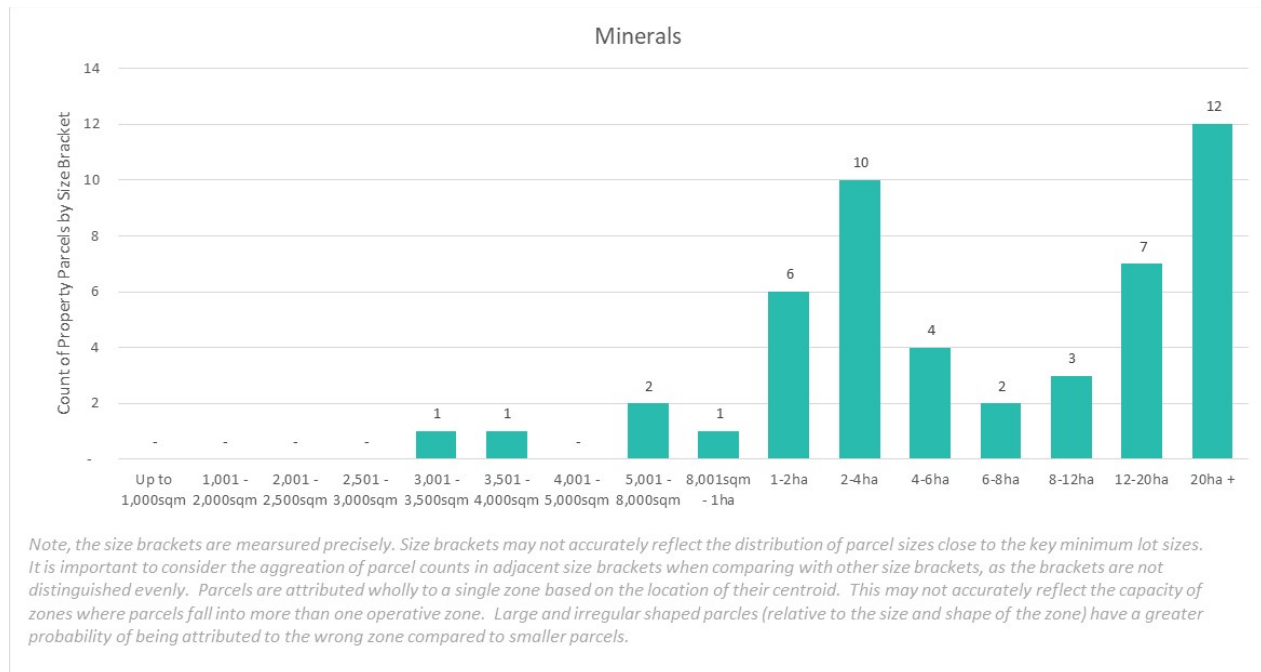


Figure 45: Distribution of Property Parcels by Size Bracket in the Minerals Zone 2017/18

Table 44: Summary of Property Parcels by Size and Title Date in Minerals Zone 2017/18

	Up to 1,000sqm	1,001-2,000sqm	2,001-2,500sqm	2,501-3,000sqm	3,001-3,500sqm	3,501-4,000sqm	4,001-5,000sqm	5,001-8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	-	-	-	-	1	-	-	2	1	4	8	4	1	2	4	8	35
2001-2007	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	3
2008-2018	-	-	-	-	-	1	-	-	-	1	-	-	1	1	2	3	9
Unmatched	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	2
<b>Total Parcels</b>	-	-	-	-	1	1	-	2	1	6	10	4	2	3	7	12	49
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	0%	0%	0%	0%	100%	0%	0%	100%	100%	67%	80%	100%	50%	67%	57%	67%	71%
2001-2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	10%	0%	0%	0%	0%	8%	6%
2008-2018	0%	0%	0%	0%	0%	100%	0%	0%	0%	17%	0%	0%	50%	33%	29%	25%	18%
Unmatched	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%	14%	0%	4%
<b>Total Parcels</b>	0%	0%	0%	0%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	0%	0%	0%	0%	3%	0%	0%	6%	3%	11%	23%	11%	3%	6%	11%	23%	100%
2001-2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	0%	0%	0%	33%	100%
2008-2018	0%	0%	0%	0%	0%	11%	0%	0%	0%	11%	0%	0%	11%	11%	22%	33%	100%
Unmatched	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	50%	0%	100%
<b>Total Parcels</b>	0%	0%	0%	0%	2%	2%	0%	4%	2%	12%	20%	8%	4%	6%	14%	24%	100%

Source: M.E based on FNDC and LINZ data.

### 5.4.7 South Kerikeri Inlet Zone

The South Kerikeri Inlet Zone (inclusive of the Sensitive Area) is only small but is currently characterised by a mix of rural lifestyle properties (1ha or greater) and small-moderate sized rural properties. Of the size brackets considered, the most common lot size is the 1-2ha size. There has also been an equal amount of supply of properties in the 2-4ha and 4-6ha size brackets. There remain 5 properties in the 12-20ha size range and 2 that are 20ha or larger (Figure 46).

Table 45 shows that in the last 10 years (2008-2018) there have been just 3 parcels created within the zone that are less than 12ha. The data suggests that the parent lots remain large (greater than 12ha). Two of the three lots created in that period are between 4-6ha, with one uncharacteristically small at less than 2,000sqm (although the purpose of that site is not known). In the preceding period (2000 to 2007) there were seven lots created that were less than 12ha.

The majority of these (4 lots) were between 1-2ha in size, with the balance slightly larger rural lifestyle lots. Overall, it appears that subdivision in the Kerikeri Inlet Zone has slowed down in recent years.

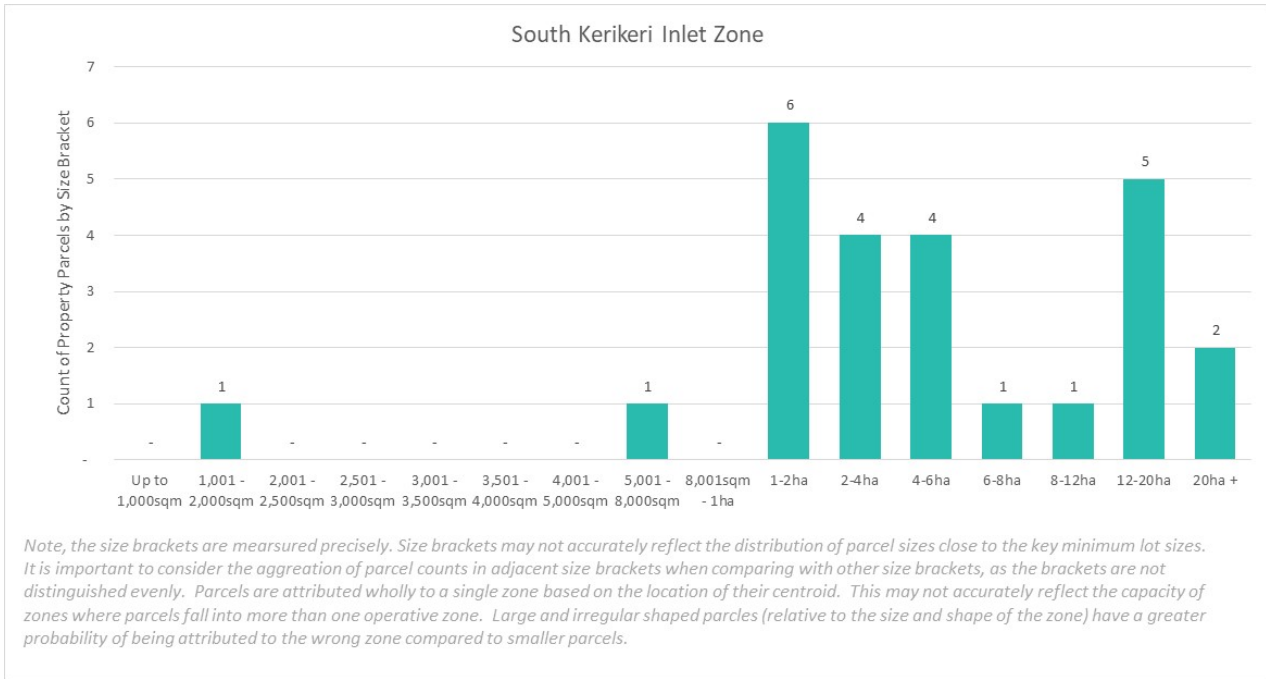


Figure 46: Distribution of Property Parcels by Size Bracket in the South Kerikeri Inlet Zone 2017/18

Table 45: Summary of Property Parcels by Size and Title Date in South Kerikeri Inlet Zone 2017/18

	Up to 1,000sqm	1,001 - 2,000sqm	2,001 - 2,500sqm	2,501 - 3,000sqm	3,001 - 3,500sqm	3,501 - 4,000sqm	4,001 - 5,000sqm	5,001 - 8,000sqm	8,001sqm - 1ha	1-2ha	2-4ha	4-6ha	6-8ha	8-12ha	12-20ha	20ha +	Total
<b>Count of Parcels by Size and Year of Title</b>																	
2000 or Before	-	-	-	-	-	-	-	1	-	2	3	-	1	1	2	-	10
2001-2007	-	-	-	-	-	-	-	-	-	4	1	2	-	-	2	1	10
2008-2018	-	1	-	-	-	-	-	-	-	-	2	-	-	-	1	1	5
Unmatched	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Parcels</b>	-	<b>1</b>	-	-	-	-	-	<b>1</b>	-	<b>6</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>25</b>
<b>Share of Parcels by Year of Title for Each Parcel Size</b>																	
2000 or Before	0%	0%	0%	0%	0%	0%	0%	100%	0%	33%	75%	0%	100%	100%	40%	0%	40%
2001-2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%	25%	50%	0%	0%	40%	50%	40%
2008-2018	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	20%	50%	20%
Unmatched	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Total Parcels</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Share of Parcels by Parcel Size for Each Year of Title</b>																	
2000 or Before	0%	0%	0%	0%	0%	0%	0%	10%	0%	20%	30%	0%	10%	10%	20%	0%	100%
2001-2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	10%	20%	0%	0%	20%	10%	100%
2008-2018	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%	20%	20%	100%
Unmatched	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Total Parcels</b>	<b>0%</b>	<b>4%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>4%</b>	<b>0%</b>	<b>24%</b>	<b>16%</b>	<b>16%</b>	<b>4%</b>	<b>4%</b>	<b>20%</b>	<b>8%</b>	<b>100%</b>

Source: M.E based on FNDC and LINZ data.

### 5.4.8 Spatial Audit of Rural Zones

M.E has carried out a desktop spatial analysis using GIS (and supported by aerial photographs/Google Maps) that examines the Rural Production, General Coastal and Waimate North rural zones for evidence of subdivision and land fragmentation, including subdivision that appears to support rural lifestyle and rural residential type living, with limited or no associated primary production activity. The intention is to place the district wide audit of rural subdivision by zone (discussed in section 5.4) ‘on the ground’. This spatial analysis is relevant because it highlights:

- That demand for rural residential (or broadly equivalent lot sizes) is not confined to the Rural Living and Coastal Living Zones.
- There is clear demand for a slightly larger ‘lifestyle’ lot not being supplied in the Rural Living Zone – that is, it shows a separate market of demand.

- Where (and in which zones) the operative provisions are effectively or ineffectively achieving rural outcomes.
- That there are areas where the rural character and productive capacity of the rural environment have already been lost and may be under further threat, including in areas with versatile soils.
- Areas that may warrant re-zoning to better recognise current land use and to manage the cumulative effect of further growth in these locations.

The analysis is not comprehensive. It is important to keep in mind the following:

- It has examined a number of localities in the District – agreed through discussion with Council. These are limited to Haruru, Waimate North, Kerikeri South, Kerikeri Inlet, Waipapa (Kerikeri North), Kaikohe, Kaitaia and Ahipara.
- It is based on parcel size data but considers also ‘date of title’ data and versatile soils to add further context.
- M.E has not specifically incorporated data on dwellings per parcel, so there is no definitive link between subdivision and rural lifestyle/rural residential land uses. Inspection of aerial photographs has been carried out to verify such development in most cases.
- Does not focus on subdivision patterns in the Rural Living or Coastal Living Zones, as these zones anticipate lower densities/lot sizes.
- Identifies some examples or ‘hot spots’ of land fragmentation. It does not identify or discuss all examples or hot-spots within the district. These ‘hot spots’ have been used to identify areas where past subdivision consents can be further examined (discussed in section 6.2.4).
- Two maps have been produced for each location. The first map looks at parcel size and is used to identify potential areas of interest. The second map shows the date of title as well as versatile soils. This map helps to eliminate areas of interest that are not examples of recent subdivision activity (i.e. within the last ten years) as well as identify which growth areas are occurring in or avoiding versatile soils.

#### 5.4.8.1 Haruru

A large area of Rural Living Zone is provided in Haruru, although has yet to see any development. It is covered by the Watea Structure Plan (and special zone) in the Operative District Plan. There is a distinct area of rural residential and rural lifestyle type land use further west along Puketona Road, east and west of Retreat Road and around Puketutu Drive (Figure 47). It appears that much of the subdivision that created these lots adjacent to the roads is not recent (i.e. pre-dates 2008), but subdivision behind these lots (rear lots) has occurred in the past 10 years (Figure 48). Further demand for these lifestyle blocks may see this pattern continue, particularly on the south side of Puketona Road. Such expansion would not be at the expense of versatile soils.

Another area of interest is north of the Waitangi River and west of Haruru Falls Road, around Wakelins Road. There are a number of rural lifestyle lots created in this area, with those along the Waitangi River also located on class 3 soils. This area has been subdivided in the past 10 years and is an area to watch for further subdivision. Especially given that it is within the Kerikeri High School enrolment zone and in close proximity to Haruru township.

#### 5.4.8.2 Waimate North and Surrounds

Waimate North and surrounding land, including around Okaihau, is a relatively short drive from Kerikeri and this proximity has likely stimulated demand for rural lifestyle type subdivision along the routes that connect to the south of Kerikeri (Figure 49). The Waimate North Zone itself is not too fragmented at this stage and contains the only pocket of class 1 soils (the most versatile soil classification) in the District. However, there is a concentration of rural lifestyle sized lots along Te Ahu Ahu Road and particularly near the intersections with Waikuku Road and Waimate North Road – which is also relatively recent and occurring on a mix of class 2 and 3 versatile soils (Figure 50).

Further to the north east, there are pockets of contiguous rural lifestyle blocks on Okokako Road, Montrose Road and just north of Montrose Road on Waimate Road North. Generally, these have not taken place on versatile soils. However, much of this appears to have taken place between 2000 and 2007.

Along Waiare Road – on Signal Road and at the intersection of Wairoa Road, there are also pockets of lifestyle blocks, but only the latter is particularly recent. The western end of Wairoa Road does not have versatile soils. There is another good example of recent rural lifestyle subdivision on Wairoa Road mid-way between Waiare and Ladore Roads.

Overall, the cumulative effect of rural subdivision in Waimate North and its surrounds since 2000, and particularly since 2008, makes this area one to watch. There is potential for further demand in this area and further loss of primary production potential.



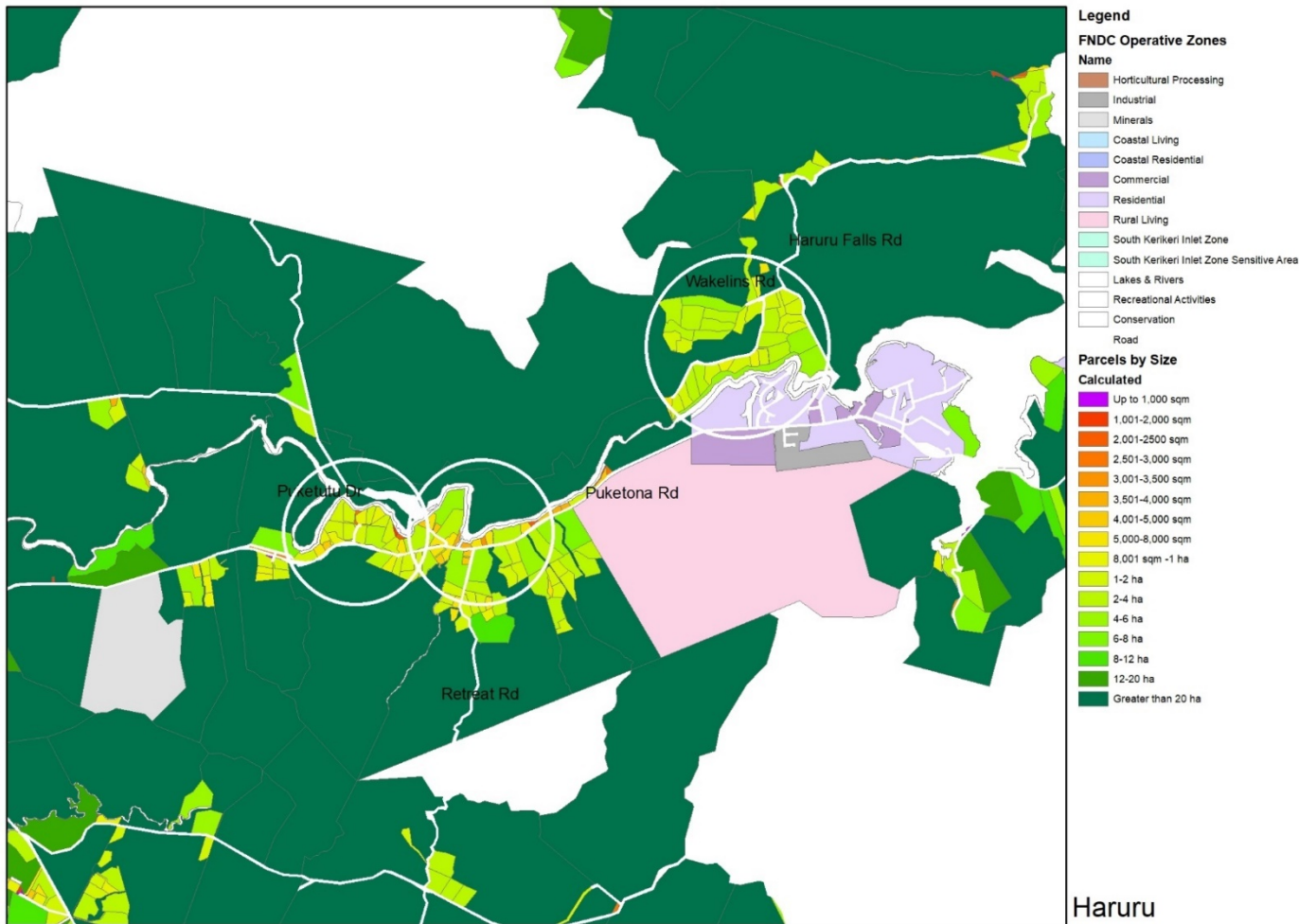


Figure 47: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Haruru

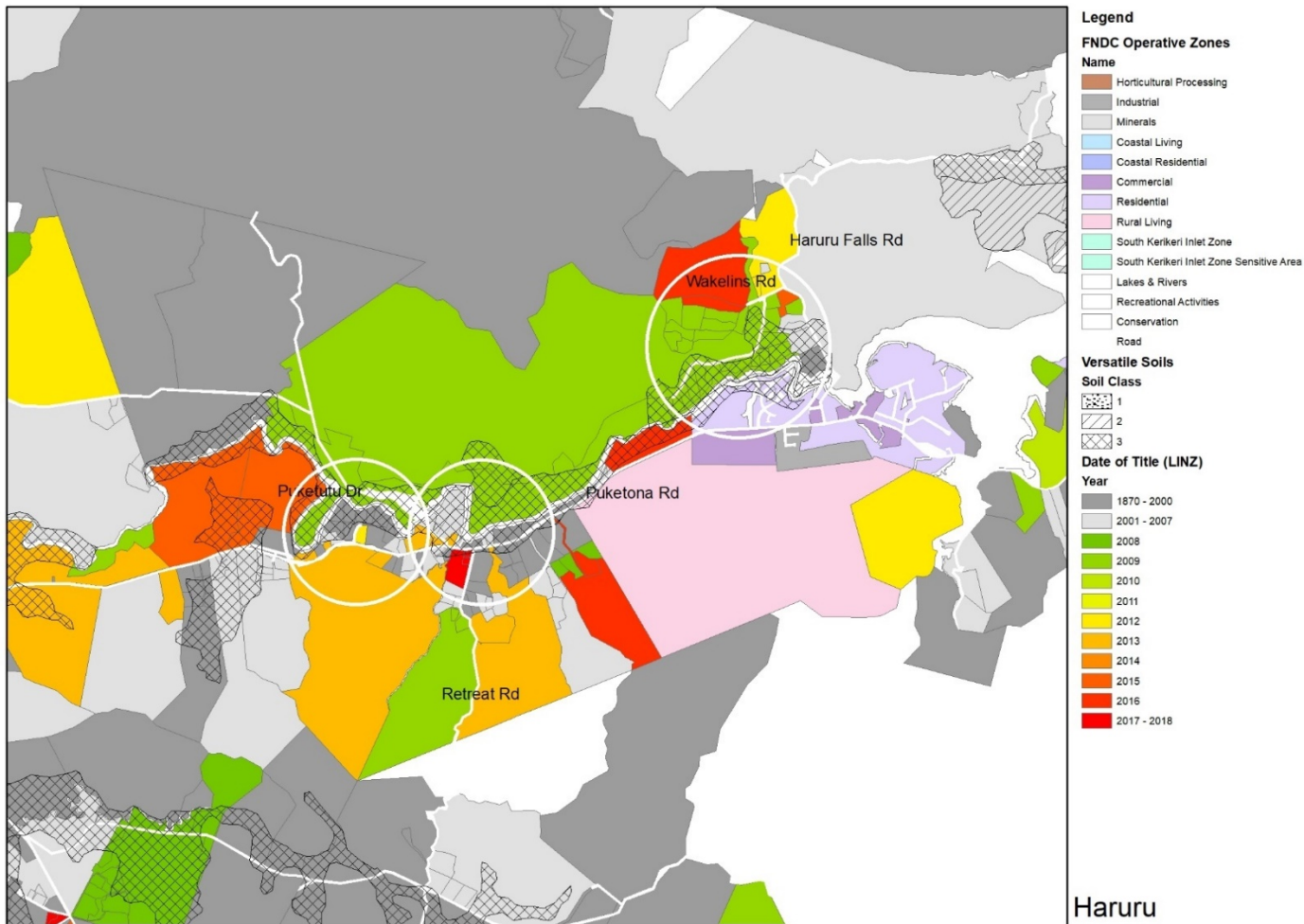


Figure 48: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones - Haruru

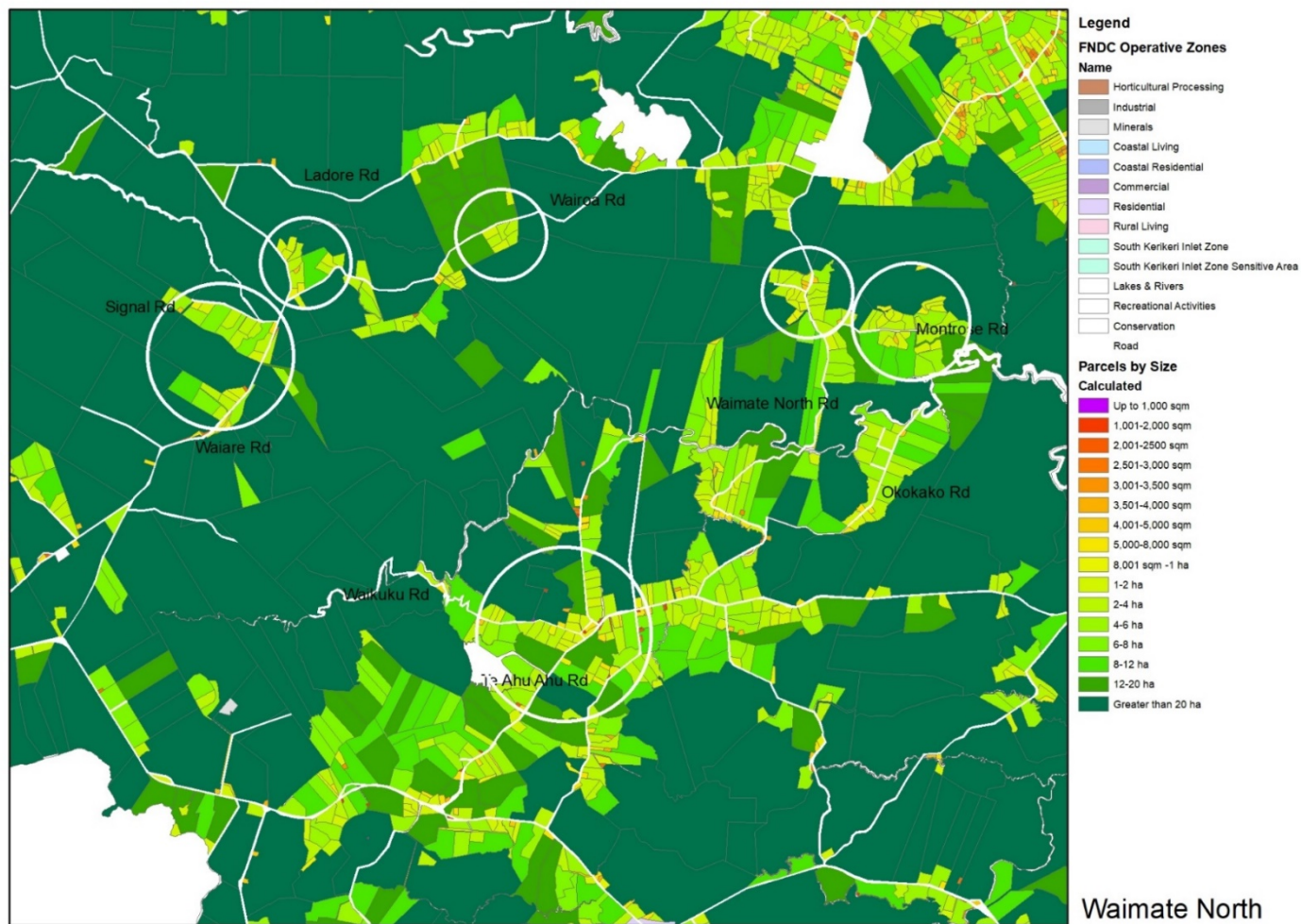


Figure 49: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Waimate North and Surrounds



Figure 50: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Waimate North and Surrounds

#### 5.4.8.3 Kerikeri South

The land west and south west of Kerikeri is extensively fragmented but not all subdivision relates to a loss of primary production activity (Figure 51). Much of the land, and indeed parcels that could be considered 'rural lifestyle' in size, is used for horticulture, so care is needed not to assume that all subdivision has necessarily led to a change away from productive land use. There are however some clear examples of rural residential and rural lifestyle activity and this highlights that demand has not been contained within the Rural Living area provided around the southern edge of the urban area.

These examples include around Blue Gum Lane, on the western side of Waimate North Road where it intersects with State Highway 10, Amuri Road and Tyree Road. When examining the year in which this subdivision occurred (specifically when titles were issued), it is clear that only Blue Gum Lane has occurred in the last 10 years (Figure 52). Of these four examples, it is the only one that has occurred generally on non-versatile soils. Another hot spot of recent subdivision activity is at the end of Valencia Lane. Aerial photographs confirm that this has also resulted in rural lifestyle blocks, with little or no associated primary production activity. This is an area that may attract further demand and release of rural land.

Another area that has attracted some rural residential sized subdivision is at the Kerikeri Road – State Highway 10 roundabout. While much of this activity has not been recent, it is an area of high exposure and may attract further land use change in the future. It occupies class 2 versatile soils.

#### 5.4.8.4 Kerikeri Inlet

Kerikeri Inlet contains pockets of Coastal Residential and Coastal Living Zones. However, on the northern side of the Inlet and outside of those zones, there is evidence of rural residential and rural lifestyle type subdivision and development along Opito Bay Road and along Redcliffs Road (Figure 53). None of this subdivision has occurred on versatile soils. The area circled on Opito Bay Road has created house sites within the bush, while the Redcliffs Road example is more rural in character. Neither subdivision is recent (Figure 54).

The largest concentration of recent subdivision has occurred south of Rangitane Road, but to date has yielded a few smaller blocks and a few larger lifestyle blocks, although those larger blocks may be attractive for further subdivision given sufficient demand in this locality.

On the southern side of the inlet, there is a cluster of rural residential sized lots along Wharau Road and evidence of rural lifestyle type subdivision at very end of Wharau Road. Both locations have experienced some recent subdivision activity suggesting that these two localities are expanding incrementally. Expansion of this area does not impact on versatile soils, and it is not an area of intensive primary production, which large pockets of bush/scrub throughout the headland.

#### 5.4.8.5 Waipapa / Kerikeri North

The Waipapa / Kerikeri North area is highly fragmented, but like Kerikeri South, contains a lot of horticultural properties which are often small in size. Not all subdivision in the Rural Production Zone has therefore led to a loss of primary production activity. There are however clear examples of rural residential and rural lifestyle type subdivision in amongst the orchards land. Key examples include Waitotara Drive, Riverstream Drive, Ironbark Road, pockets along State Highway 10 and along Stanners Road (Figure 55).

When looking at the date of title, it appears that with the exception of Stanners Road, the majority of these subdivisions occurred between 2000 and 2007 (Figure 56). All are however on class 3 versatile soils and so represent a loss of productive capacity of this finite resource.

While there have been ad-hoc pockets of recent subdivision throughout the wider Waipapa area, there is some evidence to suggest from that the majority of recent subdivision has been around the northern and western fringe of this location (see for example around Onekura Road). This indicates that perhaps further changes of farming land use will continue, with ongoing loss of primary production (unless lots are converted to horticulture).

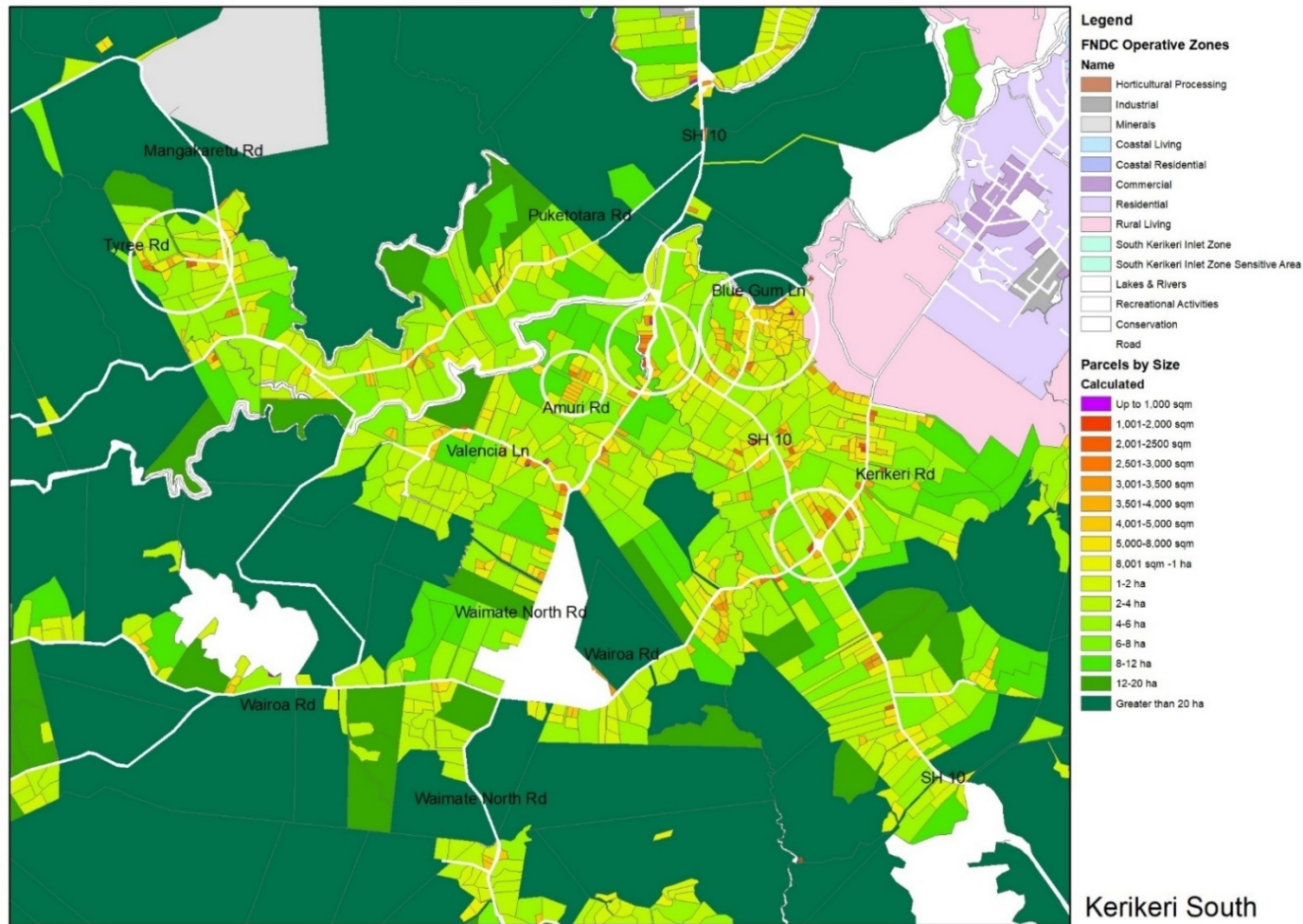


Figure 51: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Kerikeri South

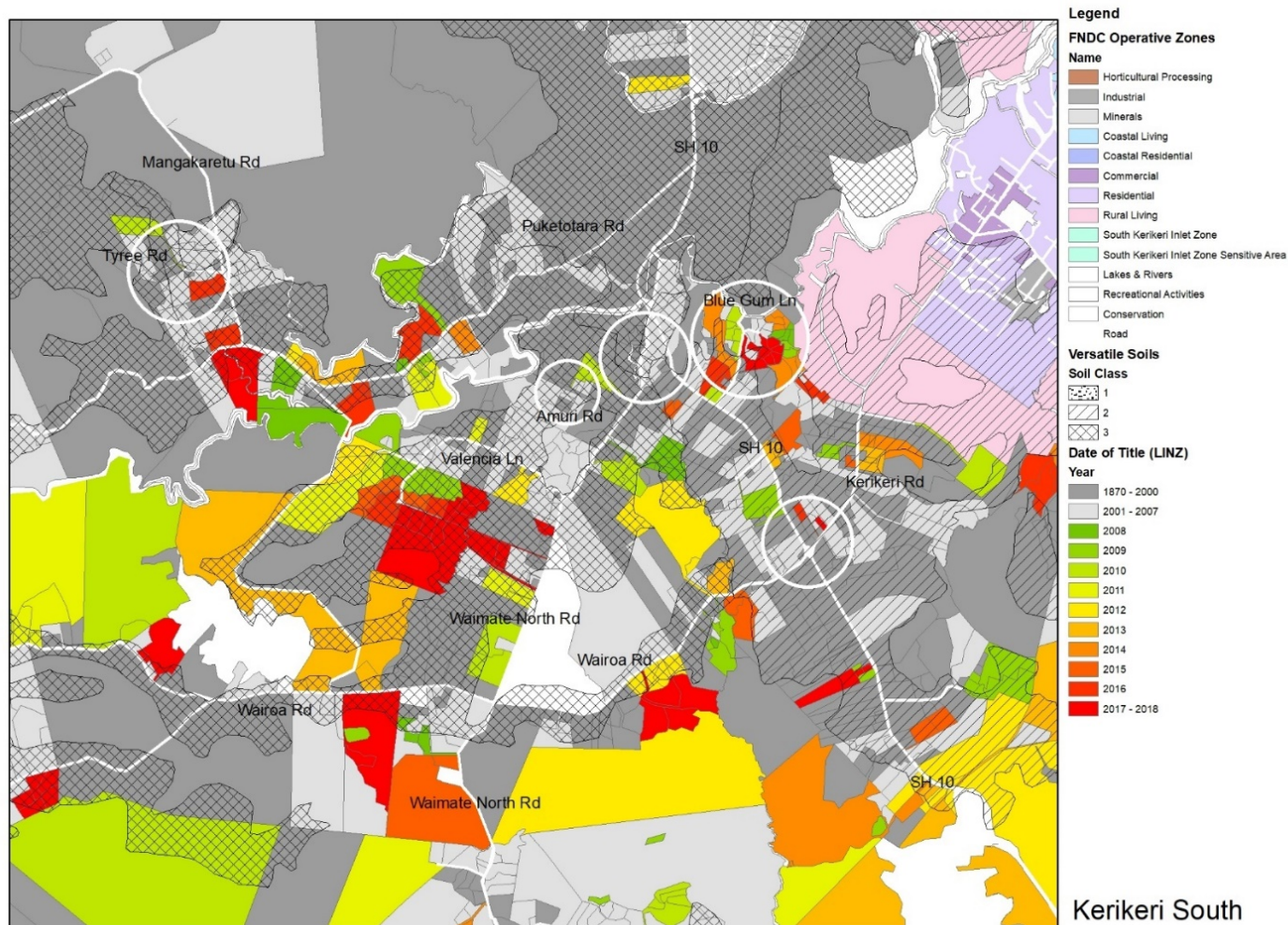


Figure 52: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Kerikeri South

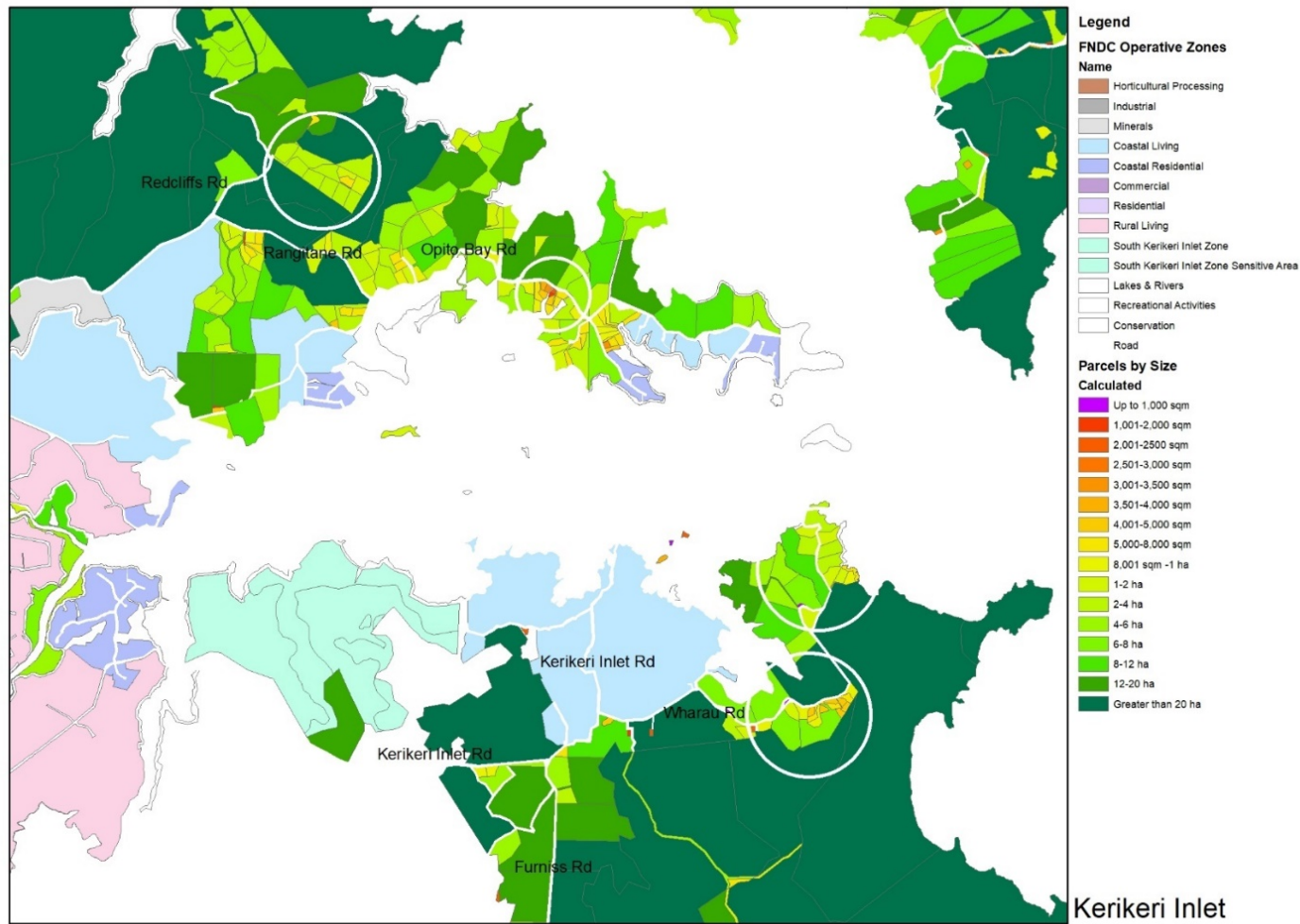


Figure 53: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Kerikeri Inlet



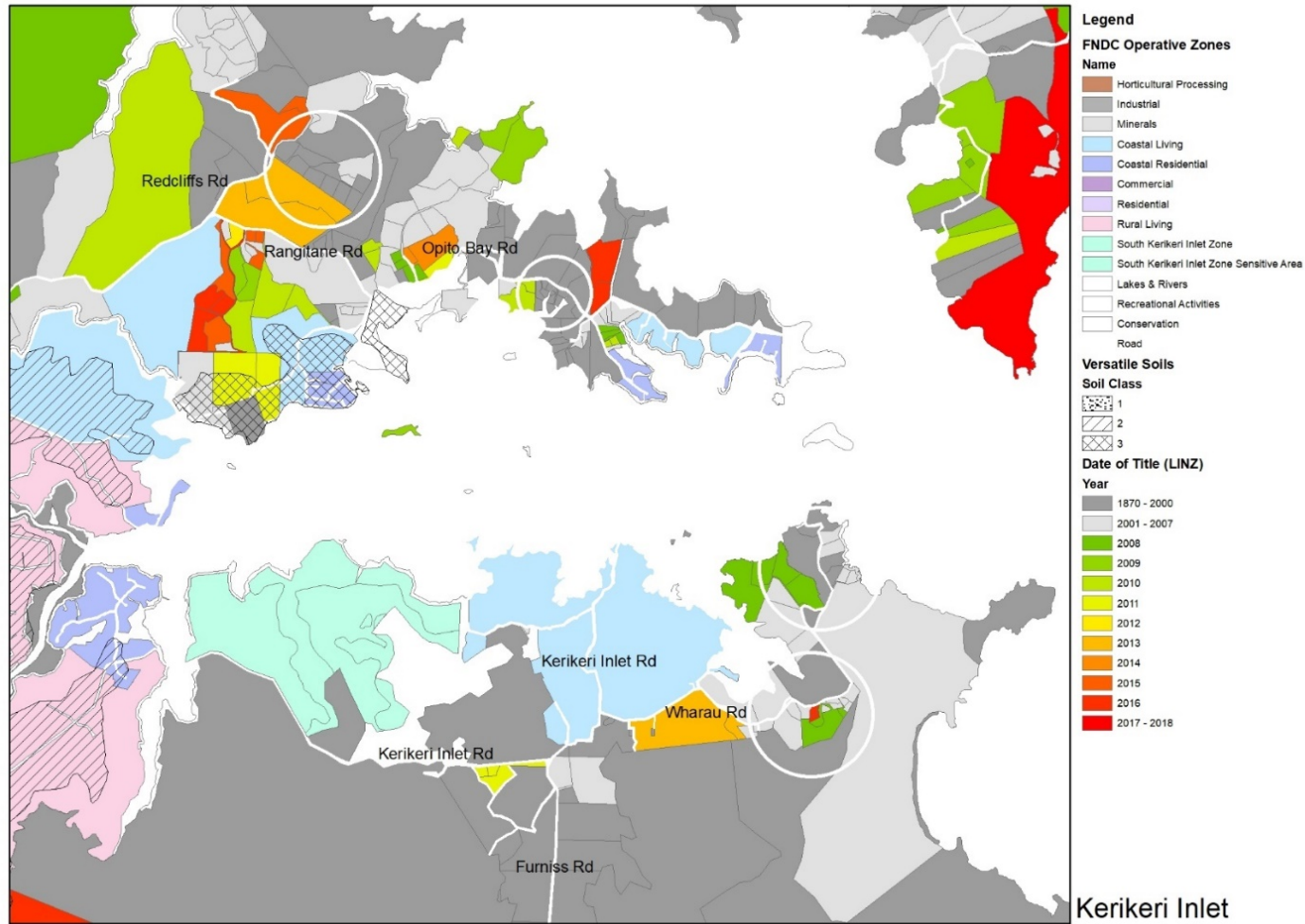


Figure 54: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Kerikeri Inlet

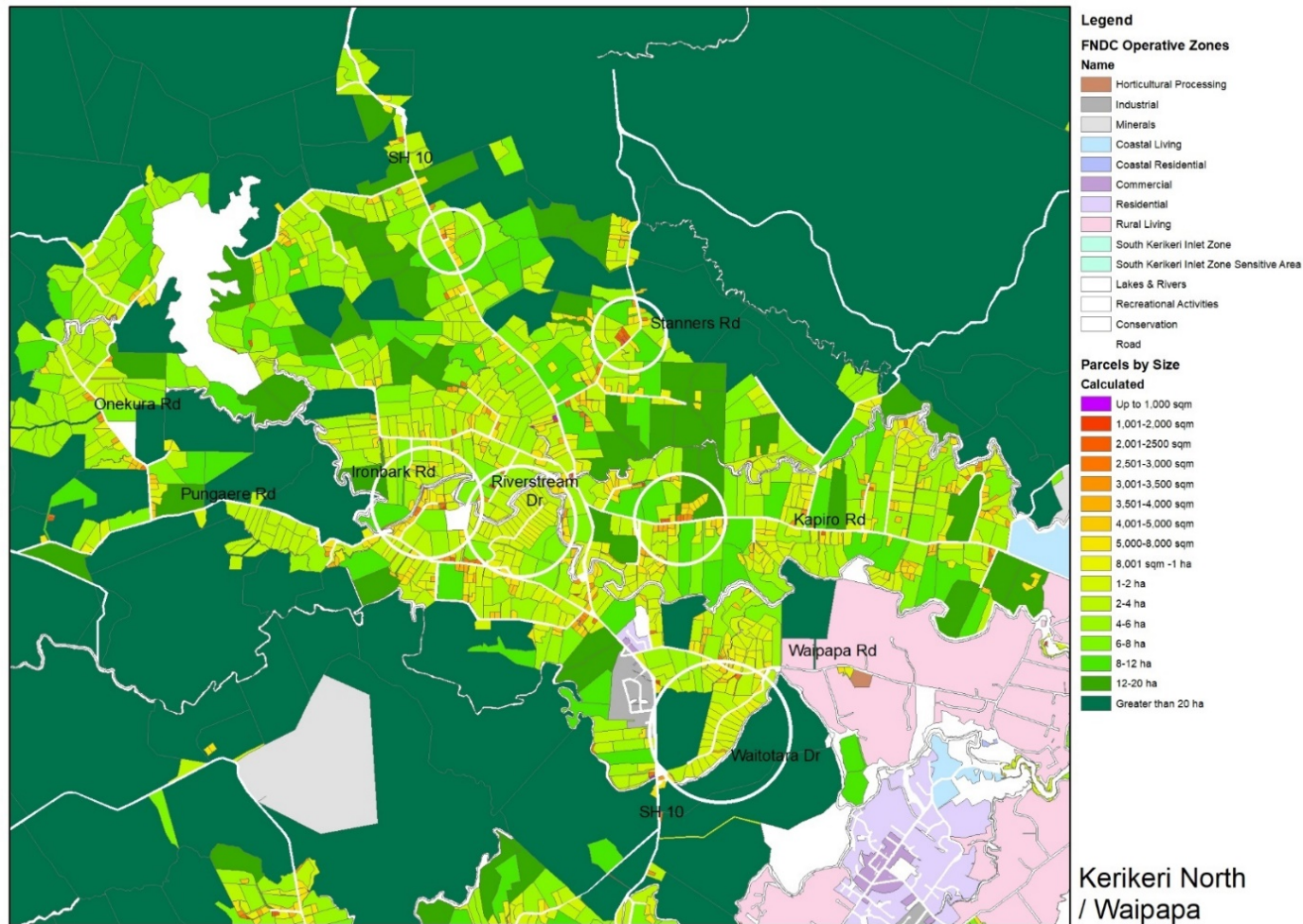


Figure 55: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Waipapa

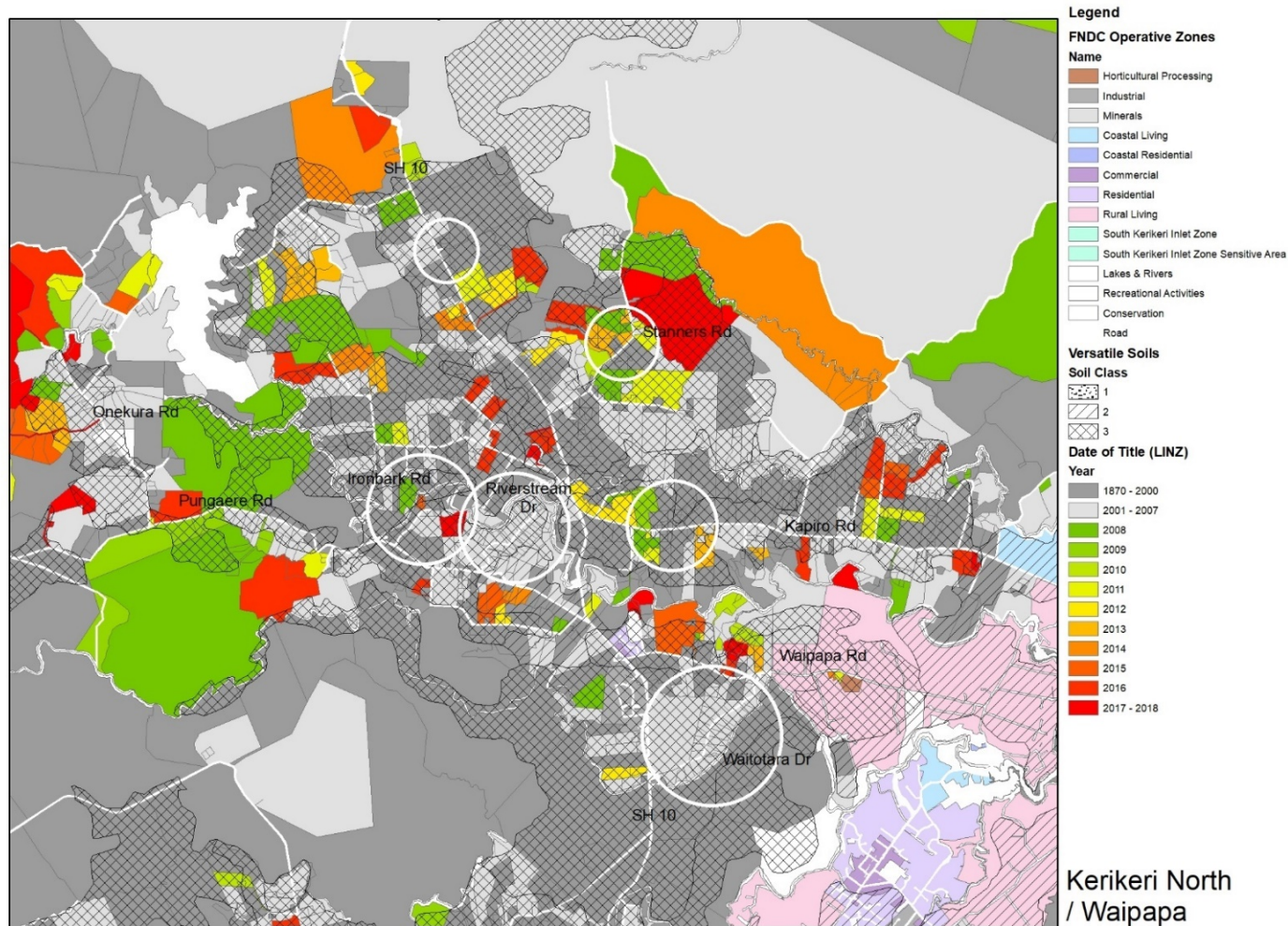


Figure 56: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones - Waipapa

#### 5.4.8.6 Kaikohe

The majority of Residential Zone land is on the northern side of Kaikohe, as is a large area of Rural Living (to the north east). There is a further small block of Rural Living zoned south of the town on State Highway 15, north of Cumber Road. Outside of these zones, there is not significant evidence of rural residential or rural lifestyle type land use and development (Figure 57) in the Rural Production Zone. While Cumber Road itself shows smaller rural residential sized blocks, they appear from aerial photographs to be used productively (as orchards) and were not subdivided recently. As such, this road does not warrant further evaluation.

The one area that does suggest a change in land use to rural residential and rural lifestyle properties (with little or no associated primary production activity) is around Rangihamama Road, and nearby on State Highway 12. This is also an area of recent subdivision (i.e. within the past 10 years, but closer to 2009 and 2010) (Figure 58). Should there be further demand for rural lifestyle living around Kaikohe, it appears most likely to favour this area, and the southern approaches generally. These are areas of class 2 versatile soils.

#### 5.4.8.7 Kaitaia

Significant provision has been made for Rural Living capacity on the urban edge of Kaitaia, to the east and south of the town. Despite this, some rural residential type subdivision is evident in the Rural Production Zone at the northern extent of the Industrial Zone (in the triangle formed by Wireless Road and Bell Road and immediately north on State Highway 1). This may be an area to watch as there appears to be good potential to incrementally extend these pockets of smaller lots along these road fronts and to the rear, although these existing lots were created pre-2000. Further residential growth here would occupy class 2 versatile soils.

A more significant area of interest is south of the town on the Kaitaia-Awaroa Road, around Okahu Road (Figure 59). Here there is evidence of some rural residential and rural lifestyle sized blocks, with aerial photographs confirming that dwellings are the primary purpose of many of these sites. This subdivision has taken place post-2000, and much of it in the past 5 years (Figure 60). This localised 'wine area' has the potential to attract further subdivision demand at the expense of existing farming activity. In close proximity to Okahu Road, this would not however consume any versatile soils.

#### 5.4.8.8 Ahipara

Ahipara is a coastal settlement with a northern and southern area of Residential Zone capacity. At the very southern end of the bay, there is a small band of Coastal Residential Zone. The northern Residential Zone is flanked by a strip of Coastal Living Zone. Of interest, there is an existing area of subdivision (Weka St) that appears more urban in density than the lower density one might expect from the Coastal Living Zone (this is not shown on Figure 61). This is likely to have set the precedent for further subdivision in this zone and implies a shortage of capacity in the Residential Zone.

The southern Residential Zone has only a small block of Coastal Living Zone to act as a buffer to the General Coastal Zone. There is also evidence of residential type density subdivision immediately adjacent to that Coastal Living Zone.

Another subdivision with urban residential densities has occurred in the Rural Production Zone on the corner of Sandhills Road and Ahipara Road. Again, this suggests that the zoning patterns in Ahipara have not kept up with demand.

Rural residential and rural lifestyle sized lots are occurring on the inland edge of the urban areas (e.g. Sandhills Road), and also along Roma Road and at the intersection of Ahipara and Kaitaia-Awaroa Road, and around Brass Road. Much of this subdivision has occurred on versatile soils and in the last ten years, or just prior (between 2000 and 2007). Given that Ahipara has been experiencing recent growth pressures (Figure 62), this is an area where subdivision could be better managed through appropriate zoning so that further ad hoc development in rural zones is minimised and that any rezoning creates a better zone edge interface with the adjoining Rural Production Zone.

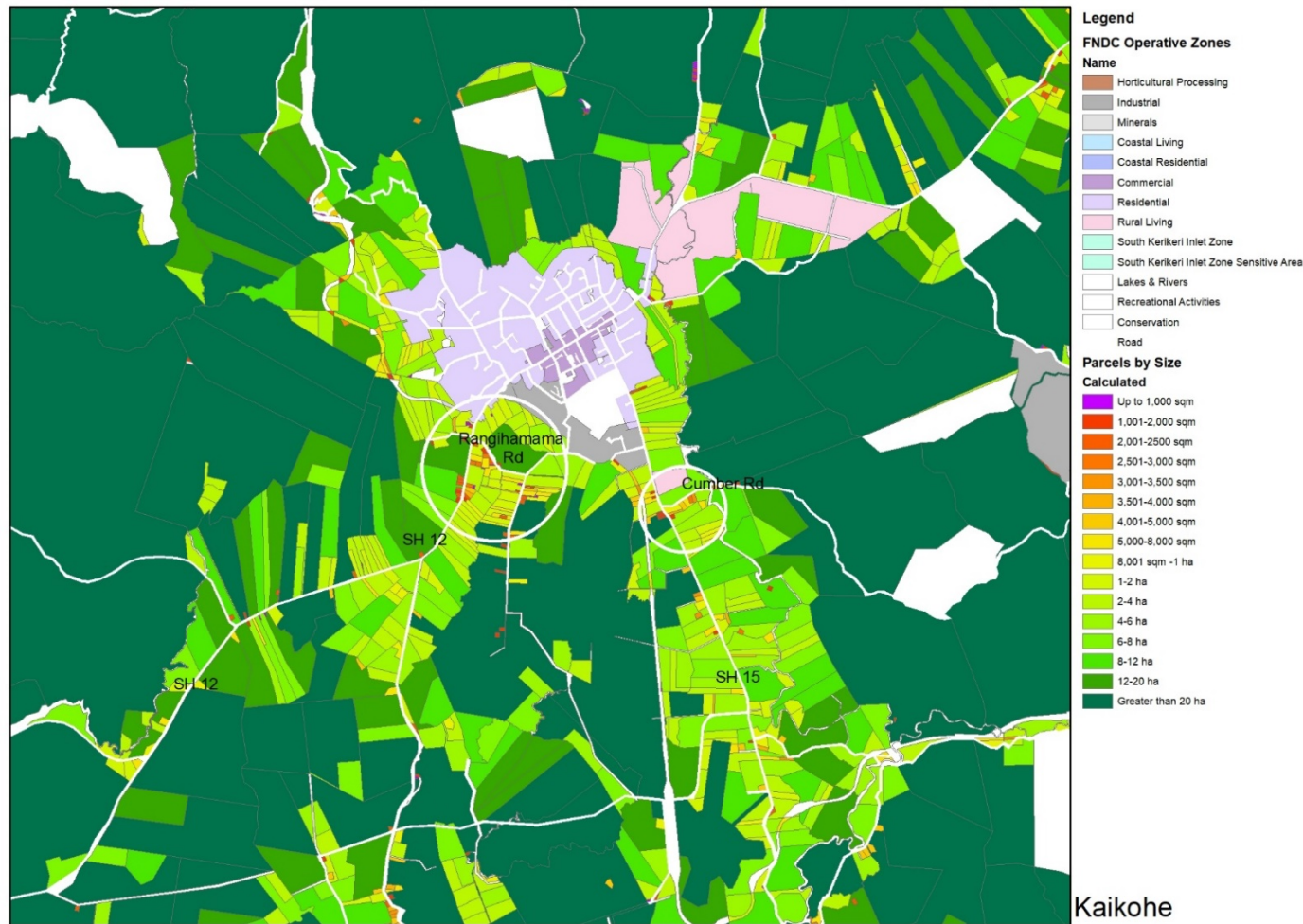


Figure 57: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Kaikohe

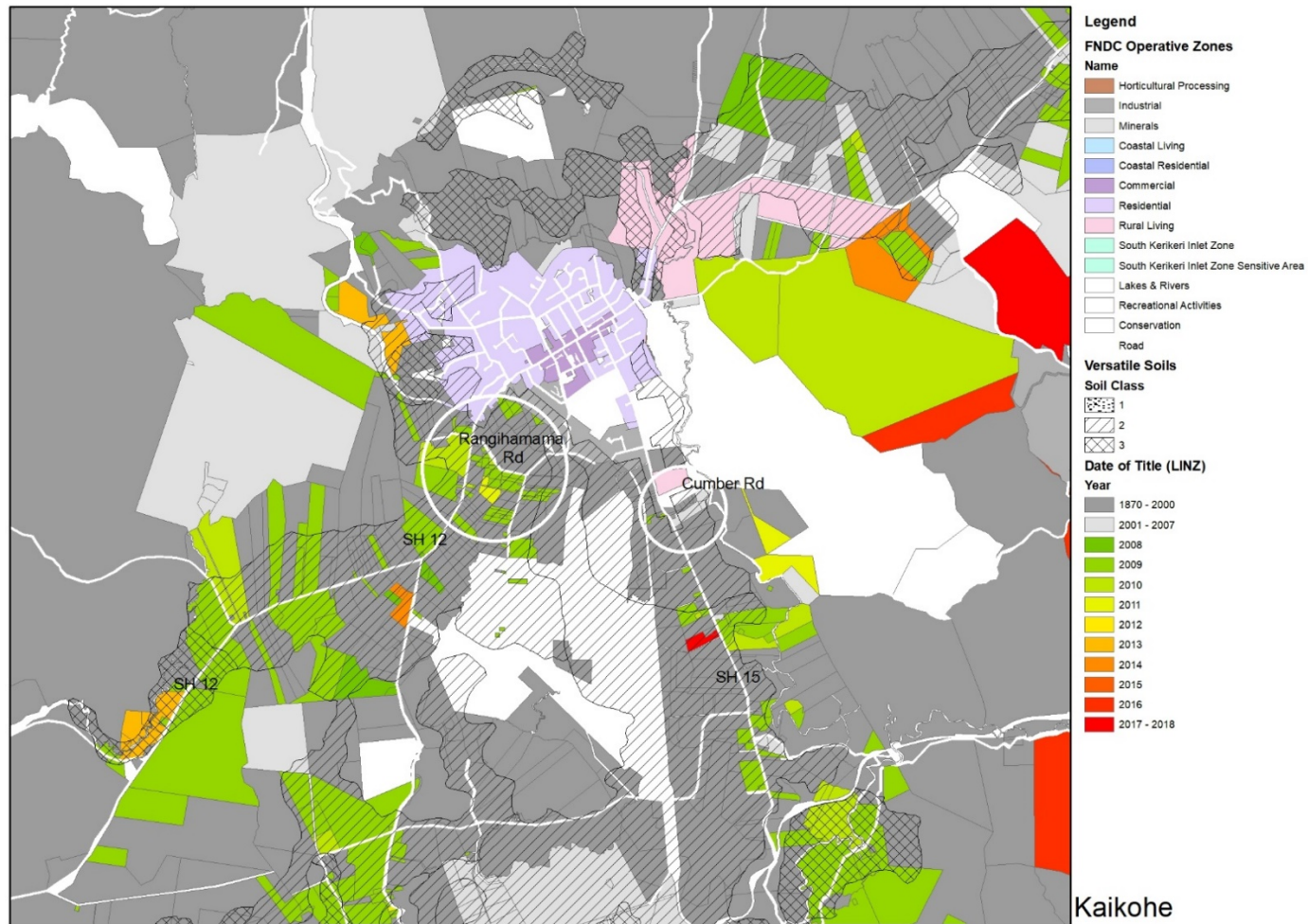


Figure 58: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones - Kaikohe

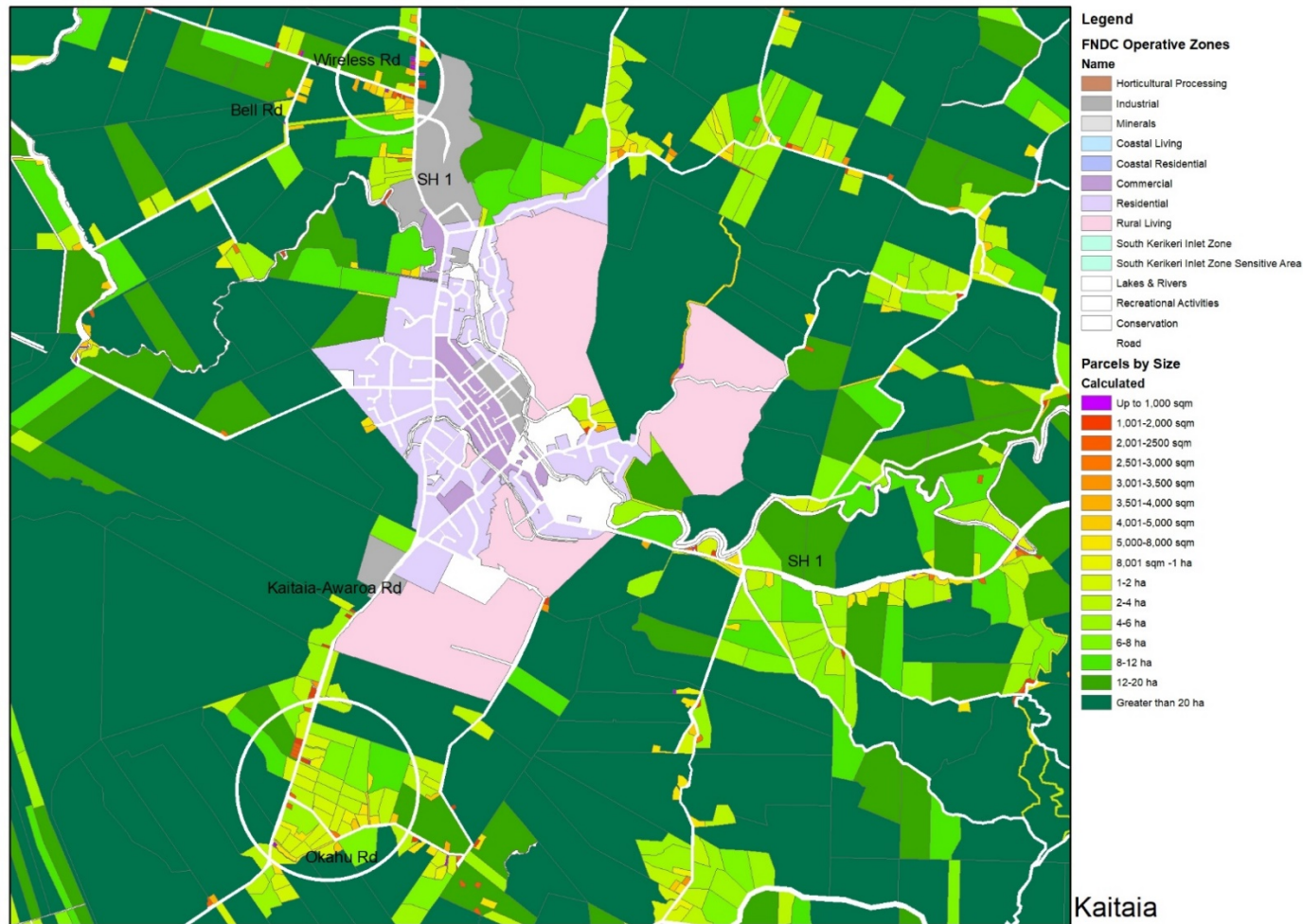


Figure 59: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones - Kaitaia

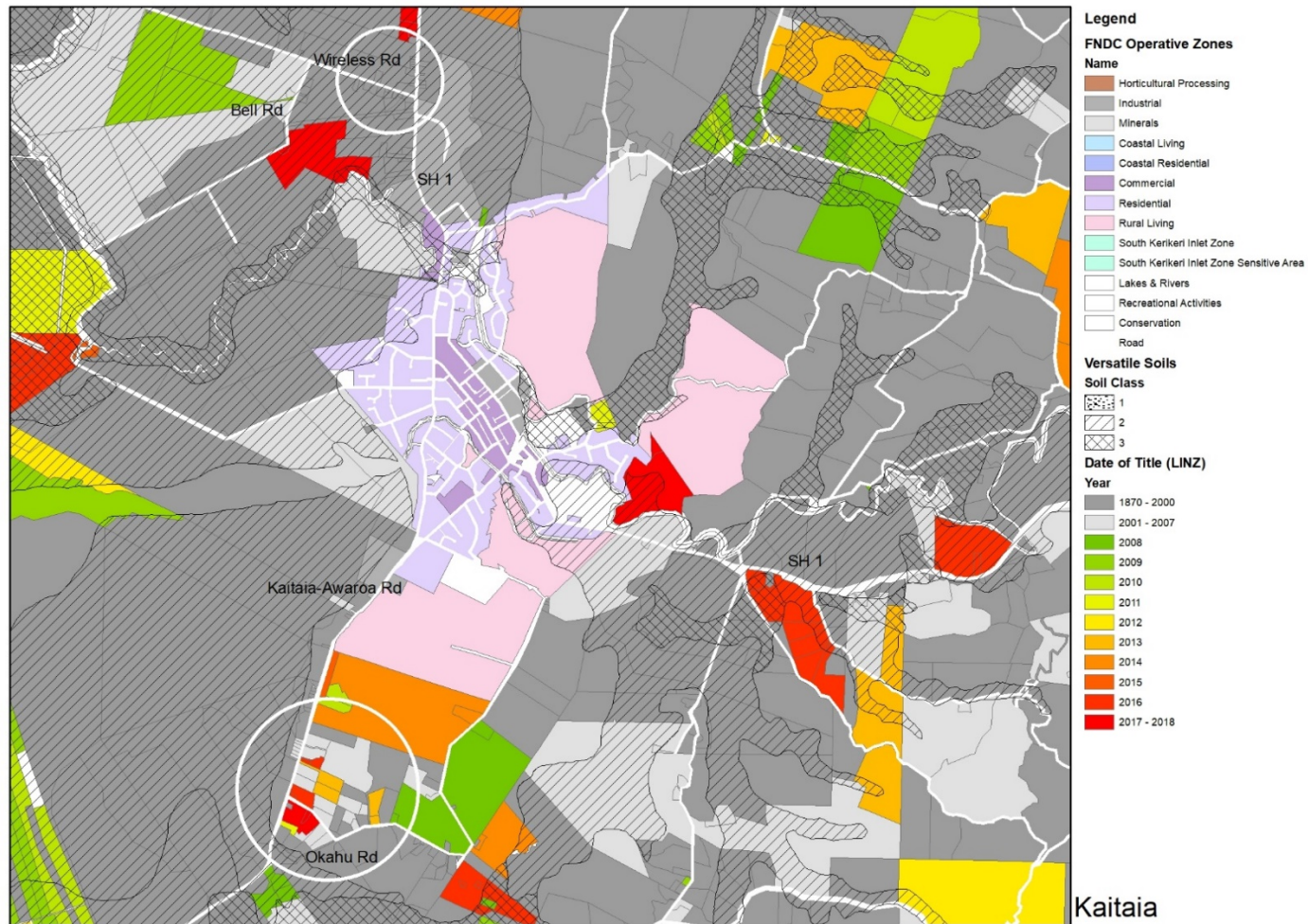


Figure 60: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Kaitia



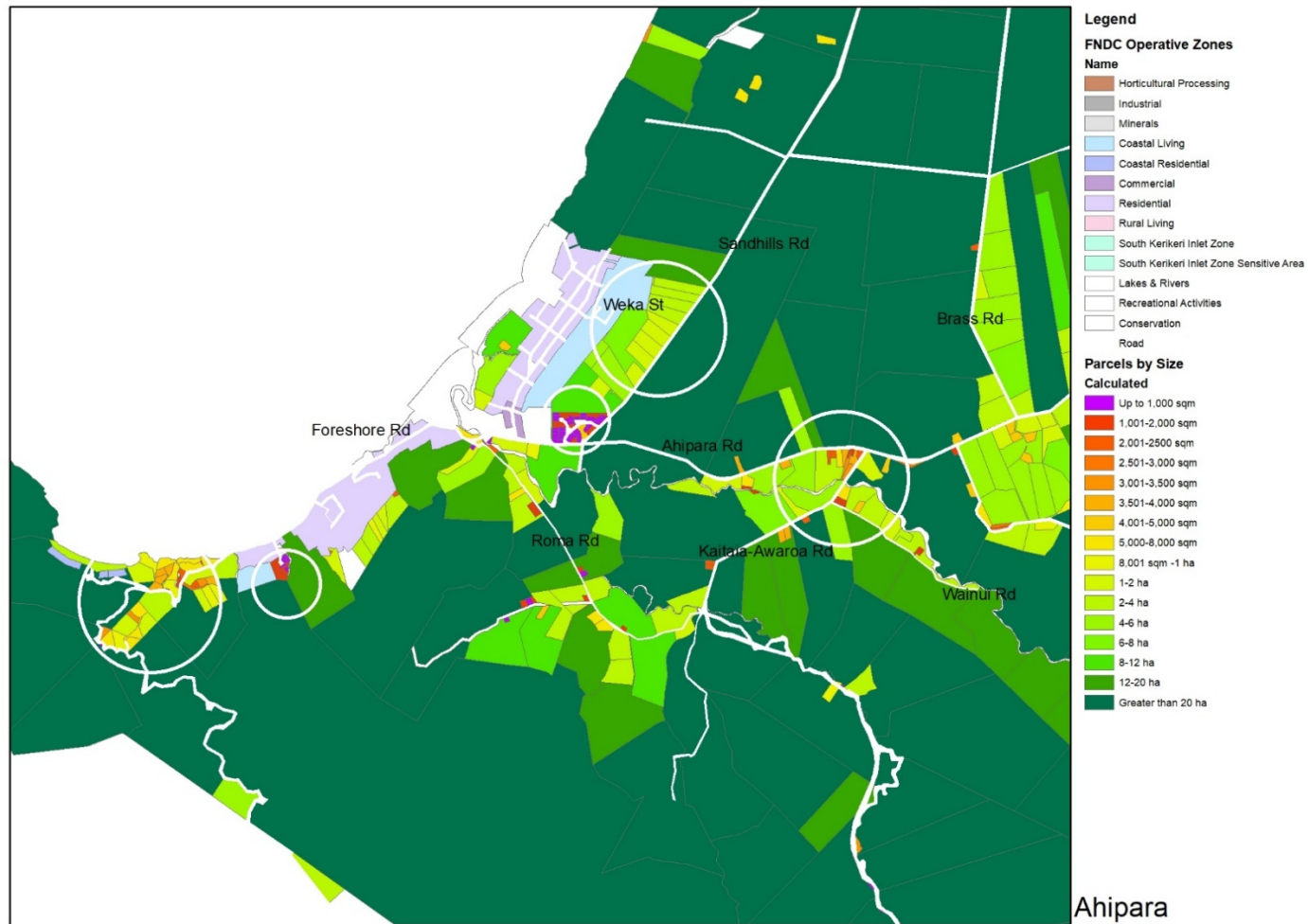


Figure 61: Land Parcel Size Outside of Urban and Rural/Coastal Living Zones – Ahipara

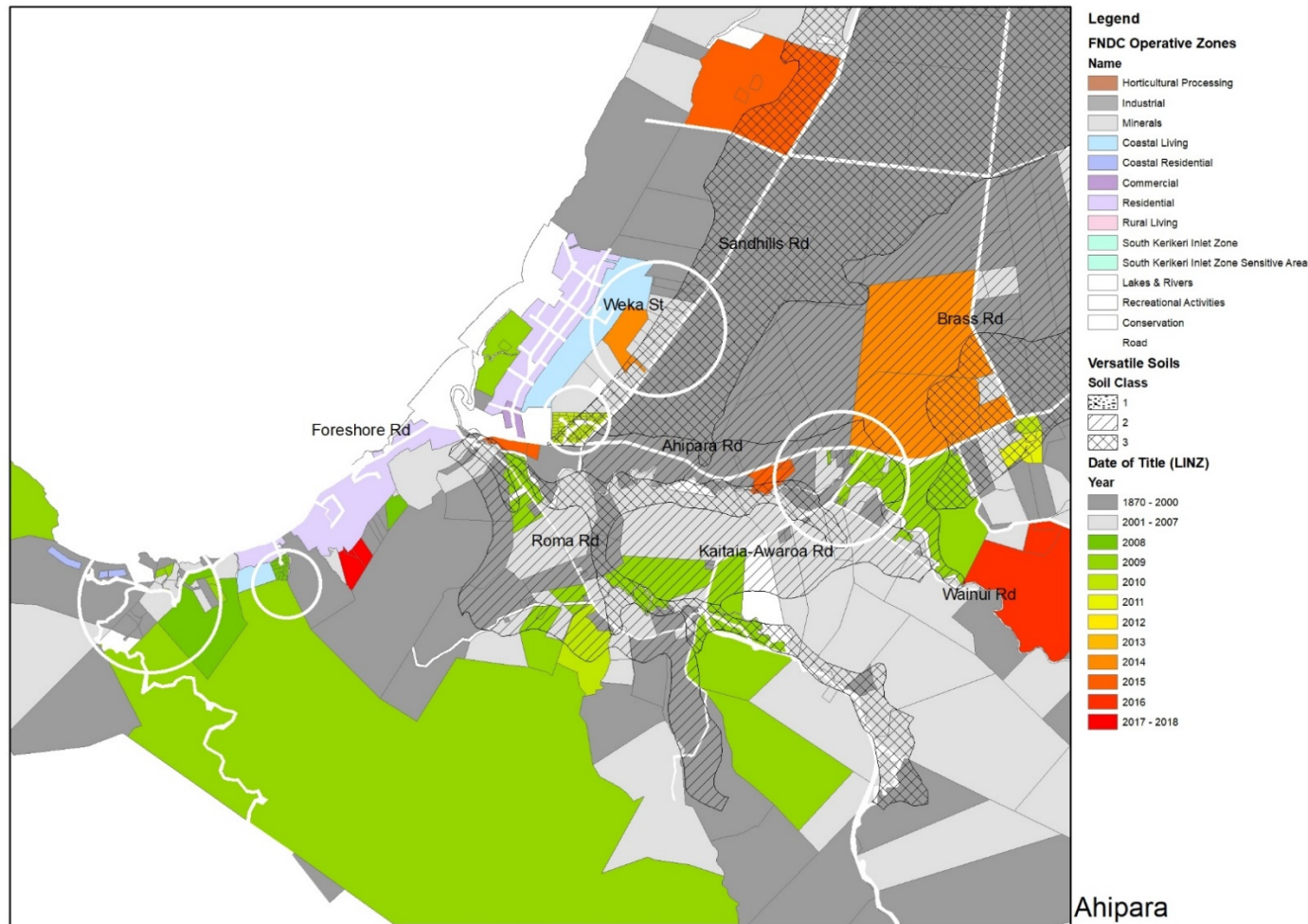


Figure 62: Land Parcel Date Outside of Urban and Rural/Coastal Living Zones – Ahipara

## 6 SUPPLY AND DEMAND FOR RURAL-RESIDENTIAL / LIFESTYLE DEVELOPMENT

### 6.1 Social and Economic Profile

This section examines the socio-economic profile of rural residential and rural lifestyle communities in Far North District to understand whether these markets differ, and how they each compare to urban communities and more traditional rural communities.

#### 6.1.1 Approach

M.E has used GIS mapping to identify some sample areas across the district within each operative district plan zone. These areas comprised of one or more meshblock (SNZ 2013 boundaries) where a single zone occupied the extent of the meshblock (or the significant majority of the meshblock area). The meshblocks were not necessarily contiguous. Meshblocks containing more than one zone were generally excluded on the basis that they may comprise more than one type of residential community and therefore skew the demographic profile.

This formed the primary criteria for selecting the meshblocks. A range of locations for each zone were evaluated as a potential source of sample meshblocks, although not all were suitable – often due to the large geographic extent of many rural meshblocks relative to very localised areas of zoning.

Ultimately, the sample of meshblocks was not determined by any scientific method. Rather, an objective selection process based solely on a visual comparison of meshblock boundaries and zone data, and in some cases, current parcel boundaries. Table 46 provides a summary of the sample areas. These are mapped in **Appendix H**.

Table 46: Summary of Geographic Sampling Underpinning the Social and Economic Profile Analysis

Zone	Location	Count of Mbs Selected	2013 UR Pop	UR Pop Density per Ha of Selected MBs
Residential *	Kerikeri	9	1,050	7.78
	Kaikohe	9	846	13.95
	Kaitaia	8	1,515	17.10
	Coopers Beach / Taipa / Mangonui	9	621	4.62
Coastal Residential	Kerikeri	7	288	4.62
Rural Living **	Kerikeri	13	1,494	2.34
	Kaikohe	2	135	0.13
	Kaitaia	2	110	0.39
	Coopers Beach / Taipa / Mangonui	3	38	0.06
Coastal Living	Kerikeri	2	282	0.55
	Opuia / Russell	5	311	1.25
General Coastal ***	Opononi & Coast	4	108	0.02
	Parengarenga Harbour	1	38	0.01
	Taupo Bay	1	38	0.01

Rural Production ***	North	8	585	0.05
	Central West	14	560	0.02
	South East	37	1,286	0.02
Rural Lifestyle ****	Haruru	2	60	0.07
	Kaikohe	4	149	0.38
	Kerikeri South	2	491	0.54
	Waipapa	5	678	0.84
	Waimate North	3	209	0.15
<p>* The average of these locations is used to represent urban residential communities. M.E opted not to use an average of both Residential and Coastal Residential zones as the sample of Coastal Residential meshblocks was limited to one location only.</p>				
<p>** The average of these locations is used to represent Rural Living (rural residential) communities. M.E opted not to use an average of both Rural Living and Coastal Living zones as the sample of Rural Living meshblocks was larger.</p>				
<p>*** The average of these locations (and across both zones) is used to represent production based rural communities. These areas do however include a mix or rural properties as well as small rural settlements.</p>				
<p>**** The average of these locations is used to represent rural lifestyle communities. This is not associated with a current operative district plan zone. The areas have been identified through the spatial audit of rural environment zones (refer section 5) and fall primarily within the Rural Production Zone, and to a lesser extent the General Coastal zone. Only those meshblocks where rural lifestyle sized lots (indicatively 1-4ha) visually dominated the extent of the meshblock were selected in each location.</p>				

Understanding rural lifestyle communities was a key objective of this analysis. Unlike the other samples, there is no specific district plan zone for this land use. Meshblocks for these indicative communities were identified within the Rural Production and General Coastal Zones as applicable and based on the areas previously identified through the spatial audit of rural environment zones (section 5).

Table 46 shows that there is some geographic variability in the size of the populations and indicative population densities within each zone/community type. These are expected and are sensitive to the meshblocks selected.

M.E has appended a range of socio-economic data from the 2013 census to each selected meshblock. This data has been summed for each zone-location. This aggregate data describes the socio-economic profile of each sample area. M.E has applied a weighted average across the sample areas to represent each zone/community type. Where appropriate, zones with a similar function have also been averaged (i.e. General Coastal and Rural Production Zones have been averaged to represent the combined 'rural' community). It is acknowledged that a different selection of meshblocks and locations may yield different outcomes around the mean.

The averages are then expressed in percentage terms to more appropriately compare the profiles of each community while controlling for the differences in scale. For the purpose of this report, the following average profiles have been compared<sup>194</sup>:

- Rural Living (essentially Rural 'Residential');
- Rural 'Lifestyle';
- Residential (Urban); and
- Rural.

<sup>194</sup> These are considered the most relevant for the purpose of the report. The analysis/model enables a range of other possible comparisons (including against the total district average) that are not reported.

### 6.1.2 Key Results

Of the sample areas analysed:

- There is little difference in the male-female split in rural living, rural lifestyle or rural communities (it's about even), although in 2013, the urban residential areas had a slightly higher share of females (53%) than males (47%).
- Rural living and rural lifestyle areas have a very similar age group profile, with the exception of the 40-44 year olds where rural living areas have a relatively lower share of the population (and more similar to the share in urban residential areas). Generally, there is a lower share of young adults (particularly 25-34 year olds) and this is common also to the rural area. Compared to urban residential areas, rural living and rural lifestyle areas have a higher share of older adults (40-64 year olds) and a similar share of 65+ year olds. The rural areas have a lower share of 65+ year olds – this often reflects the move closer to urban centres and service providers combined with a move to lower maintenance properties (Figure 63).

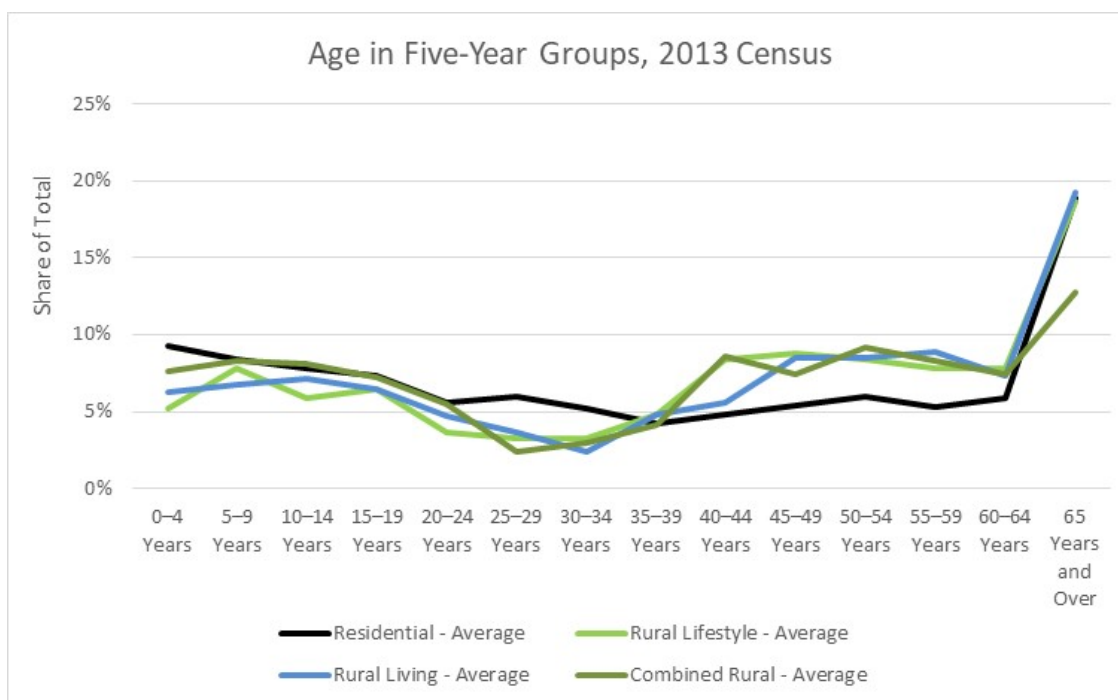


Figure 63: Rural and Urban Comparison of Age Group Profile in the Far North District, 2013

- The ethnic profile of rural living and rural lifestyle areas is almost identical, and heavily dominated by Europeans (about 80% of the total population). Maori make up about 15% of the population in these communities. This profile is quite distinct from both the urban and rural areas of Far North District, which are almost identical and have approximately 50% European, 45% Maori and about 5% Pacific Peoples.
- The profile of highest academic qualification is also very similar between the urban and rural areas, and between the rural living and rural lifestyle areas, but they are not the same. Rural and urban areas are more likely to have residents (aged 15 and over) with no qualifications compared to rural living and lifestyle areas and are slightly less likely to have level 4 certificates, diplomas, bachelor degrees or higher.
- There is little distinguishing the personal income profile of rural living and rural lifestyle areas. Compared to urban residential and rural areas, they have a lower share of low personal incomes and much higher share of the highest income bracket. This trend is also apparent with total family incomes and household incomes (Figure 64).

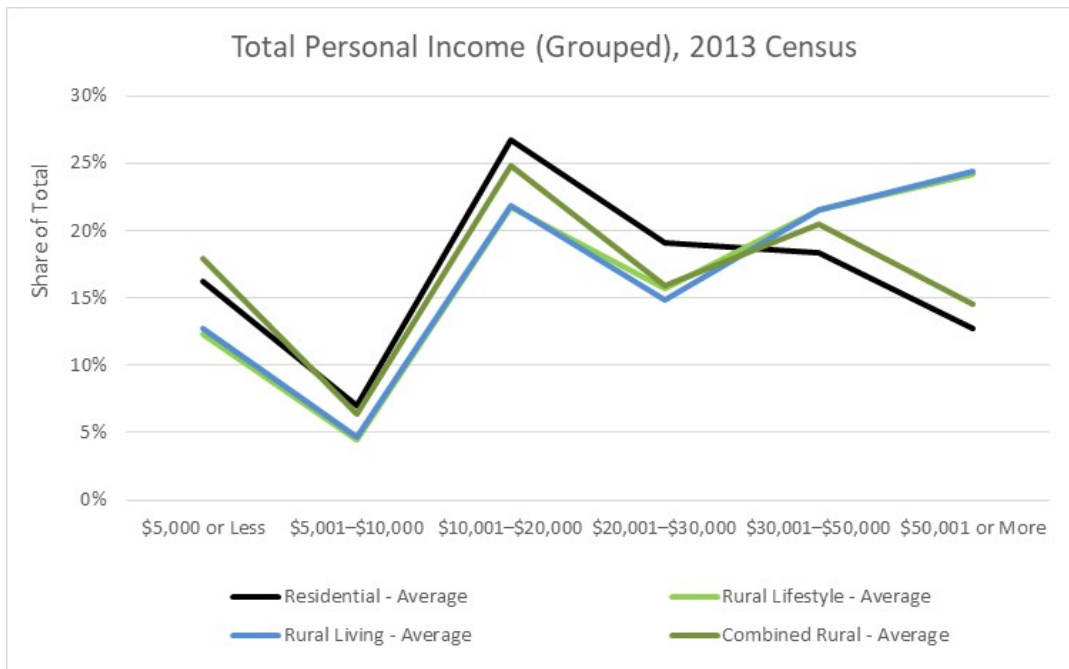


Figure 64: Rural and Urban Comparison of Personal Income Profile in Far North District, 2013

- Rural living and rural lifestyle have a similar profile in terms of the sources of personal income. The largest share of the population sources income from wages, salary and commissions. Compared to urban residential areas, a greater share of incomes are sourced from self-employment or business (particularly in rural lifestyle blocks) and interest, dividends, rent and other investments (particularly in the rural living areas). Rural living and rural lifestyle communities are less likely to earn money from benefits relative to the residential or rural communities.
- Rural living and lifestyle communities are more likely to be employed full-time and are slightly more likely to be employed part-time compared to urban residential communities and are less likely (around 5% of the total) to be unemployed or not in the labour force.
- Rural lifestyle communities have a slightly higher share of workers that are self-employed without employees than in rural living communities (and urban residential communities). The major share of all communities are however paid employees.
- Rural living and rural lifestyle areas have a similar share of managers, community and personal service workers, clerical and administrative workers, sales workers, machinery operators/drivers and labourers. However, the largest shares are managers and professionals. Approximately 24% of workers in the rural living areas are professionals, compared to around 20% in rural lifestyle areas and just 10% in rural areas. Rural lifestyle areas have about 14% of total workers in technician and trade workers occupations, compared to 10% in rural living areas (Figure 65).

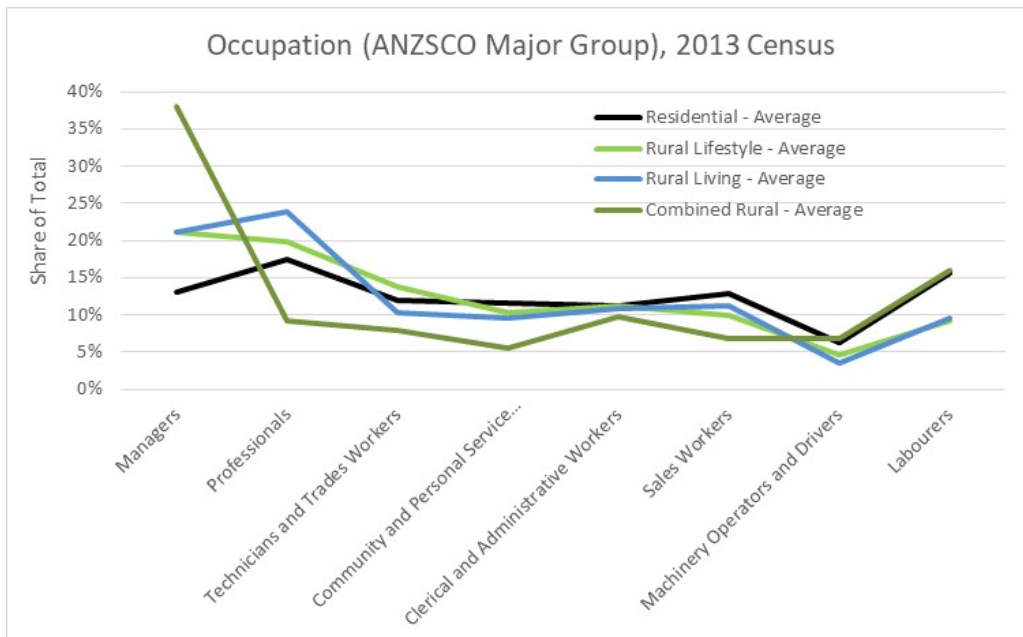


Figure 65: Rural and Urban Comparison of Occupation Profile in Far North District, 2013

- Generally, the profile of how workers travelled to work in 2013 is the same across all communities compared. The significant majority (around 50-55%) drove their own car. There are however some exceptions. As expected, a higher share (32%) of rural workers worked at home. This was followed by rural lifestyle workers (17%) and rural living workers (11%). Only 6% of urban workers work from home. There is less trip sharing (car-pooling) in all rural communities and more company cars in rural living areas. Approximately 10% of workers in urban areas walked to work, which is less feasible given the greater distances of rural living and rural lifestyle areas to the major centres of employment.
- Urban residential areas have an almost equal mix of couples without children, couples with children and one parent with children families. However, rural communities are less likely to have one parent families, and rural living and rural lifestyle areas are even less likely to have one parent families. They are more likely to be couples without children (Figure 66).

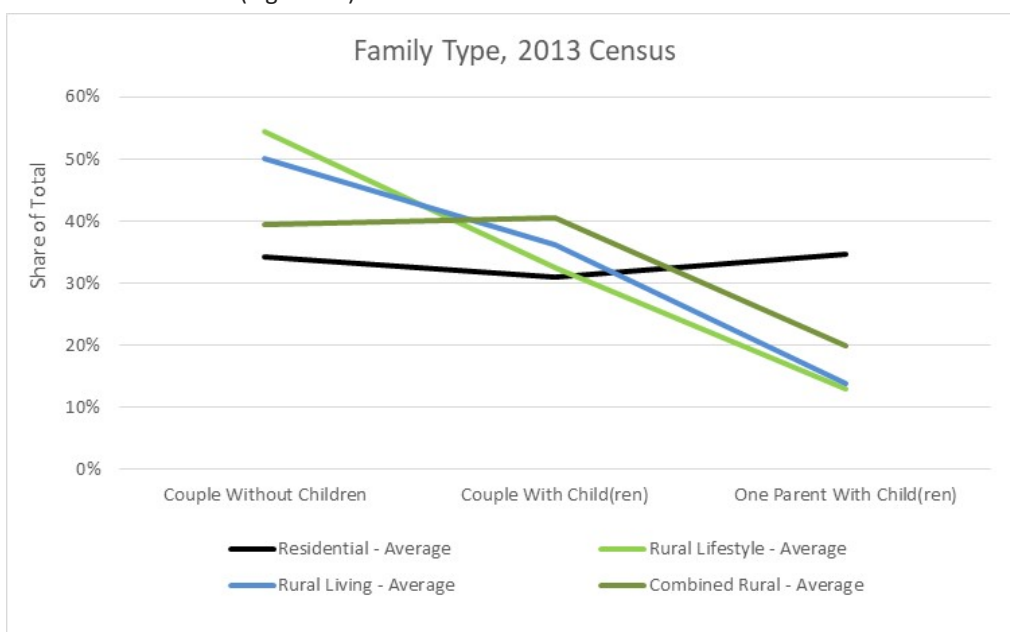


Figure 66: Rural and Urban Comparison of Family Type Profile in Far North District, 2013

- Nearly 80% of households in the rural living or rural lifestyle areas are ‘one family’ households. This contrasts with a 69% share in rural areas and 59% in urban residential areas. Rural areas generally have fewer one-person household and flatting households compared to residential areas.
- Two-person households account for the largest share of households in rural living and rural lifestyle areas (around 45%). While this is also true for urban residential areas, this category makes up about 33% of total households. Rural living and lifestyle areas have a slightly larger share of four-person households compared to both rural and residential areas, but are less likely to have six person households than residential and particularly rural areas. One-person households are an important feature of the urban residential community.
- Home ownership is higher in rural lifestyle areas (around 60% of all households) compared to rural living areas (around 51% of all households), and renting is lower respectively (approximately 21% rented in rural lifestyle compared to around 28% in rural living areas). Rented homes (not owned or held in family trust) make up the majority of households in urban residential areas sampled (50%).
- Almost 100% of dwellings in rural living, rural lifestyle and rural areas are separate (standalone) dwellings. Attached housing is very uncommon in the Far North District, but slightly more common in urban residential areas as would be expected with higher dwelling densities (13% of private occupied dwellings).
- Dwellings are larger (in terms of the number of bedrooms) in rural living and rural lifestyle areas, and there is little distinction between the two (Figure 67).

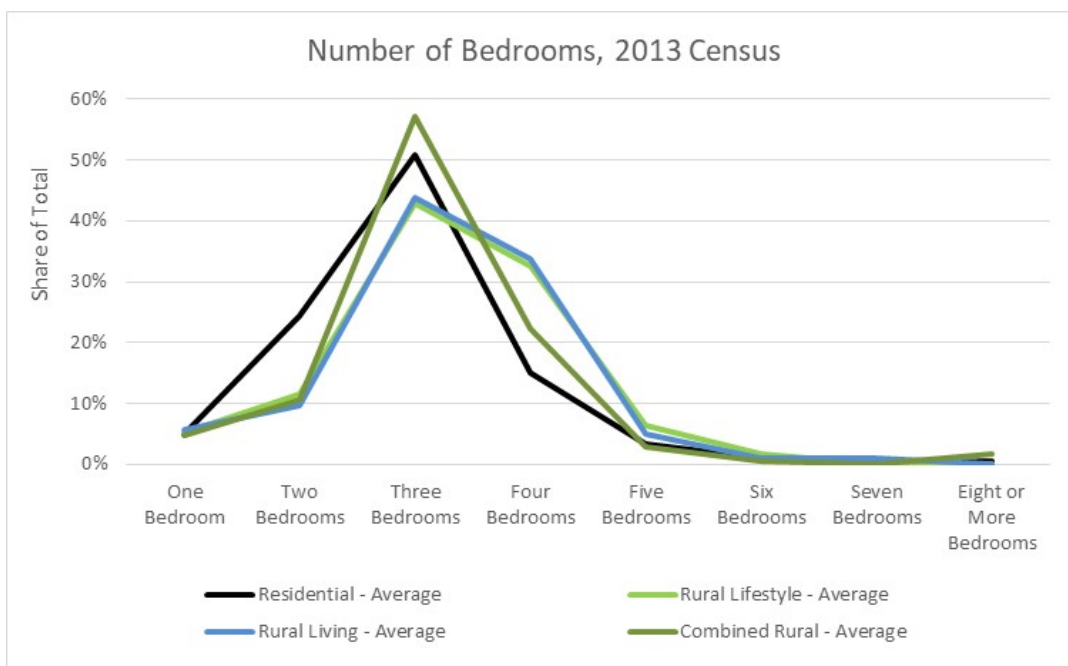


Figure 67: Rural and Urban Comparison of Number of Bedrooms Profile in the Far North District, 2013

### 6.1.3 Conclusions

There is not much distinguishing the communities of rural living (residential) and rural lifestyle areas in terms of their socio-economic profiles (and the census data that has been analysed), but there are some clear differences between these areas and urban and other rural communities. On average, rural residential and rural lifestyle communities across the district tend to be older, European dominated, mostly couple households that are more highly educated, full time working in more highly skilled occupations, with a higher incidence of being self-employed and working from home. They tend to have higher incomes, which flows from the preceding indicators (including age and therefore career advancement) and as a result have a higher incidence of home ownership. Those homes tend to be larger, standalone dwellings – many with four or five bedrooms (despite the dominance of two-person households).

In socio-economic terms, these communities have some characteristics common to urban residential communities and/or rural communities but can be distinguished overall – analysis indicates that they are a distinct market/segment of the district population and household structure. An obvious feature that distinguishes rural residential and rural



lifestyle communities is their preference for land area/section size. The larger lifestyle blocks, which would be a less efficient residential land use in the Rural Living Zone when smaller lots are enabled, are often further from urban areas and provide the opportunity for small scale farming or horticultural activity (but this is not always the case). There may be other characteristics that distinguish rural residential from rural lifestyle communities that have not been examined here. Further, it is possible that the latest census data (2018 – not available at the time of writing) might show the same or different outcomes.

## 6.2 Analysis of Current Capacity and Constraints on Supply

This section considers further, hypothetical subdivision potential in the rural environment based on the operative subdivision rules – minimum lot sizes. It does not consider capacity under a full range of lot size options. This analysis focusses on remaining capacity for rural residential type lots in the Rural Living and Coastal Living Zones, but also examines further potential subdivision in the rest of the rural environment (although the Minerals Zone and South Kerikeri Inlet Zone Sensitive Area are excluded).

### 6.2.1 Approach and Limitations

M.E’s assessment is limited to a desktop analysis. It relies on available spatial datasets, namely Council’s parcel level dataset with operative zones appended (according to the centroid of the parcel – so is approximate in some cases). It also relies on the permitted, controlled, restricted discretionary and discretionary subdivision rules for each zone – minimum lot sizes<sup>195</sup>. Potential for non-complying subdivision is unknown and excluded.

M.E has applied a simple approach. The objective was to understand the potential for further *in situ* subdivision in each of the rural zones and how this potential varies under the different operative subdivision activity statuses. The same model is used to test an alternative minimum lot size, but this is discussed in Section 7.

The potential for further subdivision (lot creation) was estimated by quantifying the number of times individual parcels could be divided by the minimum lot size under each activity status. If a parcel was already below the minimum lot size, it was left unchanged. If it was at least twice the minimum lot size, subdivision was implied, and the resulting count of new lots was calculated.

The approach relies on several assumptions and has a number of limitations:

- Only parcels within the rural environment (excluding the Minerals Zone and the South Kerikeri Inlet Zone Sensitive Area)<sup>196</sup> are considered. A parcel is attributed to the zone in which it’s centroid falls. The whole parcel is considered under the subdivision potential of the assigned zone only.
- The output of the analysis is ‘lots’. This does not imply that each new lot equates to a new dwelling, but given the alignment of residential intensity rules, new lots can broadly equate to new dwelling capacity.
- The analysis of further subdivision potential is not limited to just those parcels identified as ‘residential vacant’ or ‘lifestyle vacant’ (LINZ codes identified by QV and appended to the parcel data). M.E has considered the subdivision of a wider range of recorded current land uses, and this may imply a change in land use away from primary production.
- However, a number of rural parcels have been excluded from further subdivision potential based on the LINZ land use. Specifically, M.E has excluded all parcels identified as Forestry and Horticulture/Market Gardens. The reason being is that there is considerable investment tied up in these land parcels (e.g. trees, irrigation, shelterbelts) that

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<sup>195</sup> M.E has not specifically considered the residential intensity rules, but these generally coincide with most minimum lot sizes (albeit often with a different activity status). There are some instances where a residential intensity lot size is not addressed in the subdivision rules (and such lots are assumed to result from other processes such as boundary adjustments and protection of natural areas/features/heritage). These residential lot sizes are excluded from the analysis.

<sup>196</sup> The Minerals Zone is excluded as all subdivision is discretionary (with no minimum lot sizes included in the Operative District Plan. The South Kerikeri Inlet Zone Sensitive Area contains only a small number of parcels and this high-level approach is unlikely to represent practical subdivision potential.

are not easily reproduced on alternate sites if displaced<sup>197</sup>. This is further supported (in the case of horticulture in aquifer/irrigation areas) in section 4.2, whereby the economic impact generated by operative rural residential/lifestyle development does not outweigh the total economic impact of horticultural production<sup>198</sup>. Other primary production land (farming) is however included for potential subdivision.

- Parcels with a land code of Recreation (which includes but is not limited to conservation land and areas of bush), commercial, community (including education, halls and cemeteries), industry, transport, utilities and mineral extraction, were also excluded from further subdivision potential in the model. These potentially excludes large areas of land. M.E's approach is therefore conservative in terms of the land parcels considered for subdivision potential.
- M.E has calculated the area of each parcel using GIS and has used this calculation rather than any existing area attributes in the original files (including survey area).
- The model keeps all parcels less than the minimum the same. I.e. M.E 's approach does not reflect a complete carve-up of the rural environment irrespective of current parcel boundaries – it considers only the remaining potential for subdivision keeping existing parcel boundaries in place.
- The model assumes all sites able to be subdivided are subdivided. That is, the analysis does not consider the financial or economic feasibility of subdivision and assumes all subdivision is feasible.
- Subdivision potential is calculated irrespective of owner intentions for the land.
- It divides parcels greater than the minimum by the minimum, rounding down to ignore balance portions that fall below the minimum.
- It does not take account of parcels above the minimum that may be linked to an open space covenant or clusters and are therefore not further sub-dividable. There is insufficient detail in the data to link parcels to these subdivision arrangements.
- It does not take account of the potential to combine adjoining land parcels to make up the minimum site requirements (or boundary adjustments). Aggregating lots to increase subdivision yield would require cooperation between neighbouring land owners. Nonetheless, because of this limitation, the results underestimate potential in all zones to an unknown (but assumed small) degree.
- Where applicable to the subdivision rule, the analysis considers only the subdivision potential of titles issued prior to the 28<sup>th</sup> April 2000. For simplicity parcels with a title year of 1999 or earlier are identified for this rule.
- The analysis does not consider any constraints to subdivision such as the location of existing dwellings/structures, allotment dimensions, hazards, heritage, water supply, water/waste disposal and transmission lines.
- The analysis has not factored in the presence of outstanding natural landscapes or features which may limit subdivision (or the ability to develop a dwelling).
- This analysis has not considered the presence of versatile soils.
- The analysis has not factored in any allowance for access ways or new roads. However, the rounding down approach creates a balance of land area in most cases.
- The balance of parcel land (that could not be divided by the minimum lot size) has not been considered for further subdivision potential under a different rule (minimum lot size) when testing a particular option. Again, this is conservative.
- The analysis does not take account of potential for Papakainga related subdivision.
- While only one subdivision rule (and activity status) is tested at a time across all parcels in a zone, in reality any further subdivision will be a mix of permitted, controlled, restricted discretionary, discretionary and non-complying as applicable to the land owner and their particular piece of land. The results should therefore be considered as a range of net additional lots. Generally, the highest yield of additional lots is associated with

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<sup>197</sup> This is not to say that these properties cannot be further subdivided, but rather, are less likely to be subdivided to create residential lots compared to other primary production properties that have less investment (fixed capital) in the land itself.

<sup>198</sup> Only a dwelling density of 2,000sqm lots was shown to exceed the upstream and downstream value added contributions per hectare of horticultural land (based on a 3% discount rate and other assumptions applied).

discretionary subdivisions and the lower yield of additional lots is generally associated with controlled subdivision activities.

- For the purpose of this capacity analysis, operative minimum lot sizes of 2,000sqm, 3,000sqm, 4,000sqm, 5,000sqm and 8,000sqm (for various zones) are grouped as rural residential. Operative minimum lot sizes of 2ha and 4ha are grouped as rural lifestyle properties (with an upper limit of 8ha applied). Above 8ha, including the 12ha restricted discretionary minimum lot size in the Rural Production Zone are considered rural properties.
- While capacity for additional lots between zones is additive (as zones are discrete), capacity within a zone is not additive and represents alternate scenarios by minimum lot size.

## 6.2.2 Analysis Results

### 6.2.2.1 Rural Living Zone Capacity

In the Rural Living Zone, subdivision to a minimum of 4,000sqm is a controlled activity and subdivision to a minimum of 3,000sqm is a discretionary activity. There is no limit to the number of lots (of these minimum sizes) in any subdivision. These sized lots are considered to deliver ‘rural residential’ development.

Overall, M.E estimates that there are 2,236 parcels currently located in the Rural Living Zone (this does not equate with dwellings). Qualifying parcels (by size and land use discussed above) could yield a maximum of 3,885 additional 4,000sqm lots (total parcel count of 6,121) or a maximum of 5,416 additional 3,000sqm lots (total parcel count of 7,652) assuming no constraints to subdivision or feasibility.

Figure 68 shows that half (50%) of the net additional lots (rural residential dwelling capacity) are in the Bay of Islands-Whangaroa Ward, with 29% in the Waihou Valley-Hupara census area unit (CAU) – this is the Rural Living Zone in Haruru (included in the Watea Structure Plan). Here, there is theoretical capacity for between 1,120 and 1,490 additional rural residential lots (assuming no constraints). As this area has no internal roading yet (although identified on the Structure Plan along with commercial and green space areas), actual capacity will be lower than this.

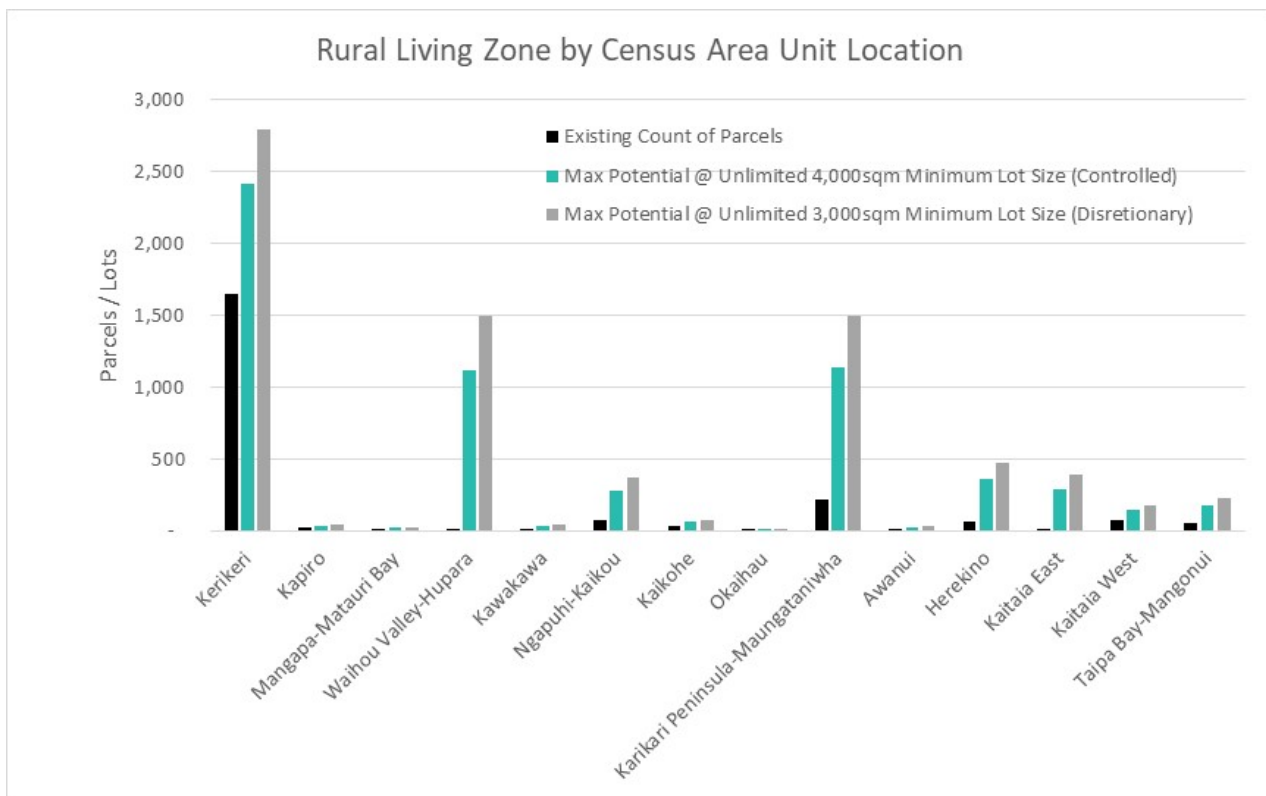


Figure 68: Maximum Theoretical Subdivision Potential in the Rural Living Zone by Location

The Kerikeri CAU accounts for 20% of additional capacity (with theoretical capacity for between 770 and 1,140 additional rural residential lots). Some of the Rural Living Zone in Kerikeri falls in the neighbouring Kapiro CAU and has maximum capacity for between 17 and 26 additional lots. Total theoretical capacity in and around Kerikeri is therefore approximately 770 to 1,170 additional rural residential lots based on 3,000sqm or 4,000sqm minimums.

The Te Hiku Ward accounts for 44% of theoretical capacity for new lots in the Rural Living Zone. The significant majority of this capacity (24%) is in the Karikari Peninsula-Maungataniwha CAU and the adjoining Taipa Bay-Mangonui CAU (3%). Combined, these areas of Rural Living Zone (which sit behind Taipa, Cable Bay, Coopers Beach and Mangonui) have a maximum theoretical capacity for 1,050 to 1,450 additional rural residential lots. These may be overstated if further allowance for roading/open space is required to develop this land.

In and around Kaitaia (Rural Living Zones falling within the Kaitaia East, Kaitaia West and Herekino CAUs), there is a theoretical capacity for 650-890 additional rural residential lots at the modelled minimums assuming no constraints to subdivision and development. Again, this may be overstated if further allowance for roading/open space is required to develop this land.

The analysis also shows that there is limited additional capacity for rural residential lots in the Rural Living Zone within the Kaikohe CAU (28-41 additional lots), but more in the adjacent Ngapuhi-Kaikou CAU (205-290 additional lots). This is a total theoretical capacity for 230-330 additional rural residential lots in the Kaikohe locality.

There is capacity for another 20-30 lots in the Rural Living Zone in Awanui, physical constraints and feasibility notwithstanding.

#### 6.2.2.2 Coastal Living Zone Capacity

In the Coastal Living Zone, subdivision to a minimum of 4ha is a controlled activity, subdivision to a minimum of 8,000sqm is a restricted discretionary activity and subdivision to a minimum of 5,000sqm is a discretionary activity. There is no limit to the number of lots (of these minimum sizes) in any subdivision. These sized lots are considered to deliver 'rural lifestyle' or 'rural residential' development.

Overall, M.E estimates that there are 1,830 parcels currently located in the Coastal Living Zone (this does not equate with dwellings). Qualifying parcels (by size and land use discussed above) could yield a maximum of 150 additional 4ha lots (total parcel count of 1,980), a maximum of 1,790 additional 8,000sqm lots (total parcel count of 3,620), or a maximum of 3,340 additional 5,000sqm lots (total parcel count of 5,170) assuming no constraints to development or feasibility. This means that there is very limited potential for further controlled subdivisions in this zone due to the absence of lots greater than or equal to 8ha. There is however greater potential for restricted discretionary or discretionary consent applications, as existing lots can be further fragmented.

Figure 69 shows the location of the capacity in this zone by CAU. Just under half of the net additional lots (rural lifestyle or rural residential dwelling capacity) is in the Bay of Islands-Whangaroa Ward. Under a rural lifestyle lot outcome (4ha minimum lot size), most of this Ward capacity of approximately 70 lots lies in the Coastal Living Zone in the Pokere-Waihaha CAU – the areas between Russell and Okiato (17% or potential for 25 additional 4ha lots). Kerikeri accounts for 14% of additional rural lifestyle capacity in the Coastal Living Zone (approximately 20 additional lots) and combined, the Waitangi and Kapiro CAUs – which cover zone area adjoining the Kerikeri Inlet, accounts for a further 6% or roughly 4 additional lots each on the north and south sides. The other key area for capacity in this ward is in Mangapa-Matauri Bay CAU (i.e. the zone areas in Matauri Bay, Whangaroa and Totara North). These areas yield a combined 15 additional 4ha lots (10% of the total).

If the Coastal Living Zone capacity in the Bay of Islands-Whangaroa Ward resulted in rural residential subdivision (5,000-8,000sqm minimum sized lots), then the theoretical yield rises significant to between 875-1,660. Kerikeri would account for a lower relative share of total district capacity under this scenario (7%), yielding approximately 125-220 additional rural residential lots. The zone areas between Russell and Okiato would yield between 290 and 540 additional lots assuming no constraints (and not further allowance for roading). In and around Matauri Bay, Whangaroa and Totara North (the Mangapa-Matauri Bay CAU), the potential yield would be between 180-330 additional rural residential lots.

The zone in Paihia could yield an estimated 40-75 additional lots, Haruru 15-30 additional lots, the southern side of Kerikeri Inlet (Waitangi CAU) an additional 120-245 lots and the northern side of Kerikeri Inlet (Kapiro CAU) an additional 65-140 lots). The feasibility of these is however likely to be overstated where land is steep and covered in bush.

Between 7-10% of additional capacity in the Coastal Living Zone occurs in the Kaikohe-Hokianga Ward. Specifically, the Hokianga South CAU has zone areas west of Omapere and in Koutu Point/Koutu which could yield 11 additional 4ha lot or a more significant 170-340 rural residential lots assuming no constraints. There is little remaining subdivision capacity in the Omapere and Opononi CAU.

Between 41-45% of additional capacity in the Coastal Living Zone occurs in the Te Hiku Ward. This is concentrated in the Houhora CAU (23% of additional rural lifestyle capacity (34 additional lots) and approximately 13% of additional rural residential capacity (235-410 additional lots)) and the Karikari Peninsula-Maungataniwha CAU (zone area at the back of Taipa, Cable Bay and also Hihi (23% of additional rural lifestyle capacity (34 additional lots) and approximately 25% of additional rural residential capacity (440-810 additional lots)). Some of this capacity at the back of Taipa appears (in aerial photographs) to be occupied by orchards (and not identified as such in terms of the LINZ land use codes). This land is unlikely to be further subdivided for residential dwellings with these orchards established, and so capacity in this particular location is likely to be overstated.

Based on existing land parcels, there is no further potential for controlled subdivision (4ha minimum lot sizes) in Ahipara, North Cape or Ninety Mile Beach Road (Motutangi-Kareponia CAU).

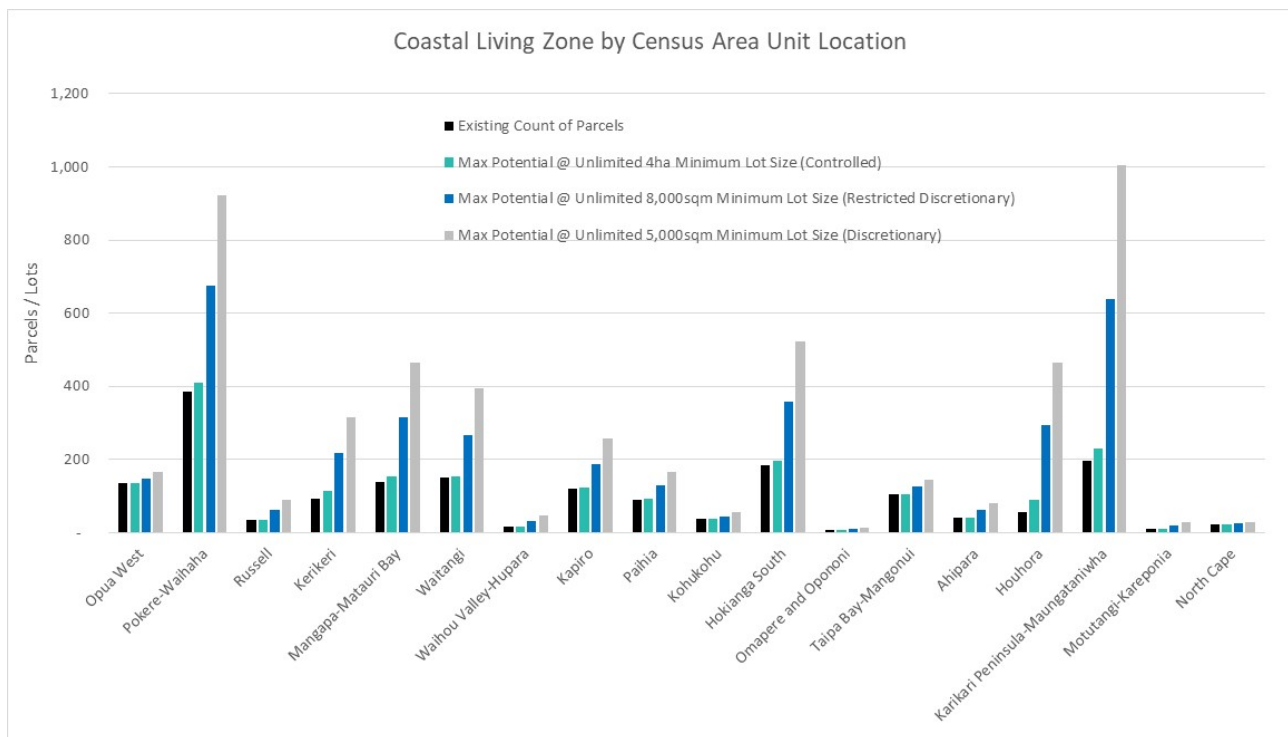


Figure 69: Maximum Theoretical Subdivision Potential in the Coastal Living Zone by Location

### 6.2.2.3 Summary of Additional Rural Residential Capacity in Living Zones

The combination of estimated additional rural residential subdivision capacity in the Rural Living and Coastal Living zones equates to a range between:

- 5,670 (lowest potential yield based on 4,000sqm and 8,000sqm minimum lot sizes respectively) and,
- 8,760 additional lots (upper potential yield based on 3,000sqm and 5,000sqm minimum lot sizes respectively).

This is summarised in Figure 70. This capacity is likely to be overstated as there will be physical constraints that mean that these minimum lot sizes cannot be achieved. Roading and open space provision, infrastructure considerations and financial feasibility are also relevant, and would further reduce these estimates. They are considered a theoretical

maximum and in the case of the Coastal Living Zone, assume that opportunities for larger 4ha lots would be forgone to deliver rural residential type subdivision.

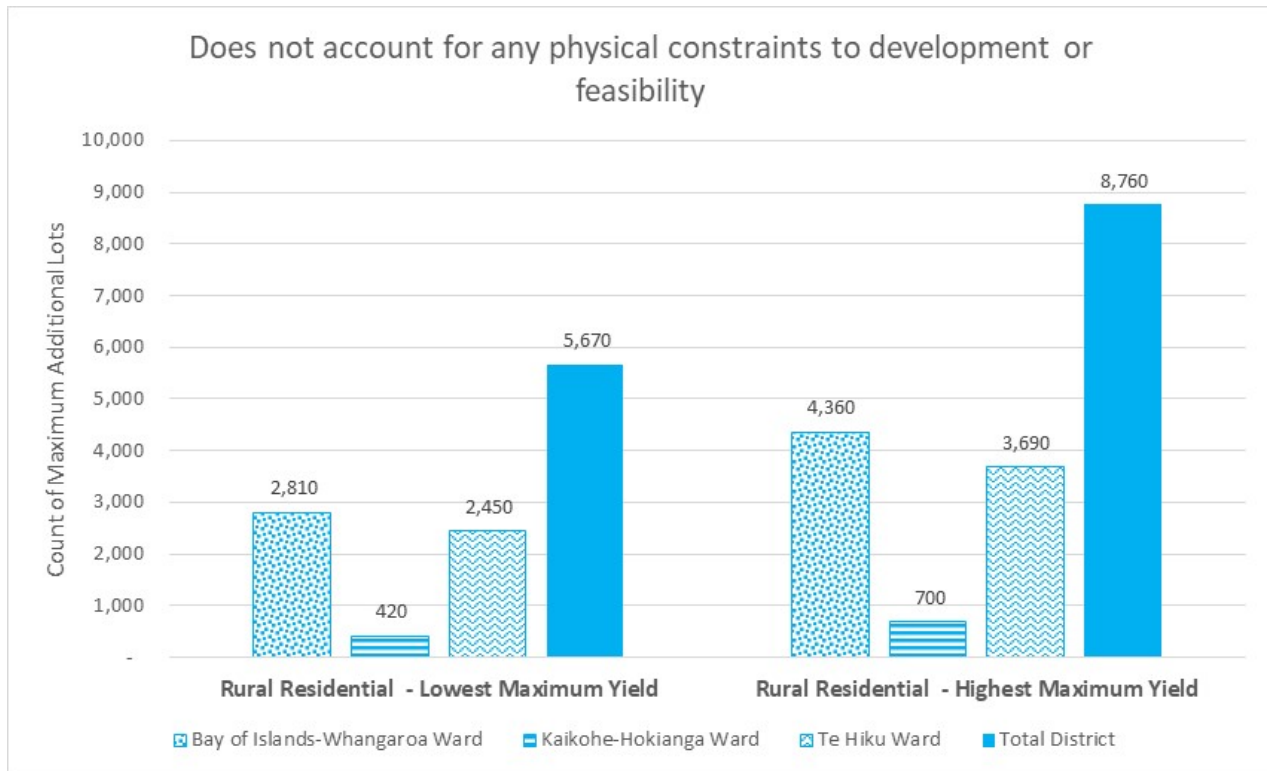


Figure 70: Maximum Theoretical Subdivision Potential in the Rural Living and Coastal Living Zones by Ward

The **Waimate North Zone** also has potential to create additional rural residential capacity. This can occur on parcels that existed before April 2000 only, under two alternative outcomes:

- Creation of two 4,000sqm lots when the parent lot has a minimum of 4ha (Controlled Activity).
- Creation of two 2,000sqm lots when the parent lot has a minimum of 4ha (Discretionary Activity).

Therefore, for every qualifying subdivision, two rural residential lots are created. This is a once off subdivision opportunity and based on M.E estimates, only 7 properties assigned to the Waimate North Zone qualify in their own right (i.e. without site amalgamation or boundary adjustments). Under both scenarios, the yield of additional rural residential lots is 14. The seven balance (parent) lots fall between 9ha and 12ha, with one at 61ha in size - far larger than the 4ha minimum (and generally larger than sought for rural lifestyle properties). In the wider scheme, Waimate North makes only a marginal contribution to total district capacity for additional rural residential lots, over and above that enabled in the Rural Living and Coastal Living Zones.

The **Rural Production Zone** also has potential to create additional rural residential capacity. This can occur on parcels that existed before April 2000 only, under two alternative outcomes:

- Creation of two 4,000sqm lots when the parent lot has a minimum of 4ha (Restricted Discretionary Activity).
- Creation of two 2,000sqm lots when the parent lot has a minimum of 4ha (Discretionary Activity).

Therefore, for every qualifying subdivision, two rural residential lots are created. This is a once-off opportunity. The resulting parent lots range in size from 8.4ha and larger – so most are larger than what might be considered rural lifestyle blocks.

Based on M.E estimates, approximately 4,300-4,450 properties assigned to the Rural Production Zone qualify in their own right under these grand-father rules (i.e. without site amalgamation or boundary adjustments). Under the restricted discretionary scenario, the yield of additional rural residential lots is approximately 8,600. Under the discretionary scenario, the yield of additional rural residential lots is approximately 8,900. In both cases, this capacity

is spread throughout the district and not necessarily in areas where there would be any demand. Even if only a portion of all subdivision in the zone was according to these scenarios, the Rural Production Zone could make a significant contribution to total district capacity for additional rural residential lots over and above that enabled in the Rural Living and Coastal Living Zones.

#### 6.2.2.4 Summary of Additional Rural Lifestyle Capacity

The potential for additional rural lifestyle capacity (based on operative minimum lot sizes of 2ha and 4ha only) is enabled in a number of zones and locations throughout Far North district:

- Coastal Living Zone - controlled activity (minimum lot size of 4ha).
- Kerikeri Inlet Zone - restricted discretionary activity (minimum lot size of 4ha).
- Rural Production Zone - discretionary activity (minimum lot size of 4ha).
- Rural Production Zone - restricted discretionary activity (minimum lot size of 2ha, up to five - limited to parcels dated prior to April 2000).

Based on the analysis above on rural residential potential, the following subdivision rules are excluded from generating potential rural lifestyle capacity because the remaining parent lot sizes were greater than 8ha in size (i.e. were generally larger than what the market looks for in rural lifestyle properties):

- Waimate North Zone – discretionary activity (minimum lot size of parent lot 4ha, with two lots at 2,000sqm - limited to parcels dated prior to April 2000).
- Waimate North Zone – controlled activity (minimum lot size of parent lot 4ha, with two lots at 4,000sqm - limited to parcels dated prior to April 2000).
- Rural Production Zone - restricted discretionary activity (minimum lot size of parent lot 4ha, with two lots at 4,000sqm – limited to parcels dated prior to April 2000).
- Rural Production Zone - discretionary activity (minimum lot size of parent lot 4ha, with two lots at 2,000sqm – limited to parcels dated prior to April 2000).

As discussed above, the potential for additional rural lifestyle lots in the Coastal Living Zone occurs only if parcels are not subdivided under a different scenario (i.e. rural residential). The maximum theoretical yield was 150 additional lots (and potentially overstated).

The yield in the Kerikeri Inlet Zone (excluding the sensitive area) is estimated at just 16 more 4ha lots.

The rough (rounded) yield of rural lifestyle lots in the Rural Production Zone (under the two relevant subdivision rules) ranges from 21,000 additional lots (restricted discretionary at up to 5 2ha lots, and including only those parent lots that fell within the general threshold of lifestyle properties (8ha in this case) and did not prior to subdivision), to 63,000 additional lots (discretionary at 4ha minimum lot sizes).

The combined additional capacity for rural lifestyle lots (keeping in mind that the Coastal Living and Kerikeri Inlet Zones make only a minor contribution at the district level) is summarised in Figure 71. The majority of capacity occurs in the Kaikohe-Hokianga Ward. This capacity is not additive of rural residential capacity when alternate scenarios have been tested.

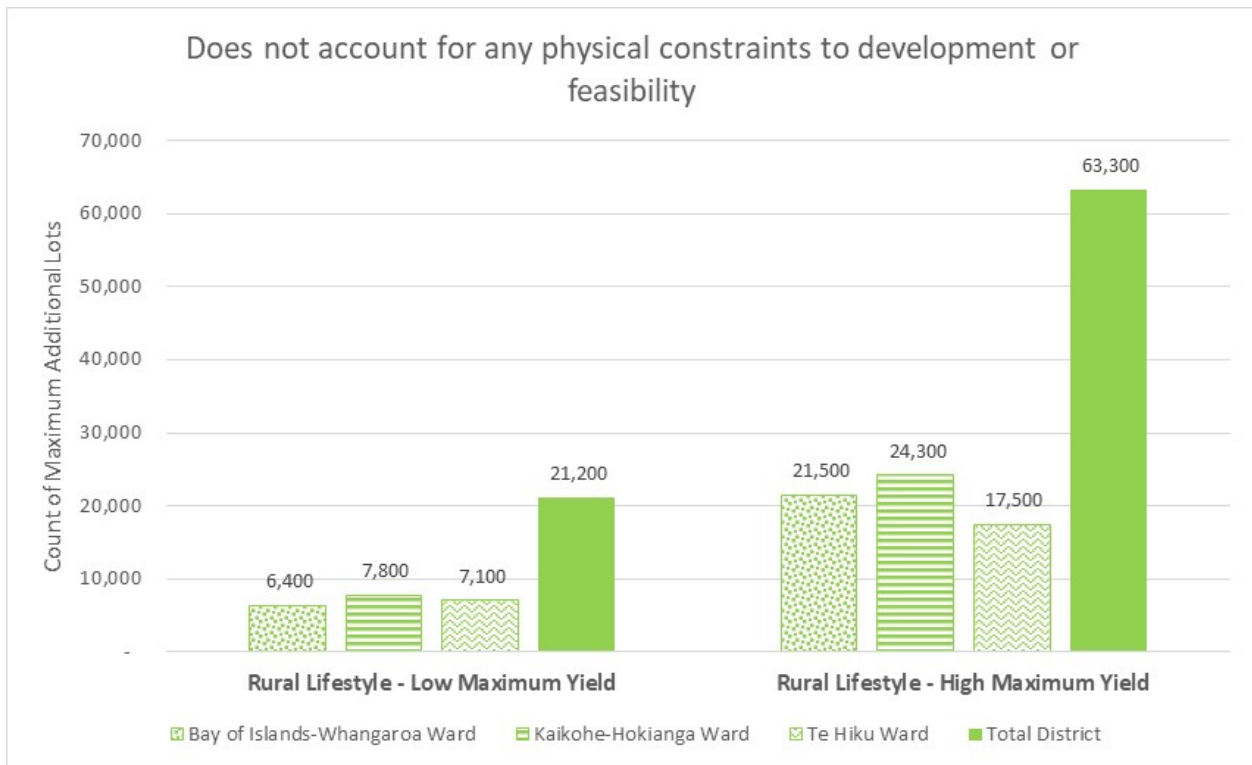


Figure 71: Maximum Theoretical Subdivision Potential for Rural Lifestyle Lots (Various Zones) by Ward

### 6.2.3 Development Constraints in the Far North

From a planning perspective, we consider there are constraints across the district that currently occur or exist which have and will impact on rural lifestyle and rural residential living into the future. A snapshot of the key development constraints has been identified below and fall out of a review of statutory documents (particularly the RPS), a review of Council actions, onsite observations and discussions with key Council staff. These constraints generally follow those broad themes identified in the literature review (refer to section 5.1.2).

#### 6.2.3.1 Natural hazards

The Far North District is subject to a number of natural hazards. As noted in the Northland RPS *“Natural hazards, particularly flooding and coastal erosion and inundation, have the potential to create significant risk to human life, property, community and economic wellbeing in Northland. This risk is projected to increase as a result of a changing climate”*.

The RPS states that the risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and regional economy are minimised by *“avoiding inappropriate new development in 10- and 100-year flood hazard areas and coastal hazard areas”*.

Not surprisingly, most of the land subject to coastal flood and coastal erosion hazards (storm inundation) is generally limited to coastal margins.

A significant natural hazard in the Far North is river flooding. An example of the Northland Regional Council flood extents is shown below. This shows potential for significant flooding in a 10-year flood extent to the south-west of Kaitia which is currently zoned Rural Production.



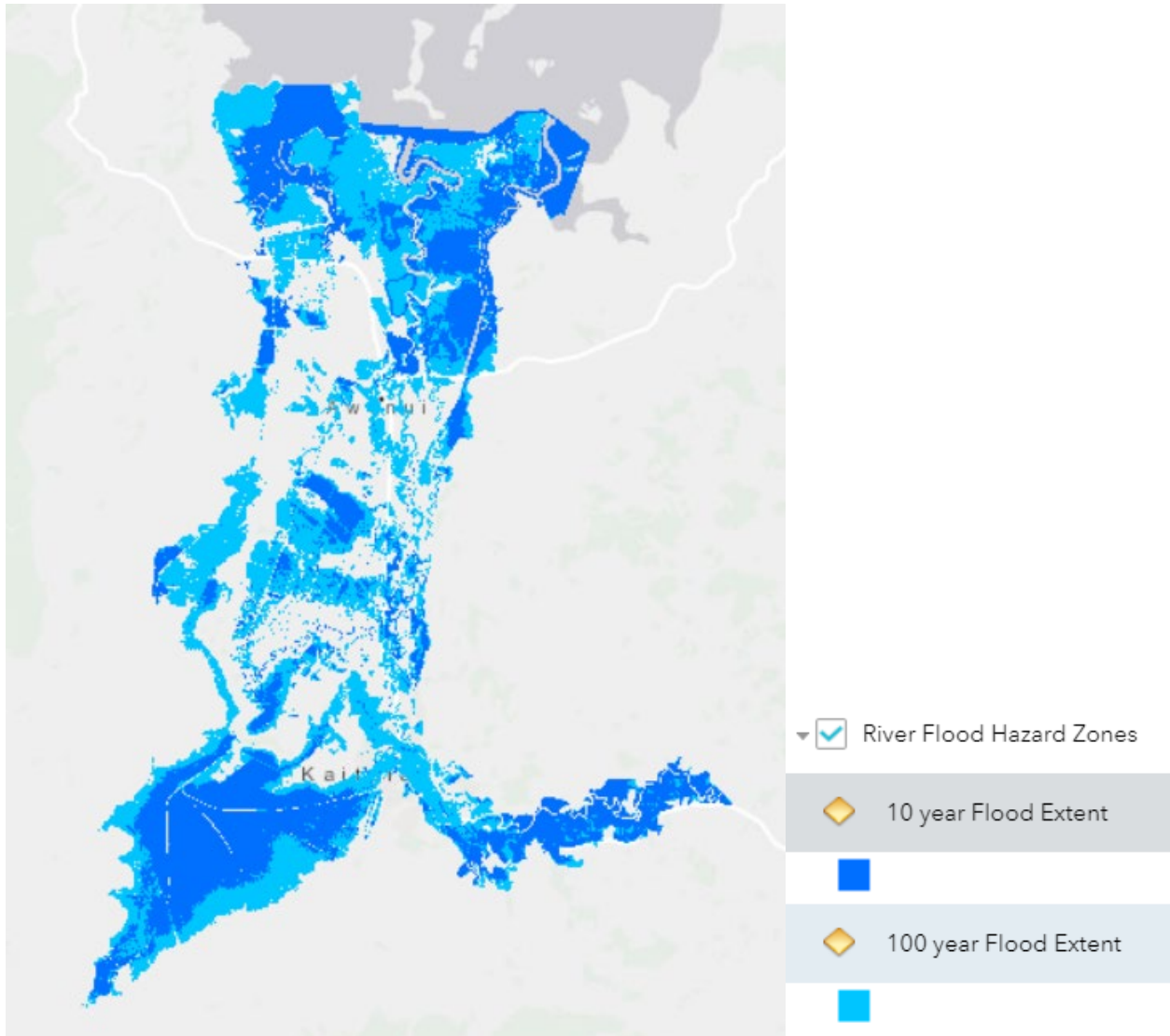


Figure 72: River Flood Hazard Zones - Kaitia (Source: Northland Regional Council)

The figure below shows the flood hazard zones for Kerikeri, with the key flood risk area being to the south of Waipapa.

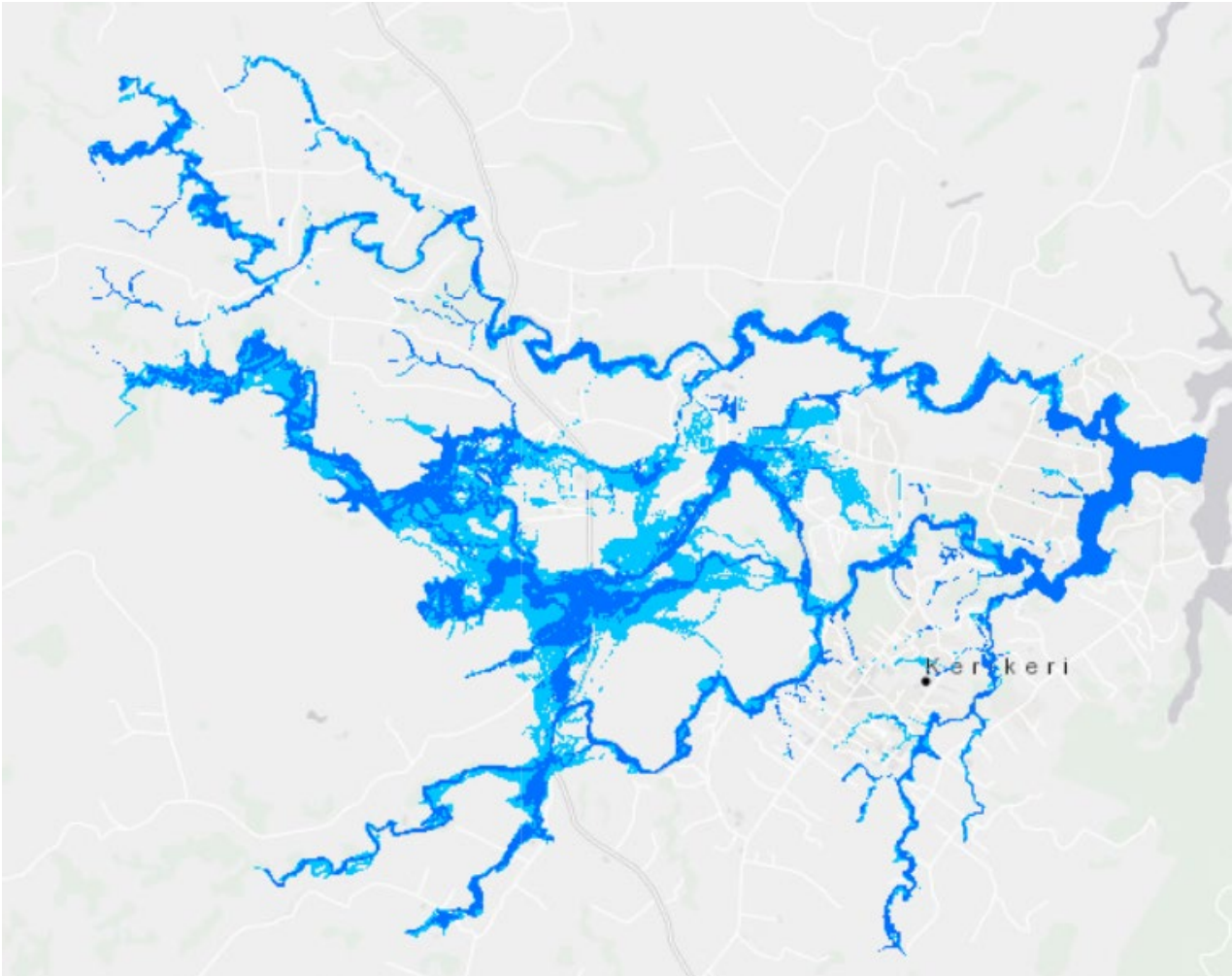


Figure 73: River Flood Hazard Zones - Kerikeri (Source: Northland Regional Council)

Flooding and high-water tables has implications on the design of sites including access, amount of impervious areas, floor levels for dwellings, and infrastructure (including the ability for onsite stormwater disposal).

Communications with Council staff have indicated that earthworks associated with the development of sites are resulting in changes to flood hazards, such as overland flow paths in the Kaitaia and Kerikeri area.

Given the low-lying and expansive coastline in the Far North, Tsunami is another natural hazard that, although not often regulated in RMA plans, poses potential for perceived or actual development constraints. An example of the Civil Defence Tsunami Evacuation Zones, focussing on Kerikeri is shown below.

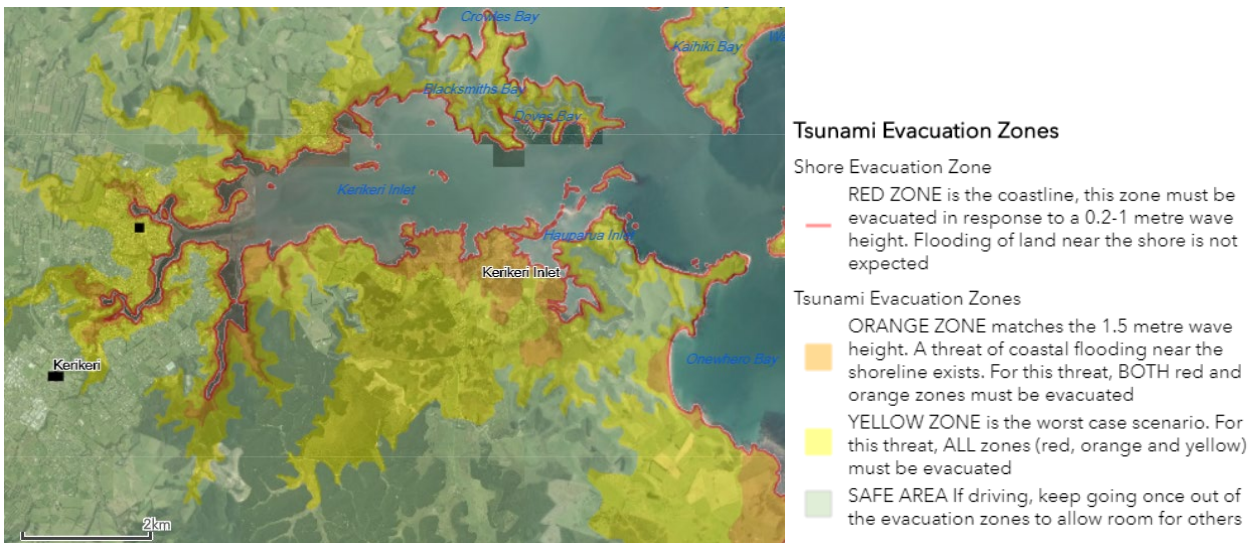


Figure 74: Civil Defence - Tsunami Evacuation Zones - Kerikeri (Source: Northland Regional Council)

### 6.2.3.2 Natural features

Section 6 of the Resource Management Act 1991 (RMA) states that the preservation of the natural character of the coastal environment and water bodies, and their margins, is a matter of national importance. Section 6 also requires the protection of natural character, outstanding natural features / landscapes and historic heritage from inappropriate subdivision, use and development. These directives are reinforced through the New Zealand Coastal Policy Statement in Policies 13, 15 and 17. The Regional Policy Statement recognises that production land and other lawfully established activities are amongst the characteristics and qualities which make up the outstanding values of areas of that land. It is also recognised that, by their very nature, production land and other lawfully established activities change over time and that such changes may not result in the deterioration of these values.

The Far North District includes a number of Outstanding Natural Landscapes (ONL), Outstanding Natural Features (ONF) and areas of Outstanding or High Natural Character. Not surprisingly, in order to protect these features, controls around lot sizes and land use activities limit (or should limit) the amount and type of development in these areas.

A map showing the extent of ONLs in the Far North is shown below.

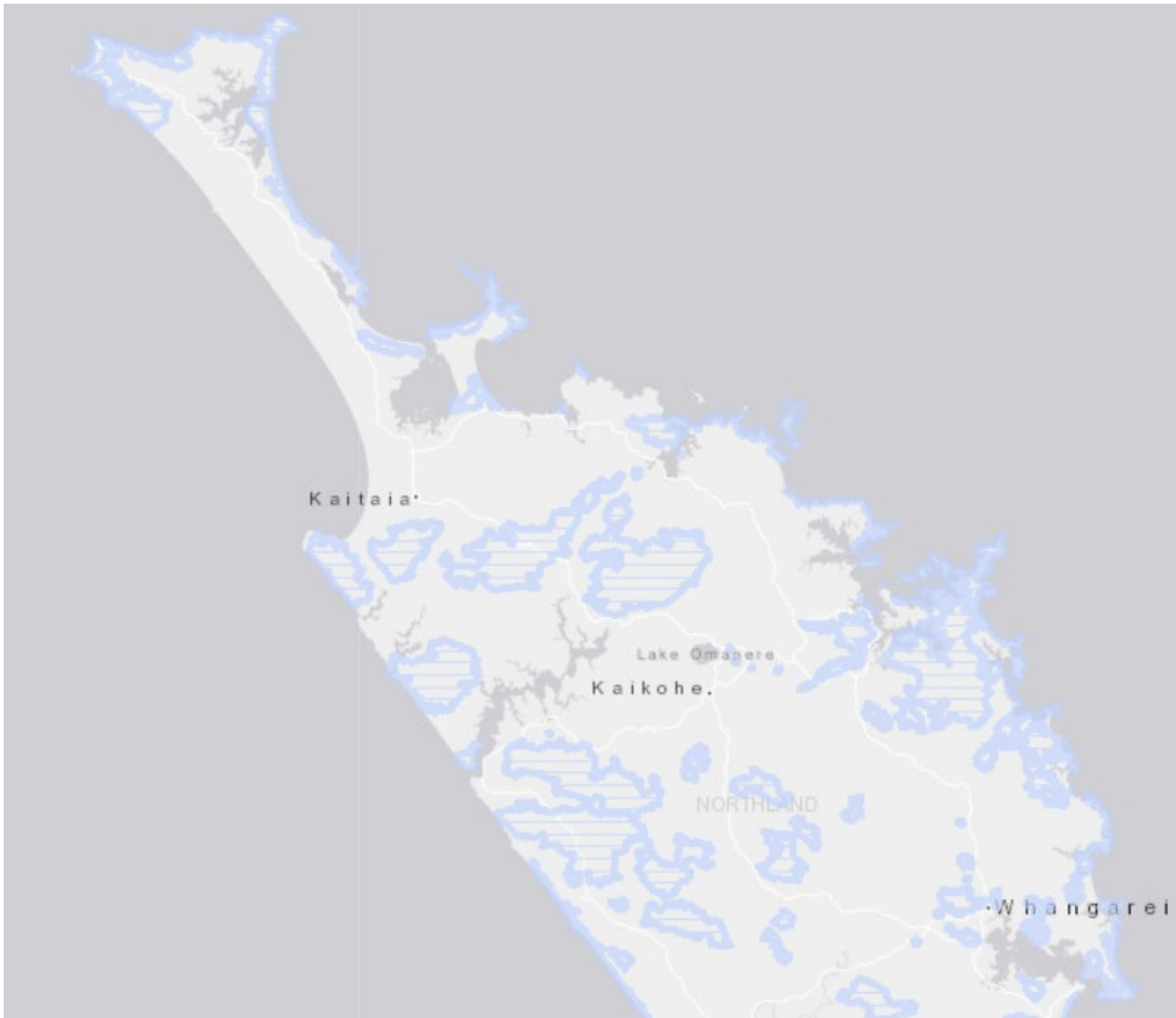


Figure 75: Map of Outstanding Natural Landscapes (Source: Northland Regional Council)

### 6.2.3.3 Biodiversity

The Northland region contains a wide diversity of habitat types and ecosystems and a high number of indigenous species, a number of which are found only in Northland. These can be found on both public and private land. Habitat loss and fragmentation can occur as a result of intensification of land use. The Northland Regional Plan has regulatory and non-regulatory methods to protect significant wetlands, and vegetation clearance. At the District Plan level there are also a range of methods to protect significant indigenous vegetation and significant habitats of indigenous fauna in line with Section 6(c) of the RMA.

### 6.2.3.4 Cultural and historic heritage

Historically and archaeologically, the Far North District has a wealth of assets, many of which are nationally important. Heritage resources are scattered throughout the District. The Northland Regional Plan maps identify historic heritage sites and historic heritage areas. Heritage resource in the District Plan include notable trees; historic sites, buildings and objects; sites of cultural significance to Maori (including waahi tapu); registered archaeological sites; and heritage precincts. Many of these sites are mapped at the District level, through the District Plan maps. The New Zealand Archaeological Association also has a database of archaeological sites. The figure below provides an indication of the extent of (mapped) archaeological sites in the Far North, which not surprisingly is significant. There are a range of development controls under the District Plan, as well as other legislation such as the Heritage New Zealand Pouhere Taonga Act which seek the protection of these significant sites from modification or destruction.

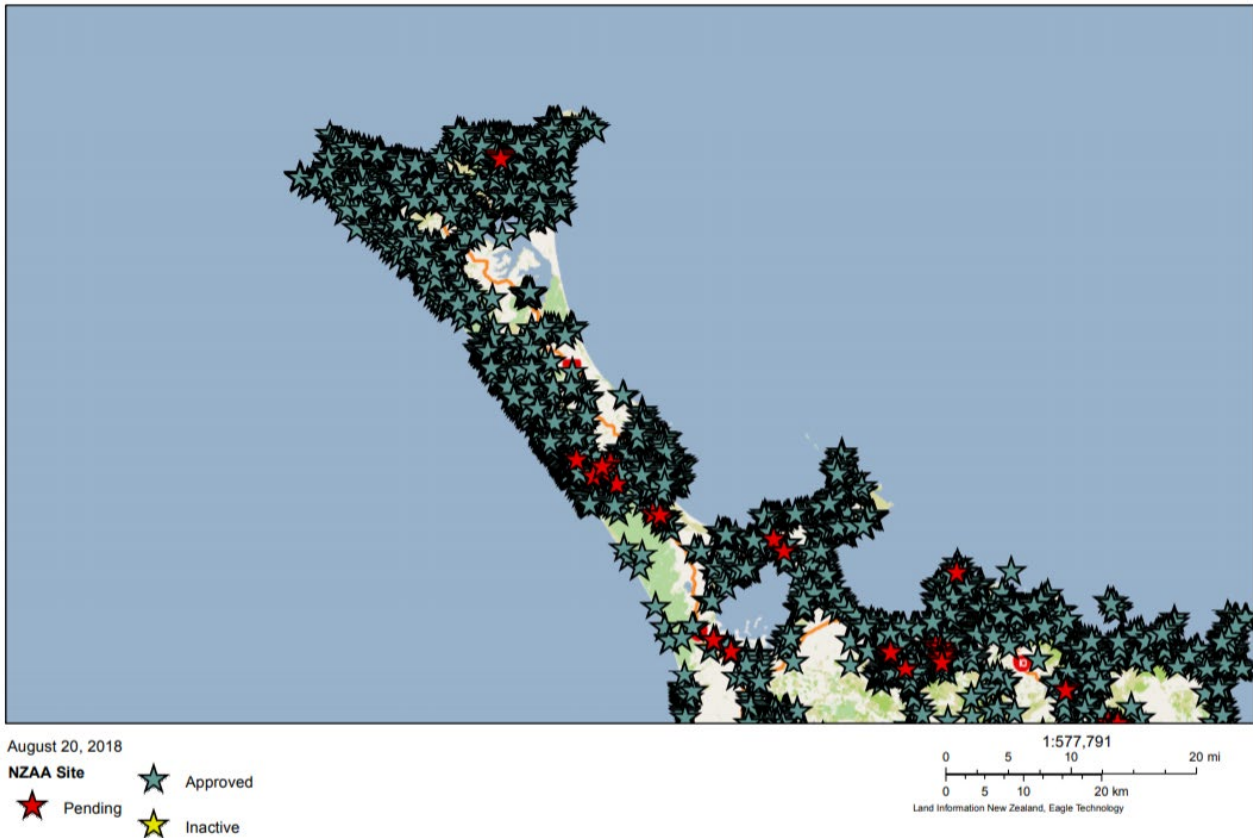


Figure 76: Archaeological Sites (Source: NZAA)

#### 6.2.3.5 Reverse sensitivity

Reverse sensitivity from horticulture is a big issue in the region. Council often receive complaints in relation to perceived health risks with spray drift and dust effects from unsealed rural roads. There is currently a lack of direction in the plan for managing reverse sensitivity effects. The implications of reverse sensitivity on development is outlined further in the rural residential/lifestyle and rural environment interface methodology outlined in section 5.2.

#### 6.2.3.6 Highly versatile soils and productive land

As discussed and mapped in detail in earlier sections of this report (refer to section 3.3), the Far North district has areas of highly versatile soils (total of 64,436 hectares of class 1-3 soils). It is evident that some of these areas, in particular around Kerikeri South and Waipapa are locations that are subject to significant development pressures.

Ad-hoc subdivisions are resulting in the loss of or fragmentation of productive rural land around centres (such as Kerikeri, Waimate North, Paihia/Haruru, around Campbells Beach and some parts of Kaitiāia and Ahipara). There have been observations from Council staff that productive lots are reducing in size and in some cases becoming too small for kiwifruit orchards, which is resulting in a less competitive product when compared to other regions (such as the Bay of Plenty). The wider issue is that smaller sites can often mean there is less ability in the future to adapt to changing markets. This issue has also been examined in section 4.1.

#### 6.2.3.7 Infrastructure

It is understood there is real pressure from developers for Council to provide reticulated wastewater and stormwater networks, which has a cost to Council and the wider community. The Far North District Council does not require development contributions to fund infrastructure and relies heavily on rates to do so. Many developments are exceeding the impervious area thresholds and it is not mandatory to have stormwater tanks.

The development of rural residential and lifestyle lot sizes, has impacts on roading infrastructure. It is understood that the District Plan directs that if there are over nine lots on a single right of way, Council has the ability to adopt this

road into their network. However, in practice these are often left in private ownership to avoid ongoing maintenance costs to Council. This can however, result in poorly maintained accessways and associated infrastructure (such as drainage).

Ad-hoc low-density development is also resulting in inefficient roading networks and layouts, as a result of a number of right of ways, rather than a connected roading network, which also results in an inefficient use of land.

#### 6.2.4 Review of Subdivision Consents

A sample of 14 subdivision consents (notification and decision reports) were reviewed to identify the sorts of rural land uses that have sought land fragmentation, the nature of lot sizes that have been created, and any changes in land use that have resulted (and that can be determined to date) in order to assess the general effectiveness of the current zone provisions.

A sample was selected by:

- 1) Identifying small (generally less than 8 hectares) land parcels in the Rural Production Zone;
- 2) Reviewing when the land parcels were created (only small land parcels created during the life of the Operative Far North District Plan were chosen);
- 3) Reference to the spatial audit undertaken in section 5.4.6.

This resulted in a sample of consents from the following locations and townships in the Far North:

- Ahipara;
- Haruru;
- Kaitaia;
- Kerikeri Inlet; and
- Kerikeri North (Waipapa).

It is noted that this sample may not be representative, however, the comments below are also qualified by observations by Council staff involved in processing such consents.

All of the subdivision consents were to create new lots (to provide for residential development) or were variations to existing consents, seeking to amend lot sizes. The overall activity status for the consents (restricted discretionary – non-complying) and reasons for consent varied significantly. None of these applications were publicly or limited notified.

For restricted discretionary subdivision consents, the planning officer was limited to matters of discretion outlined in the plan. These are very limited and for subdivision within the Rural Production Zone include:

- Effects on the natural character of the coastal environment for proposed lots which are in the coastal environment;
- Effects of the subdivision under (b) and (c) above within 500m of land administered by the Department of Conservation upon the ability of the Department to manage and administer its land;
- Effects on areas of significant indigenous flora and significant habitats of indigenous fauna; and
- The mitigation of fire hazards for health and safety of residents.

Not surprisingly, in these consents, there was very limited ability to assess effects on the versatile soils, viability of primary production, reverse sensitivity, effects on infrastructure etc.

Two consents specifically assessed reverse sensitivity effects, with their assessment provided below:

*“The proposed development will not result in reverse sensitivity effects occurring. The only potential is from normal farming practices which do not occur within close proximity to the site. There are other lifestyle type lots between the application site and the pastoral blocks. The adjoining lots are similar to that which is proposed in this application.”*

*“The surrounding area is rural production and rural residential in nature. It is considered that the proposal is in keeping with the existing character of the area and does not add to the risk of reverse sensitivity.”*

One example (non-complying activity due to a 0.38ha lot) provided an assessment of effects of the proposal on soils:

*“Councils GIS mapping system, Mahere Whenua indicates that the soil type for the site are 4e 10 for the area that will become Lot 2, and the remainder, a mix of 4s 5, 6e 1 and 4e 10. NZ Land Resource Inventory Worksheets does not identify these soil specifications as highly versatile. No further development is proposed as part of this application. It is not considered that there will be any adverse effects in terms of effects on the soils capacity to support life.”*

One consent (to create lots of 4505m<sup>2</sup> and 5640m<sup>2</sup> within the Rural Production Zone (non-complying activity)) was assessed as being appropriate in terms of rural character and amenity as *“The lots are located within a small concentration of houses similar to that which is proposed under this subdivision. The proposal will not affect the wide and open areas of pasture which contributes to the amenity of the area”*.

Some broad conclusions can be made from the review of the subdivision consents:

- The existing rural environment (modified by previous consents allowing development below anticipated development thresholds) is often used as a baseline for justifying why further intensification at lower development levels is considered appropriate.
- Consents for subdivision below anticipated development thresholds are not often notified (limited or public) and the corresponding activity status does not appear to place an impediment against subdivision below minimum lots sizes being applied for, which based on our observations in other Districts, can be the case, particularly when dealing with a non-complying activity status.
- There appears to be no recent examples of subdivision consents being declined by Council due to development intensification of the Rural Production Zone.
- The current policy framework does not allow for appropriate consideration for the loss highly-versatile soils and as a consequence this does not appear to be a constraint to avoiding further rural residential intensification, which is telling given that the significant majority (85%) of versatile soils are located in the Rural Production Zone.
- The ability to refer back to policy direction in higher order documents such as the Regional Policy Statement has not been undertaken well. Further, generally the assessment of objectives and policies of the District Plan under s104(1)(b).

### 6.2.5 Summary, Constraints and Demand Implications

M.E’s high-level analysis looks at the maximum potential for in-situ subdivision in each rural zone (excluding the Minerals Zone and Kerikeri Inlet Sensitive Area). Key findings include:

- There is theoretical potential for a large volume of additional **rural residential** lots to be created in the Rural Living and Coastal Living Zones. Most of this potential is in the Rural Living Zone.
- This capacity is spread over a number of locations throughout the district, some of which have shown little or no subdivision activity to date. Other more popular or easier developed zone locations have only limited capacity remaining.
- Where land is steep, bush clad, or yet to be serviced with roading, the estimates of dwelling yields will be overstated. Other constraints also apply that would further reduce the figures stated. Not all subdivision will be feasible or sought by the landowners.
- There is limited potential left for controlled subdivision in the Coastal Living Zone. Soon this rule could be redundant.
- The rules which allow for subdivision of parcels created prior to April 2000 still offer significant subdivision potential.
- There is theoretical potential for a large volume of additional **rural lifestyle** lots to be created in the Rural Production Zone.
- The creation of additional rural residential and rural lifestyle lots in the Rural Production Zone (and the Waimate North Zone) is primarily at the expense of farming land (and will mean further loss of primary production capacity).

- The uptake of plan enabled capacity will depend on demand for rural residential and rural lifestyle lots. This demand is not distributed evenly across the Far North. Demand is discussed further below.

## 6.3 Analysis of Demand

This section considers demand for rural residential and rural lifestyle lots/dwellings in the Far North. All survey responses from the sample of surveyors and real estate agents in the Far North considered that there was high demand for rural residential and rural lifestyle living. Discussions with key Council staff saw demand of rural residential and lifestyle lots being driven by schooling, retirees and commuters from Auckland. A common conclusion from these stakeholders was that they saw there being a demand for rural residential sites (site with lawn and gardens) as opposed to more rural lifestyle blocks (that can accommodate small farming). This is further reflected in there being demand from landowners of rural lifestyle properties seeking further subdivision to more rural residential properties. Surveyors and real estate agents believe that people are looking for:

*“Just somewhere to build to live in or very near Kerikeri. There are way more single people wanting smaller homes on smaller sites. Mostly they don’t want big sites, just too hard to look after.”*

*“Privacy, location, close to facilities.”*

*“People are wanting to be in the rural setting but with not a lot of land.”*

*“Smaller sites, close to town centres (Kaitia & Kerikeri), very little interest in having enough ‘lifestyle’ land for farming on – generally looking for somewhere to build their house on a manageable size section”.*

In order to determine whether the plan enabled capacity meets future demand requires an assessment of likely demand. Because any single projection only provides a single view of the future, we have treated the assessment as a scenario around which decisions could be made if the scenario shows there are gaps in provision or excess.

### 6.3.1 Approach and Assumptions

The basis of the assessment is Statistics New Zealand’s Census Area Unit (CAU) level household projections. These have been further disaggregated to Meshblock (MB) level based on MB share of 2013 CAU households. This process leads to a scenario where future growth is likely to be clustered around areas where current households reside. It makes the implicit assumption that households revealed preferences for location to date, hold true into the future. The initial allocation does not take into account capacity provided at the MB level, however, it provides a basis to assess whether the capacity provided aligns broadly – at the CAU level with future growth.

In addition to the raw household growth, it has been necessary to align growth of households with the type and nature of current land zoning. Existing household counts and future household growth has been split by location between;

- Rural Households;
- Rural Lifestyle Households;
- Rural Residential Households; and
- Residential Households.

This categorisation allows alignment with operative planning zones by type and provides a basis for comparison with capacity. The share of parcels in each MB by zone has been collated and aligned with MB level household demand projections. This allows household projections to be aligned with zone types on a proportional basis as a first cut. The initial allocations have been further modified based on an assessment of how future growth is likely to occur. For example, it is understood that in the Rural Production Zone there is an ability to carve off parcels for Rural Lifestyle and Rural Residential development (through the various subdivision rules). This is likely to mean that in the Rural Production Zone, any growth in household numbers that occurs is more likely to be in these types than for additional primary production units (Rural households).

It is also noted that the Rural Production and General Coastal Zones cover a significant number of small townships/rural settlements across Far North District. In these locations (i.e. CAUs), any additional growth is likely to be Residential in nature.



It has not been possible to disaggregate household growth into meaningfully different demographic groups that might allow close alignment with the different District Plan zones. There are significant similarities between the Rural Residential and Rural Lifestyle households in terms of their demographic profiles. It is noted that households that locate in these areas are materially different from households that locate in the residential zone (older, higher incomes, more likely to be European ethnicity, more likely to be self-employed or receive interest or dividends, more likely to be full time employed in managerial or professional occupations).

In addition to the above constraints a number of assumptions drive this scenario. Altering these assumptions will change the outcome – but testing significant changes resulted in limited changes in final outcomes;

- Medium CAU Household Projections from 2013 Census base are used (2103 – 2043 in 5-year cohorts).
- 100% of growth in the Rural Living Zone is coded as Rural Residential in nature.
- 100% of growth in the Coastal living Zone is coded as Rural Residential.
- Growth in Waimate North has been split between Rural Residential (80%) and Rural Lifestyle (20%).
- Growth in the more traditional rural zones (General Coastal and Rural Production) is split between Rural households (5%), Rural Lifestyle households (80%) and Rural Residential households (15%). Note that this differs from the 2013 split where 70% of existing households was considered Rural, 20% Rural Lifestyle and 10% Rural Residential. That is, we assume a changing mix of household types over time.
- Parcels identified as being in the Minerals Zone, have been excluded in this split (with no additional households assigned to it).
- 100% of growth in South Kerikeri Inlet Zone (and Sensitive Area) is assumed to be Rural Lifestyle households.
- Growth in Total Special Zone areas that currently contain residential communities has been split according to the current nature and location of MBs, between Rural Lifestyle and Rural Residential.

### 6.3.2 Results

Applying the above assumptions to anticipated future growth sees the District grow from around 23,720 households in the 2013 Census to an estimated 27,350 by 2043. In 2013 almost half the total District households (49%) were classified as Rural (11,600 out of the 23,720). A further 34% were Residential (7,980) and 14% were considered Rural Residential which generally occur on the outskirts of the larger towns (3,210 households). Rural lifestyle households made up an estimated 4% of the total. (Table 47).

Table 47: Far North District 2013 Estimated Household Count by Ward and Property Type

Ward	Ward Name	Rural	Rural Lifestyle	Rural Residential	Residential	TOTAL	Share of Holds
101	Te Hiku Ward	3,690	260	790	2,730	7,460	31%
103	Kaikohe-Hokianga Ward	4,500	210	260	1,720	6,690	28%
102	Bay of Islands-Whangaroa Ward	3,420	460	2,160	3,530	9,570	40%
	<b>TOTAL FAR NORTH DISTRICT</b>	<b>11,600</b>	<b>930</b>	<b>3,210</b>	<b>7,980</b>	<b>23,720</b>	<b>100%</b>
	<b>Share of Property Type</b>	<b>49%</b>	<b>4%</b>	<b>14%</b>	<b>34%</b>	<b>100%</b>	

Source: M.E (based off Statistics NZ CAU Household Projections – Medium)

Future growth is likely to be a little different based on where Statistics New Zealand project growth will occur across the District's CAUs. Of the almost 3,630 additional households expected under this scenario, 1,490 or 41% is expected to be Rural Lifestyle, 1,120 households are expected to be added to the towns as Residential (31%) and almost 1,000 (920 or 25%) are expected to be classified as Rural Residential (Table 48). This scenario suggests that there will be growing pressure for rural lifestyle block subdivisions in the Rural Production and General Coastal Zone over time, as well as Waimate North and Kerikeri Inlet Zone and growing pressure for rural residential sections on the outskirts or urban centres.

Table 48: Far North District Estimated Household Growth 2013 – 2043 by Ward and Property Type (Medium)

Ward	Ward Name	Rural	Rural Lifestyle	Rural Residential	Residential	TOTAL	Share of Growth
101	Te Hiku Ward	30	510	200	450	1,190	33%
103	Kaikohe-Hokianga Ward	30	490	110	110	740	20%
102	Bay of Islands-Whangaroa Ward	30	500	610	570	1,700	47%
	<b>TOTAL FAR NORTH DISTRICT</b>	<b>90</b>	<b>1,490</b>	<b>920</b>	<b>1,120</b>	<b>3,630</b>	<b>100%</b>
	<i>Share of Property Type</i>	<b>2%</b>	<b>41%</b>	<b>25%</b>	<b>31%</b>	<b>100%</b>	

Source: M.E (based off Statistics NZ CAU Household Projections – Medium)

Table 48 shows that an estimated 47% of household growth will be directed at the Bay of Islands-Whangaroa Ward (1,700 additional households over the long-term). A third (33%) of estimated household growth (1,190 additional households) are projected to occur in Te Hiku Ward by 2043 and the balance (740 additional household or 20%) is projected to occur in the Kaikohe-Hokianga Ward.

Figure 77 shows the estimated mix of property types associated with projected household growth. In the Te Hiku Ward, an estimated 38% of household growth will be for urban residential densities. A further 17% is estimated for rural residential densities. This is a combined 55% seeking locations in or on the outskirts of urban areas.

In the Kaikohe-Hokianga Ward, the significant majority of demand is for rural lifestyle type properties (66%), with those seeking urban or urban fringe locations accounting for an estimated 30% of long-term growth. The Bay of Islands-Whangaroa Ward has the highest demand for rural residential densities (36% of projected ward growth to 2046. A third of additional households are estimated to seek urban residential densities and 29% rural lifestyle blocks.

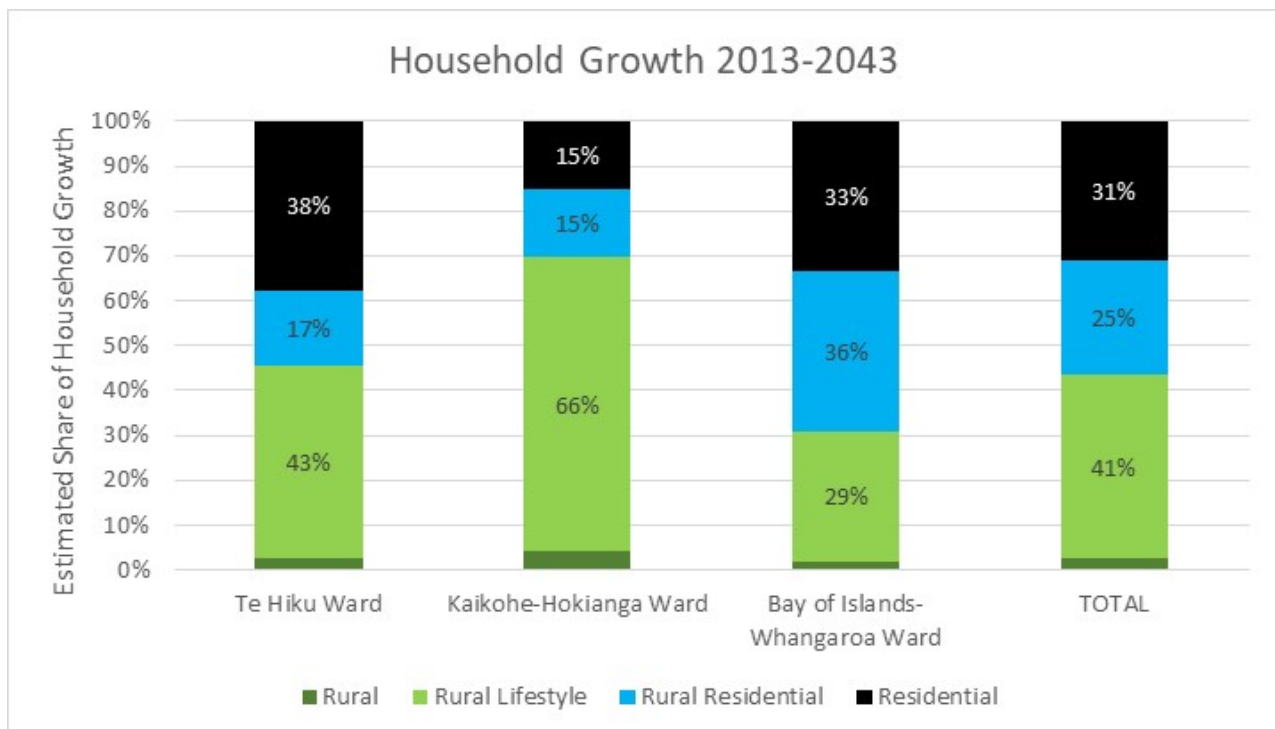


Figure 77: Far North District Estimated Household Growth 2013 – 2043 by Ward and Property Type (Medium)

Figure 78 compares the 2013 household structure by type and ward with the projected 2043 scenario. It suggests that the Kaikohe-Hokianga Ward will continue to be focussed on rural households but with a growing proportion of rural lifestyle properties and some urban growth. These changes will however be gradual. In the Te Hiku Ward, rural households are decreasing in share relative to urban residential and rural residential and lifestyle communities. Rural households drop from an estimated 49% in 2013 to 43% in 2043. The strong residential and rural residential growth in the Bay of Island’s-Whangaroa Ward will result in a household structure even more dominated by urban and semi urban land uses – but the relativities between residential, rural residential and rural lifestyle stay similar (but larger in quantum).

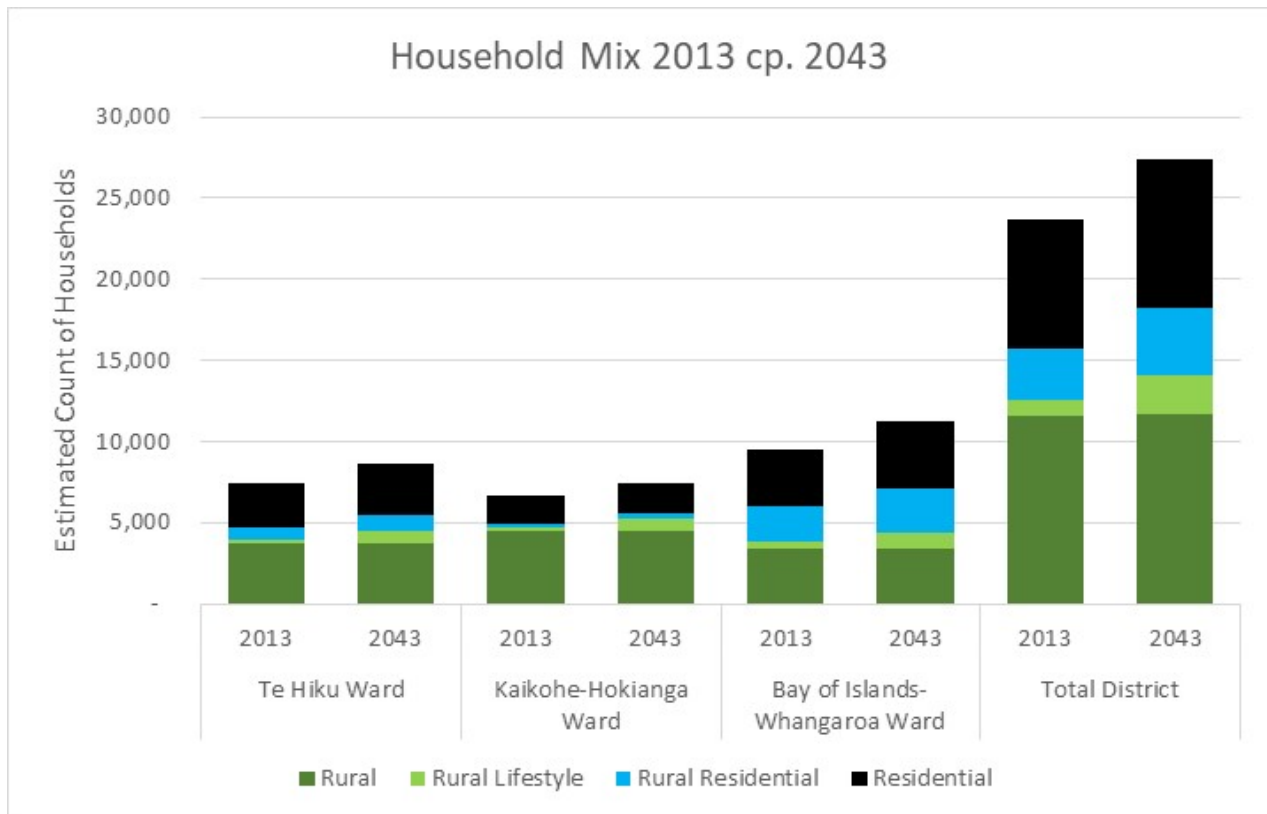


Figure 78: Far North District Estimated Current and Long-Term Household Structure by Ward (Medium Growth)

### 6.3.3 Comparing Demand Growth and Capacity – Sufficiency of Theoretical Plan Enabled Capacity

When comparing projected demand growth for rural residential properties with capacity at the ward level, the existing Rural Living and Coastal Living Zones show significant surplus capacity based on theoretical and unconstrained potential subdivision down to minimum lot sizes. However, as stated in the analysis of capacity, potential lot yields may be overstated, so some caution is required. Key areas of note regarding rural residential demand and capacity:

- Kaitaia – slow growth projected over the long-term but significant surplus capacity estimated in the Rural Living Zone.
- Awanui – very slow growth projected but only a moderate surplus in the Rural Living Zone in the long term (2043), with little or no further rural residential subdivision capacity able to be created in the surrounding Rural Production Zone.
- Taipa-Mangonui – strong demand growth projected for rural residential lots. However, a large surplus of capacity is also indicated in the present zoning.
- Kaikohe - very slow growth projected but only a moderate surplus in the Rural Living Zone in the long term (2043), within the Kaikohe CAU, but plenty of capacity in the adjoining Ngapuhi-Kaikou CAU – so overall, a surplus of capacity in the Rural Living Zone for long term demand.

- Paihia/Haruru – moderate growth in demand. While there is implied capacity for further growth in Paihia, this may not be feasible. Significant capacity in the Rural Living Zone in Haruru can cater for growth in this combined locality.
- Between Russell and Okiato – slow growth in demand, but lots of theoretical capacity implied.
- Southern side of Kerikeri Inlet – very slow growth projected for rural residential demand, but lots of theoretical capacity in the Coastal Living Zone (Waitangi CAU).
- Northern side of Kerikeri Inlet / Kapiro CAU – moderate growth in demand aimed at rural residential densities. Only a moderate surplus of mainly Coastal Living capacity left in the long-term, but this could be a shortfall once subdivision constraints and feasibility are taking into account.
- Kerikeri – strong demand growth over the long term for rural residential development. Theoretical capacity indicates a large surplus within the Rural Living and Coastal Living Zones. Care is needed to validate the feasibility of capacity in this location given that it has the strongest rate of growth for this land use type in the District.

When comparing projected demand growth for rural lifestyle properties with capacity at the ward level, the capacity of the Rural Production Zone, combined with the Coastal Living and Kerikeri Inlet Zones, show significant surpluses based on theoretical and unconstrained potential subdivision down to minimum lot sizes. However, as stated in the analysis of capacity, potential lot yields may be overstated (particularly as a large share of capacity has discretionary activity status), so some caution is required. Furthermore, in the Coastal Living Zone rural lifestyle demand competes directly with rural residential demand – which is likely to be the more commercially feasible of the two subdivision options for landowners.

Key areas of note regarding rural lifestyle demand and capacity:

- In most CAUs experiencing moderate or strong demand growth, there is a theoretical surplus of potential capacity.
- There is strong demand growth in the Kapiro CAU (which includes land to the east of Waipapa and out to the Coast). Under a low capacity scenario, there would be a shortfall of rural lifestyle capacity (estimated at 75 dwellings), but under a high capacity scenario, there could be a surplus in the long term. Given that some of this capacity may be substituted for rural residential subdivision, the shortfall may be larger (and become evident sooner). Care is needed to validate the feasibility of capacity in this location (including any priority given to versatile soils) given that it has one of the strongest rates of growth for this land use type in the District.
- There is strong demand growth in the Waihou Valley-Hupara CAU (which includes land to the north, north west, west, south west and south of Kerikeri, and round to Haruru). There is significant theoretical capacity for rural lifestyle subdivision on this land and given the high demand, continued strong interest in rural lifestyle subdivision (and changes in land use from primary production and further loss of versatile soils) can be expected. Care is needed to validate the feasibility of capacity in this location (as well as effects and trade-offs) given that it has the strongest rate of growth for this land use type in the District.

## 7 IDENTIFYING AND ANALYSING DEVELOPMENT PRINCIPLES

The report makes a number of key recommendations relating to a move away from the ad hoc rural residential and rural lifestyle development intensification provided for under the current District Plan subdivision standards. It is recommended that measures are adopted that seek to expand upon both the development capacity of the existing Rural Living Zones for rural residential development, while also encouraging expanded opportunities for rural lifestyle opportunities within those areas of the District that are located outside of the District's highly versatile soils, aquifers and irrigation areas, as there is a demand trend for this form of living opportunity.

As set out in this report there appears to have been a strong demand pattern for new rural residential properties in the Rural Production Zone, which has been enabled by subdivision provisions within the Far North District Plan, in particular the existing grandfathering clause where the subdivision is created from a site that existed at or prior to 28 April 2000. We recommend that the existing grandfathering rules in the District Plan be deleted. For the Rural Production Zone, in its place, we recommend that minimum lots sizes are introduced that better reflect the purpose of the zone.

It is noted that this research has focused on subdivision lot sizes and has not included a review of potential implications of the recommended changes on other subdivision and zone standards such as intensity, coverages etc.

### *Changes to Minimum Lots Sizes within the Rural Production Zone*

#### *40ha Minimum Lot Size – Controlled Activity*

In considering the intention of the Rural Production Zone, the report has provided an analysis of the economic viability of primary production and identifies the likely minimum viable farm size for a range of primary productive land uses and includes the following:

- Kiwifruit orchards would need to have a productive area of between 7ha and 16ha respectively. These align closely with the current median sized horticultural property (7ha) and average sized horticultural property (17ha). Other types of horticultural properties are expected to require a similar productive area range;
- Dairy farming properties would need to have a productive area of between 46ha and 103ha respectively. The upper value is not dissimilar to the current median and average dairy farm property size (94ha and 126ha respectively as defined in Section 4.1);
- Sheep and beef properties would need to have a productive area of between 242ha and 538ha respectively. This is considerably larger than the estimated median and average sheep and beef property sizes currently in the district (Section 4.1);
- Other livestock farms (but particularly deer farming properties) would need a productive area of between 126ha and 280ha; and
- The median sized forestry and logging property is 37ha according to the analysis in Section 4.1 (meaning there are a lot of relatively small forestry blocks) and the average across all unique rateable properties in this sector is 168ha. The economic viability of forestry lot sizes has not been assessed, due in part to the fact that returns are long-term in nature (tied to tree maturity) and not annual returns like other primary productive sectors.

It is evident from the evaluation of viability of minimum property sizes in the Rural Production Zone that there is a threshold beyond which land is no longer large enough to viably support a range of primary productive uses (particularly for new owners that may have taken on debt to purchase the property or do not own other land parcels that can be combined). In the context of the Rural Production Zone this would occur for all primary productive land uses where subdivision densities are reduced below 40ha, however we acknowledge that there are a number of smaller established horticultural land parcels that are likely to support viable primary productive uses (particularly in aquifer/irrigation areas).

We consider that the existing operative minimum 20ha lot size in the Rural Production Zone is not expected to sustain an economically viable farming property (unless there are other sources of income not captured) and there does not appear to be a valid resource management reason for sustaining the minimum lot size at 20ha. We consider that 40ha be used as the basis for minimum lot size in the Rural Production Zone and this be provided for as a **controlled activity**. Below this minimum lot size, we recommend Council adopt a **discretionary activity** status.

### *8ha Minimum Lot Size – Restricted Discretionary Activity*

Our analysis has identified that there is significant additional capacity for expansion of primary productive uses within the District's aquifer areas and Kerikeri Irrigation Regions. Collectively, the gross output of primary production sectors in the Kerikeri Irrigation North and South Regions in the Far North is estimated at \$46.2m, so there is potential to further expand primary production activities by promoting a minimum lot size that is targeted at a viable horticulture lot size rather than smaller potentially non-productive properties.

We recommend that a minimum lot size of 8ha be provided for within the Rural Production Zone where the majority (more than half) of the lot area sits within one of the district's aquifer areas and or Kerikeri Irrigation North and South Regions. We recommend a minimum lot size of 8ha for subdivision within these areas be a **restricted discretionary activity** in order to promote opportunities for a range of horticultural primary productive uses to establish. We see key matters of discretion being the protection of highly versatile soils and reverse sensitivity from incompatible land uses. Importantly, we do not see this lot size being small enough to encourage rural residential intensification, however it is large enough to enable rural lifestyle development (at the upper end of the scale), while promoting potential for productive capacity within these valuable and finite water resource areas.

We note that presently 76% of total horticulture property land area falls within the Rural Production Zone and the average lot size is estimated at 9.8ha. As noted above, Kiwifruit orchards would need to have a productive area of between 7ha and 16ha respectively to generate an estimated household return of between \$45,000 to \$100,000 per annum. The average horticultural property (parcel) size with versatile soils is considerably smaller than those horticultural properties without versatile soils – 8.6ha on average across all zones compared to 25.9ha respectively. This implies that smaller horticultural properties are more economically viable when they have the benefit of versatile soils (and may be viable at even smaller sizes when they have access to water for irrigation).

Under this scenario, the maximum theoretical potential in the Rural Production Zone if lot size was reduced down to 8ha in an aquifer or irrigation area would generate 167 additional lots in the Kerikeri Irrigation North Region, 116 additional lots in the Kerikeri Irrigation South Region and 4,936 additional lots (Kerikeri Irrigation North and South Regions combined and any aquifer area), (Figure 79).

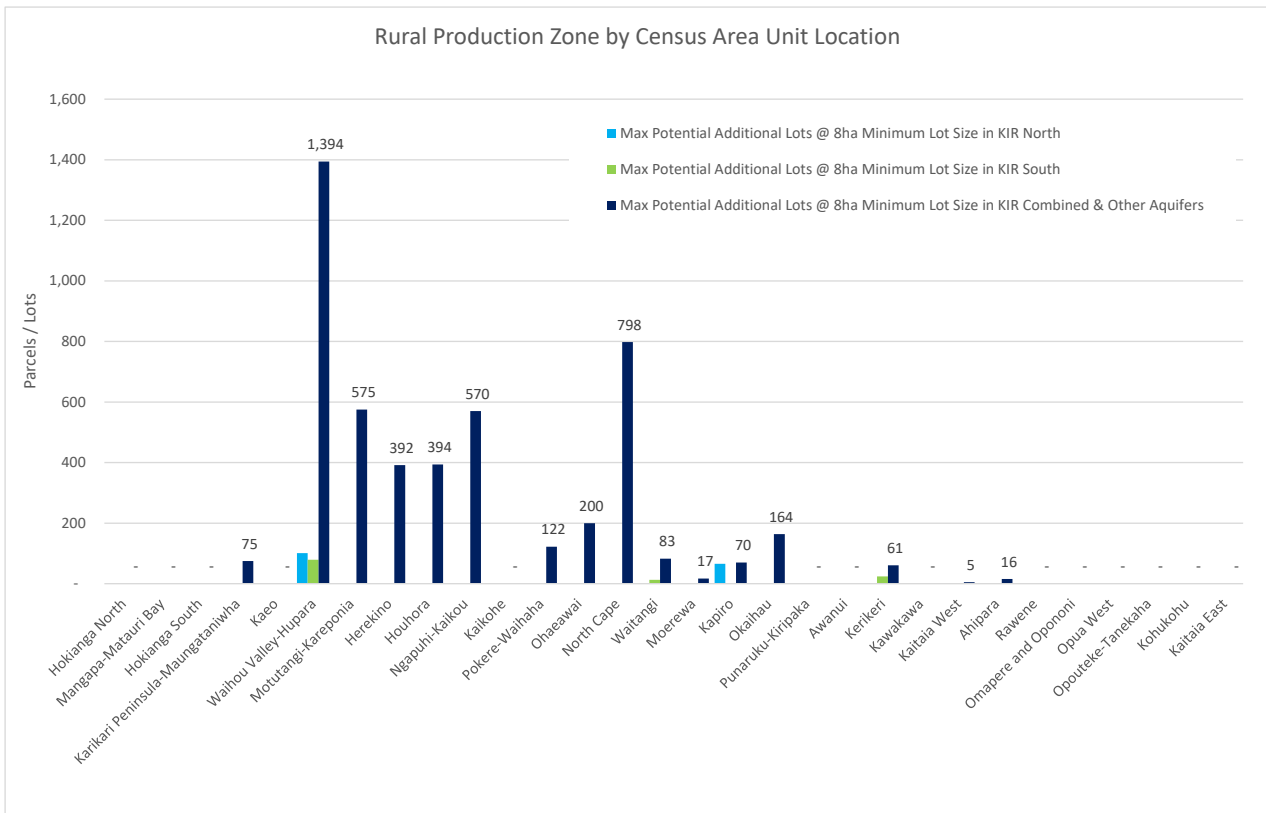


Figure 79: Maximum Theoretical Lot Potential in the Rural Production Zone – 8ha in Irrigation/Aquifer Areas

We recommend that subdivision below this 8ha minimum lot size within the Rural Production Zone where the majority of the lot sits within the aquifer areas and or Kerikeri Irrigation North and South Regions be a **non-complying activity** which indicates further rural residential and lifestyle living is not anticipated within these areas. This would need to be supported by a strong objective, policy and rule framework seeking to protect highly versatile soils and to manage reverse sensitivity etc.

#### Intensification of Existing Rural Living Zoned Areas

An analysis has been undertaken of the capacity of the District’s existing Rural Living Zone to gauge whether there is scope to provide for further growth in these areas. When comparing projected demand growth for rural residential properties (Lots of between 2,000m<sup>2</sup> and 8,000m<sup>2</sup> are considered ‘rural residential’) with capacity at the ward level, the existing Rural Living and Coastal Living Zones showing significant surplus capacity based on theoretical and unconstrained potential subdivision down to minimum lot sizes. The combination of estimated additional rural residential subdivision capacity in the Rural Living and Coastal Living zones equates to between 5,670 (lower limit based on 4,000sqm and 8,000sqm minimum lot sizes respectively) and 8,760 additional lots (upper limit based on 3,000sqm and 5,000sqm minimum lot sizes respectively). This capacity is likely to be overstated, however, as there will be physical constraints that mean that these minimum lot sizes cannot be achieved.

We recommend that the future demand for rural residential development in the Far North be accommodated in the first instance by encouraging further development intensification to occur in the existing Rural Living Zone. We consider that it is appropriate to specifically target the Rural Living Zone, given the zone specific characteristics that are found in other zones, such as the Coastal Living Zone, that may be more sensitive to development intensification below their existing minimum lots sizes.

We recommend, and subject to a more detailed analysis of service infrastructure implications, that greater intensification be provided for within the Rural Living Zone identified throughout the District.

Below is the graph (Figure 80) which shows maximum theoretical potential in the Rural Living Zone if minimum lot sizes were reduced to 2,000m<sup>2</sup> (applying the same assumptions and conditions in this report). Over the total District, the following lot ranges are provided for in the Rural Living Zone and compare:

- @ 4000m<sup>2</sup> – 3,885 additional lots
- @ 3000m<sup>2</sup> – 5,416 additional lots
- @ 2000m<sup>2</sup> – 7,195 additional lots

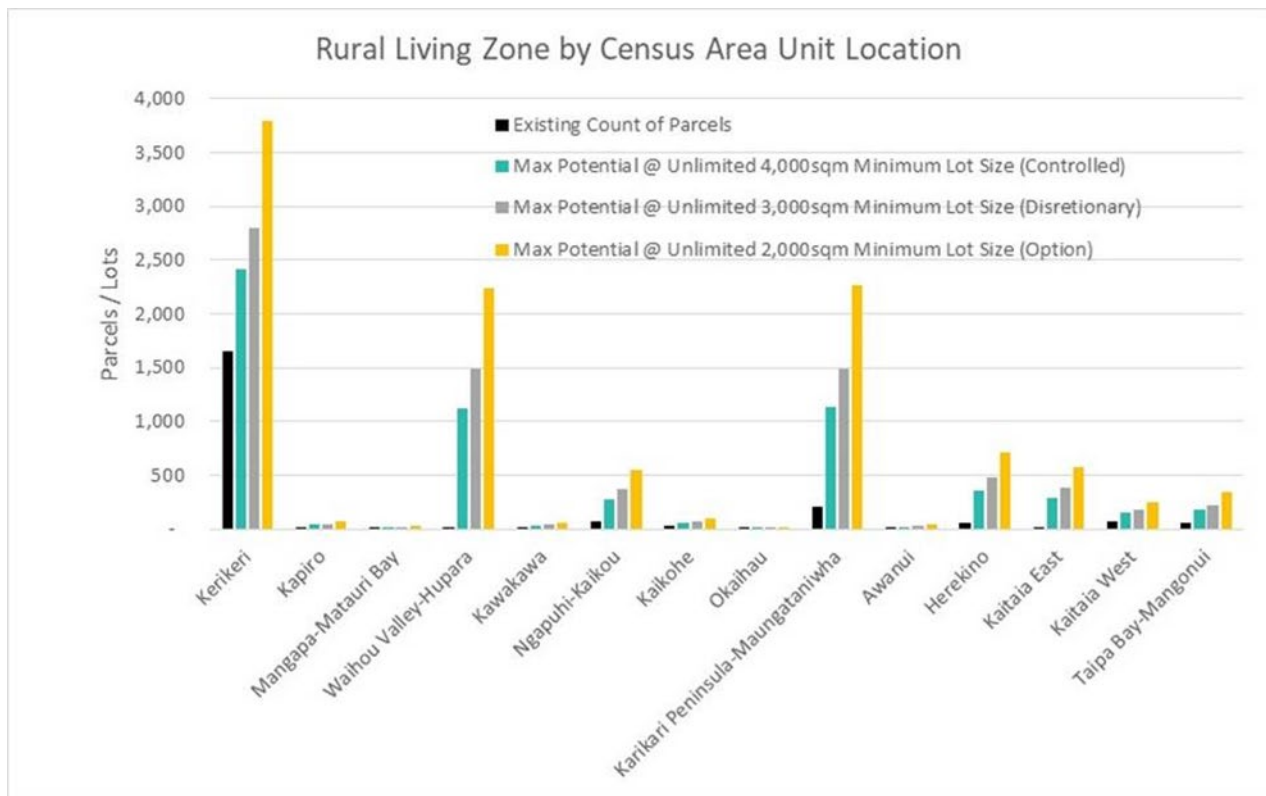


Figure 80: Testing of Recommended Density in the Rural Living Zone - Capacity Comparisons

In terms of providing for additional capacity for rural residential development, lowering the minimum lot size to 2,000m<sup>2</sup>, provides for close to double the capacity relative to the 4,000m<sup>2</sup> minimum under the District Plan. Importantly, while the figures don't allow for provision of road area, landscaping etc which might be more applicable in some zone areas than others (i.e. ones that have had little development to date), what is evident is that enabling more development capacity may be a more effective response to meeting future demand for rural residential development intensification in the Far North District. It may also increase the commercial feasibility of some Rural Living Zones that have experienced little or no subdivision activity to date. Increasing density in the Rural Living Zone may also take some pressure off urban areas that are expecting dwelling growth (particularly around Kerikeri) but have few lateral growth opportunities without up-zoning surrounding Rural Living areas. That is, the low-density Rural Living Zone may accommodate a share of future Residential (urban) demand.

We consider subdivision in this zone below 2,000m<sup>2</sup> should be a **non-complying activity** as this would be considered more in line with urban residential living (and associated infrastructure and amenity expectations).

*Expansion of Rural Lifestyle Opportunities*

There is clear demand for a slightly larger 'lifestyle' lot not provided for in the Rural Living Zone at present which reflects a separate market of demand. While rural lifestyle densities can be provided for under the current minimum lot size standards under the Rural Production Zone, as set out above, promoting further rural lifestyle intensification in this zone would only add to add hoc subdivision of the District's highly versatile soils and greater risks of reverse sensitivity issues. There is limited capacity for growth of rural lifestyle lots in the Coastal Living Zone, Kerikeri Inlet Zone and Waimate North Zone (particularly if the grandfathering clause is removed). The analysis undertaken



identifies a number of areas that we recommend the Council provide further investigation on in order to consider potential rezoning to target Rural Lifestyle opportunities. Minimum lot sizes in such areas would need to be considered in light of the intent of these zones.

The Waimate North Zone offers some limited rural lifestyle development opportunities. The zone is only small but is currently characterised by a mix of moderately large properties (8ha or greater) and small-moderate sized properties (which broadly fall within a scale akin to rural lifestyle lots, although the presence or otherwise of dwellings on those lots is not included in the available data). Of the size brackets considered, the most common lot size is the 2-4ha size. There has also been moderate supply of properties in the 8-12ha. While land use within the zone is relatively stable at present and is not undergoing much change, we consider that this zone offers opportunities for more intensification in support of rural lifestyle opportunities, however because this zone accommodates versatile soils we consider a higher minimum lot size is more acceptable in order to promote rural lifestyle development but at a density that may be able to still accommodate primary productive uses. Given the presence of versatile soils in the Waimate North Zone a policy framework that considers the implications of versatile soils in this zone should be considered, whereby discretion is provided at the time of subdivision to protect high quality versatile soils through appropriate siting of dwellings.

We recommend that the area north of the Waitangi River and west of Haruru Falls Road, around Wakelins Road be further investigated for rural lifestyle development opportunities. This area has experienced some rural lifestyle development coupled with those along the Waitangi River. We note that this area is within the Kerikeri High School enrolment zone and in close proximity to Haruru township.

The land west and south west of Kerikeri is extensively fragmented but not all subdivision relates to a loss of primary production activity. Much of the land, and indeed parcels that could be considered 'rural lifestyle' in size, is used for horticulture, so care is needed not to assume that subdivision has necessarily led to a change in land use. However, examples where there is no evidence of productive use associated with dwellings include around Blue Gum Lane, on the western side of Waimate North Road where it intersects with State Highway 10, Amuri Road and Tyree Road. Another hot spot of recent subdivision activity is at the end of Valencia Lane. This is an area that may attract further demand and release of rural land.

Kerikeri Inlet contains pockets of Coastal Residential and Coastal Living Zones. However, on the northern side of the Inlet and outside of those zones, there is evidence of rural residential and rural lifestyle type subdivision and development along Opito Bay Road and along Redcliffs Road. None of this subdivision has occurred on versatile soils. We consider that this is a good candidate for Council to consider rezoning in support of Rural Lifestyle development. This may be best dealt with through a separate Rural Lifestyle Zone.

While the above list is not exhaustive, we recommend that Council undertake a more 'fined' grained analysis of those areas that have previously experienced some development intensification and may assist with meeting Rural Lifestyle demand. In the context of any future zone provisions, we recommend that these areas be underpinned with a minimum lot size of 2ha and any development below this be a **non-complying activity**. Development above 2ha could be considered as a **restricted discretionary** activity.

#### *Protection of Highly Versatile Soils*

The significant majority (85%) of versatile soils are located in the Rural Production Zone. There is only one pocket of class 1 soils located in the rural environment. This falls within the Rural Production Zone (56ha) and the Waimate North Zone (35ha).

As a consequence, we recommend that these zones be supported with a more robust policy framework that seeks to ensure that subdivision below the specified minimum lots sizes for the zone do not materially reduce the potential for soil-based primary production on land with highly versatile soils. We also consider it important that there is very clear policy guidance on avoiding incompatible land uses establishing in areas that would conflict with soil-based primary production activities.

**Appendix A:**

**Historical Employment and Business Growth by 48 Sectors**

Sector	Employment												Growth 2006-2016	Growth 2006-2016 %
	MECs 2006	MECs 2007	MECs 2008	MECs 2009	MECs 2010	MECs 2011	MECs 2012	MECs 2013	MECs 2014	MECs 2015	MECs 2016			
Horticulture and fruit growing	831	897	861	738	536	608	560	577	592	600	763	-	68	-8%
Sheep, beef cattle and grain farming	1,145	1,032	981	954	938	948	931	958	933	900	848	-	297	-26%
Dairy cattle farming	784	734	721	641	634	679	696	661	688	672	651	-	134	-17%
Poultry, deer and other livestock farming	101	95	100	82	91	113	118	140	141	138	152	-	51	51%
<i>Beekeeping</i>	40	54	60	53	61	81	64	100	94	92	115	-	75	189%
<i>Poultry, deer and other livestock farming</i>	61	42	40	29	30	33	55	40	47	46	37	-	24	-39%
Forestry and logging	193	228	244	186	200	232	240	260	200	206	173	-	20	-10%
Fishing and aquaculture	242	203	179	182	147	117	151	135	176	161	168	-	73	-30%
Agriculture, forestry and fishing support services	414	349	374	329	294	331	410	580	472	476	515	-	101	24%
Mining, quarrying, exploration and other mining support services	95	107	103	113	98	94	95	82	62	67	53	-	42	-44%
Oil and gas extraction	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Meat and meat product manufacturing	350	290	311	442	402	261	301	232	302	326	285	-	65	-19%
Dairy product manufacturing	48	54	10	10	10	6	9	9	9	7	6	-	42	-88%
Other food manufacturing	352	247	259	254	204	172	175	155	151	192	190	-	162	-46%
Beverage and tobacco product manufacturing	34	57	41	31	30	30	36	35	33	29	30	-	3	-10%
Textile, leather, clothing and footwear manufacturing	22	22	32	22	24	22	21	24	25	25	21	-	0	-2%
Wood product manufacturing	570	529	546	489	511	484	427	395	418	371	357	-	213	-37%
Pulp, paper and converted paper product manufacturing	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Printing	35	37	32	34	23	25	23	27	27	25	24	-	11	-31%
Petroleum and coal product manufacturing	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Chemical, polymer and rubber product manufacturing	67	70	70	13	53	55	72	72	75	71	67	-	0	0%
Non-metallic mineral product manufacturing	68	67	65	52	57	51	48	39	35	32	36	-	32	-47%
Primary metal and metal product manufacturing	1	-	-	-	-	-	1	1	1	1	3	-	2	221%
Fabricated metal product manufacturing	109	107	127	116	80	99	69	69	66	79	91	-	18	-16%
Transport equipment manufacturing	107	89	91	72	62	64	49	47	63	70	83	-	24	-22%
Machinery and equipment manufacturing	127	139	121	128	103	103	104	107	87	96	94	-	33	-26%
Furniture and other manufacturing	49	44	40	47	44	42	37	40	36	51	49	-	0	1%
Electricity generation and supply	152	162	173	172	166	172	181	179	187	176	160	-	9	6%
Gas supply	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Water, sewerage, drainage and waste services	155	139	150	178	109	170	89	102	77	99	64	-	91	-59%
Construction	1,938	2,044	2,126	1,827	1,769	1,836	1,639	1,487	1,486	1,571	1,658	-	280	-14%
Wholesale trade	284	300	349	338	354	335	377	330	341	329	369	-	85	30%
Retail Trade	2,616	2,678	2,716	2,643	2,494	2,572	2,396	2,358	2,341	2,310	2,397	-	219	-8%
Accommodation and food services	2,487	2,617	2,577	2,363	2,315	2,261	2,175	2,066	2,126	2,207	2,200	-	287	-12%
Road transport	451	460	537	497	460	424	512	441	430	463	484	-	32	7%

Sector	Employment												Growth 2006-2016	Growth 2006-2016 %
	MECs 2006	MECs 2007	MECs 2008	MECs 2009	MECs 2010	MECs 2011	MECs 2012	MECs 2013	MECs 2014	MECs 2015	MECs 2016			
Other transport, postal, courier, transport support and warehousing services.	360	369	416	336	391	352	327	346	385	336	330	-	30	-8%
Air and space transport	11	11	10	16	16	10	10	12	23	6	0	-	11	-99%
Information media and telecommunications	224	205	192	152	166	128	112	119	103	96	129	-	95	-42%
Finance	162	175	178	170	176	219	169	230	222	226	146	-	15	-10%
Insurance and superannuation funds	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Auxiliary finance and insurance services	54	72	85	67	70	77	75	69	74	69	79	25	47%	
Rental, hiring and real estate services	716	744	757	653	665	642	649	664	662	635	680	-	36	-5%
Ownership of owner-occupied dwellings	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Professional, scientific, technical, administrative and support services	1,509	1,552	1,627	1,559	1,480	1,487	1,398	1,303	1,387	1,569	1,629	120	8%	
Central government administration, defence and public safety	651	688	674	691	817	672	726	759	837	822	792	141	22%	
Local government administration	260	275	275	273	271	244	249	252	241	279	313	53	20%	
Education and training	2,070	2,220	2,192	2,076	2,344	2,224	2,154	2,123	2,104	2,056	2,162	91	4%	
Health care and social assistance	2,275	2,292	2,145	2,239	2,305	2,351	2,539	2,533	2,510	2,544	2,576	301	13%	
Arts and recreation services	382	368	432	390	405	414	369	337	326	284	373	-	9	-2%
Personal and other services	785	721	674	707	894	698	656	587	608	609	599	-	186	-24%
<b>Total</b>	<b>23,384</b>	<b>23,587</b>	<b>23,690</b>	<b>22,362</b>	<b>22,300</b>	<b>21,936</b>	<b>21,493</b>	<b>21,085</b>	<b>21,201</b>	<b>21,421</b>	<b>21,950</b>	<b>-</b>	<b>1,434</b>	<b>-6%</b>

Source: Statistics New Zealand Business Directory, M.E. MEC = Modified Employee Count (includes employees and estimated working proprietors)

Sector	Businesses												Growth 2006-2016	Growth 2006-2016 %
	GUs 2006	GUs 2007	GUs 2008	GUs 2009	GUs 2010	GUs 2011	GUs 2012	GUs 2013	GUs 2014	GUs 2015	GUs 2016			
Horticulture and fruit growing	408	418	387	371	348	335	312	305	298	287	273	-	135	-33%
Sheep, beef cattle and grain farming	1,117	1,092	1,112	1,117	1,115	1,074	1,058	1,009	959	911	936	-	181	-16%
Dairy cattle farming	480	439	352	343	337	326	314	301	300	356	324	-	156	-32%
Poultry, deer and other livestock farming	118	103	86	86	94	103	107	105	105	103	123	5	4%	
<i>Beekeeping</i>	19	22	22	22	25	32	33	31	35	35	60	41	214%	
<i>Poultry, deer and other livestock farming</i>	99	81	64	64	69	71	74	74	70	68	64	-	35	-36%
Forestry and logging	260	258	296	284	279	278	274	271	269	268	280	20	8%	
Fishing and aquaculture	120	113	107	109	95	93	88	90	84	86	78	-	42	-35%
Agriculture, forestry and fishing support services	148	143	146	154	135	126	136	134	131	143	136	-	12	-8%
Mining, quarrying, exploration and other mining support services	12	12	13	12	12	11	11	14	12	17	14	2	14%	
Oil and gas extraction	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Meat and meat product manufacturing	1	1	2	3	3	2	2	3	3	2	2	1	62%	

Sector	Businesses												Growth 2006-2016 %	Growth 2006-2016 %
	GU's 2006	GU's 2007	GU's 2008	GU's 2009	GU's 2010	GU's 2011	GU's 2012	GU's 2013	GU's 2014	GU's 2015	GU's 2016			
Beverage and tobacco product manufacturing	11	11	11	10	9	10	10	10	10	9	10	-	1	-5%
Textile, leather, clothing and footwear manufacturing	13	16	15	13	13	11	12	13	12	12	12	-	1	-10%
Wood product manufacturing	51	50	48	42	44	45	42	41	47	41	40	-	11	-22%
Pulp, paper and converted paper product manufacturing	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Printing	12	13	13	13	13	12	13	11	11	13	14	2	20%	
Petroleum and coal product manufacturing	-	-	-	-	-	-	1	1	1	-	-	-	-	0%
Chemical, polymer and rubber product manufacturing	6	7	8	7	4	5	6	9	9	7	9	3	53%	
Non-metallic mineral product manufacturing	23	27	25	27	25	23	22	20	20	20	15	-	8	-33%
Primary metal and metal product manufacturing	2	-	-	-	-	-	1	1	2	2	4	2	79%	
Fabricated metal product manufacturing	24	24	25	26	25	27	25	23	23	24	23	-	1	-6%
Transport equipment manufacturing	32	33	34	38	29	26	26	30	32	25	24	-	8	-25%
Machinery and equipment manufacturing	30	32	34	36	30	30	32	29	33	37	41	11	36%	
Furniture and other manufacturing	32	29	27	28	28	23	23	23	24	31	30	-	2	-5%
Electricity generation and supply	5	5	5	5	6	6	6	6	6	5	4	-	1	-23%
Gas supply	-	-	-	-	-	-	-	-	1	-	-	-	-	0%
Water, sewerage, drainage and waste services	15	17	19	24	21	21	22	23	19	18	20	5	34%	
Construction	840	902	948	934	871	846	772	729	719	718	759	-	81	-10%
Wholesale trade	135	133	134	134	128	125	133	130	127	135	157	22	16%	
Retail Trade	450	445	437	442	437	438	425	426	419	418	410	-	40	-9%
Accommodation and food services	457	431	439	442	439	431	417	400	414	402	436	-	21	-5%
Road transport	96	91	95	90	81	76	75	67	76	76	83	-	13	-13%
Other transport, postal, courier, transport support and warehousing services.	136	139	144	147	140	131	129	127	134	121	124	-	12	-9%
Air and space transport	4	4	4	3	3	3	3	3	3	3	2	-	2	-47%
Information media and telecommunications	35	43	40	37	42	39	35	37	34	39	42	7	19%	
Finance	112	139	161	182	185	190	189	186	189	264	200	88	79%	
Insurance and superannuation funds	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Auxiliary finance and insurance services	27	36	45	51	54	48	46	46	43	41	39	12	45%	
Rental, hiring and real estate services	1,119	1,185	1,256	1,220	1,167	1,171	1,177	1,181	1,231	1,298	1,205	86	8%	
Ownership of owner-occupied dwellings	-	-	-	-	-	-	-	-	-	-	-	-	-	0%
Professional, scientific, technical, administrative and support services	511	512	533	559	528	540	539	528	528	599	565	54	11%	
Central government administration, defence and public safety	56	55	57	57	53	54	54	53	57	54	50	-	6	-10%
Local government administration	18	18	18	19	19	19	19	19	19	17	19	1	8%	
Education and training	197	196	203	204	206	206	209	204	203	200	202	5	2%	
Health care and social assistance	189	192	196	214	219	220	222	220	219	222	227	38	20%	
Arts and recreation services	126	137	153	139	132	132	139	132	131	132	148	22	17%	
Personal and other services	289	295	298	311	325	334	333	319	324	340	347	58	20%	
<b>Total</b>	<b>7,752</b>	<b>7,832</b>	<b>7,961</b>	<b>7,969</b>	<b>7,727</b>	<b>7,623</b>	<b>7,491</b>	<b>7,308</b>	<b>7,310</b>	<b>7,526</b>	<b>7,467</b>	<b>-</b>	<b>285</b>	<b>-4%</b>

Source: Statistics New Zealand Business Directory, M.E. GU = Geographic Unit (Business)

**Appendix B:**

**Further Detail on the Economic Futures Model**

The process for deriving future Business as Usual (BAU) estimates for each category in the M.E Economic Futures Model is as follows:

#### Household Consumption

The household consumption final demand is made up of four sub-consumption categories, 'Households', 'Private non-profit institutions servings households', 'Central Government' and 'Local Government'. Future estimates of demand in each sub-category is primarily driven by changes in future population. The Model uses the Statistics NZ medium projection series (Appendix C:). It is assumed that each person within the region consumes a constant mix of goods and services. Thus, any population growth for the area will result in a proportional increase in the amount of goods and services consumed within each sub-category.

In addition, the model includes the implications of changing demographic structure on household consumption. For all sub-categories, future demands by each cohort are adjusted by a cohort-specific consumption scalar. These scalars define the ratio of spending by an average person across all cohorts, to the spending of an average person within the subject cohort.

The resulting value for a particular year provides an estimate of the growth in total household consumption from the base year.

#### International Exports

These are overseas demand of goods and services produced by an area and are exogenous inputs to the model. The growth projections used include BAU projections of international exports and future projections for each industry are generated by applying long-run average growth rates to the base year international export values as obtained from the MRIO. The exception to this is for sectors that are driven primarily by tourism flows. For these growth projections of tourism nights are based on the long run averages for the export performance of the Accommodation, retail, transport, recreational activity and personal services sectors.

The growth rates were generated using a number of different statistical methods. Selection of the time series techniques applied depended on the availability of the data and underlying production structure of the industry output being analysed. For example, long-run growth rates for agricultural industries were estimated based on long-run projections of physical stocks and land availability constraints. Conversely, industries with less physical constraints, such as services, were estimated based on long-run national export trends. The data utilised in these time series analyses were derived from SNZ's Overseas Trade Exports – Trade, Merchandise: Monthly Estimates of all Harmonised System Items 1989–2014.

#### Inter-regional Exports

These are demands of good and services produced within a study area by areas outside the study area, but within New Zealand. In other words, trade between Far North District and the rest of New Zealand affects demand for the production activities in Far North District.

#### Gross Fixed Capital Formation (GFKF)

Future increases in investment demand are represented as a change in GFKF and is an exogenous input into the model. The future GFKF projections for each industry are generated by applying long-run average growth rates to the base year GFKF values as obtained from the MRIO. The growth rates were determined by econometric time-series analysis. The data utilised in the time-series analysis of GFKF are derived from SNZ's National Accounts gross fixed capital formation by industry time series.

#### Changes in Inventory

These are an endogenous variable within the model, where its future projections are weighted average of future values of other final demand categories. Within the national accounts framework, the changes in inventory is an accounting balancing item and records changes in financial inventory stocks. Note: for many industries changes in inventory are very small compared with international exports, inter-regional exports, and GFKF.

**Appendix C:**

**Economic Projections by 48 Sectors**



Sector	Employment							Structure		Significance		
	MECs 2016	MECs 2023	MECs 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	MECs 2016 %	MECs 2043 %	Share of Region 2016	L.Q Region	L.Q.NZ
Horticulture and fruit growing	763	835	991	72	228	9%	30%	4%	4%	49%	1.49	2.48
Sheep, beef cattle and grain farming	848	901	1,009	53	160	6%	19%	4%	4%	43%	1.33	2.20
Dairy cattle farming	651	769	1,040	118	389	18%	60%	3%	4%	27%	0.82	1.77
Poultry, deer and other livestock farming	152	170	208	18	56	12%	37%	1%	1%	41%	1.26	1.99
Forestry and logging	173	237	409	64	236	37%	137%	1%	2%	33%	0.99	3.43
Fishing and aquaculture	168	236	415	67	247	40%	146%	1%	2%	74%	2.25	4.36
Agriculture, forestry and fishing support services	515	621	893	106	378	21%	73%	2%	4%	43%	1.32	1.73
Mining, quarrying, exploration and other mining support services	53	73	125	20	72	38%	135%	0%	1%	32%	0.98	1.31
Oil and gas extraction	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Meat and meat product manufacturing	285	291	293	6	7	2%	3%	1%	1%	50%	1.52	1.03
Dairy product manufacturing	6	7	8	1	3	15%	46%	0%	0%	1%	0.04	0.05
Other food manufacturing	190	204	226	14	36	8%	19%	1%	1%	43%	1.30	0.61
Beverage and tobacco product manufacturing	30	34	42	4	12	13%	38%	0%	0%	53%	1.60	0.45
Textile, leather, clothing and footwear manufacturing	21	21	18	1	3	-3%	-14%	0%	0%	10%	0.32	0.22
Wood product manufacturing	357	394	417	37	60	10%	17%	2%	2%	26%	0.80	2.17
Pulp, paper and converted paper product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Printing	24	26	27	2	3	7%	13%	0%	0%	24%	0.72	0.30
Petroleum and coal product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Chemical, polymer and rubber product manufacturing	67	75	87	8	20	12%	30%	0%	0%	27%	0.83	0.38
Non-metallic mineral product manufacturing	36	44	51	8	14	21%	40%	0%	0%	9%	0.26	0.46
Primary metal and metal product manufacturing	3	3	2	0	0	-4%	-14%	0%	0%	100%	3.05	0.07
Fabricated metal product manufacturing	91	106	120	15	29	17%	32%	0%	0%	13%	0.39	0.40
Transport equipment manufacturing	83	92	105	8	21	10%	26%	0%	0%	25%	0.75	0.72
Machinery and equipment manufacturing	94	109	140	15	46	16%	49%	0%	1%	19%	0.59	0.34
Furniture and other manufacturing	49	52	54	3	5	6%	10%	0%	0%	21%	0.63	0.55
Electricity generation and supply	160	177	210	17	50	11%	31%	1%	1%	31%	0.96	2.49
Gas supply	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Water, sewerage, drainage and waste services	64	71	84	7	20	12%	31%	0%	0%	21%	0.63	0.91
Construction	1,658	2,104	2,478	446	819	27%	49%	8%	10%	28%	0.86	0.90
Wholesale trade	369	403	448	34	79	9%	21%	2%	2%	19%	0.57	0.35
Retail Trade	2,397	2,517	2,615	120	218	5%	9%	11%	11%	35%	1.08	1.19
Accommodation and food services	2,200	2,152	1,885	48	315	-2%	-14%	10%	8%	47%	1.44	1.47
Road transport	484	537	622	53	138	11%	29%	2%	3%	31%	0.93	1.16
Other transport, postal, courier, transport support and warehousing services.	330	351	375	22	46	7%	14%	2%	2%	33%	1.00	0.80
Air and space transport	0	0	0	0	0	2%	0%	0%	0%	1%	0.02	0.00

Sector	Employment								Structure		Significance		
	MECs 2016	MECs 2023	MECs 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	MECs 2016 %	MECs 2043 %	Share of Region 2016	L.Q. Region	L.Q.NZ	
Information media and telecommunications	129	132	122	2	-	7	2%	-5%	1%	0%	25%	0.76	0.32
Finance	146	155	162	8	15	6%	11%	1%	1%	31%	0.96	0.49	
Insurance and superannuation funds	-	-	-	-	-	0%	0%	0%	0%	0%	-	-	
Auxiliary finance and insurance services	79	85	93	6	14	8%	18%	0%	0%	27%	0.83	0.52	
Rental, hiring and real estate services	680	749	869	70	189	10%	28%	3%	3%	40%	1.23	1.39	
Ownership of owner-occupied dwellings	-	-	-	-	-	0%	0%	0%	0%	0%	-	-	
Professional, scientific, technical, administrative and support services	1,629	1,749	1,826	120	197	7%	12%	7%	7%	28%	0.86	0.52	
Central government administration, defence and public safety	792	797	755	6	-	37	1%	-5%	4%	3%	37%	1.11	0.88
Local government administration	313	315	296	2	-	17	1%	-5%	1%	1%	41%	1.25	1.40
Education and training	2,162	2,138	1,892	-	24	-	270	-1%	-12%	10%	1.12	1.30	
Health care and social assistance	2,576	2,545	2,443	-	31	-	132	-1%	-5%	12%	10%	0.88	1.17
Arts and recreation services	373	383	357	11	-	16	3%	-4%	2%	1%	37%	1.14	0.91
Personal and other services	599	624	609	25	10	4%	2%	3%	2%	33%	1.01	0.96	
<b>Total</b>	<b>21,798</b>	<b>23,286</b>	<b>24,818</b>	<b>1,488</b>	<b>3,020</b>	<b>7%</b>	<b>14%</b>	<b>100%</b>	<b>100%</b>	<b>33%</b>			

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario. MEC = Modified Employee Count (includes employees and estimated working proprietors)

Sector	Gross Output (\$m <sup>2016</sup> )								Structure		Significance		
	Output 2016	Output 2023	Output 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	Output 2016 %	Output 2043 %	Share of Region 2016	L.Q. Region	L.Q.NZ	
Horticulture and fruit growing	89	103	138	13	49	15%	55%	2%	3%	43%	1.68	3.76	
Sheep, beef cattle and grain farming	171	190	242	19	71	11%	41%	5%	5%	44%	1.71	3.44	
Dairy cattle farming	161	199	305	38	145	24%	90%	4%	6%	27%	1.04	2.50	
Poultry, deer and other livestock farming	11	13	18	2	7	17%	63%	0%	0%	34%	1.33	1.15	
Forestry and logging	136	188	337	53	202	39%	148%	4%	6%	43%	1.67	4.92	
Fishing and aquaculture	77	109	198	32	122	42%	159%	2%	4%	73%	2.87	9.08	
Agriculture, forestry and fishing support services	61	74	111	13	50	22%	82%	2%	2%	42%	1.63	1.96	
Mining, quarrying, exploration and other mining support services	38	53	93	15	55	40%	147%	1%	2%	30%	1.18	1.56	
Oil and gas extraction	-	-	-	-	-	0%	0%	0%	0%	0%	-	-	
Meat and meat product manufacturing	65	68	77	4	12	6%	19%	2%	1%	51%	2.01	0.97	
Dairy product manufacturing	6	8	11	1	4	19%	70%	0%	0%	2%	0.06	0.06	
Other food manufacturing	24	27	34	3	9	12%	39%	1%	1%	43%	1.68	0.45	

Sector	Gross Output (\$m <sup>2016</sup> )							Structure		Significance		
	Output 2016	Output 2023	Output 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	Output 2016 %	Output 2043 %	Share of Region 2016	L.Q. Region	L.Q. NZ
Beverage and tobacco product manufacturing	15	18	24	3	9	17%	60%	0%	0%	56%	2.18	0.47
Textile, leather, clothing and footwear manufacturing	4	4	4	0	0	0%	0%	0%	0%	15%	0.59	0.23
Wood product manufacturing	95	109	129	14	34	15%	36%	3%	2%	34%	1.34	2.48
Pulp, paper and converted paper product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Printing	3	3	4	0	1	11%	32%	0%	0%	19%	0.73	0.14
Petroleum and coal product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Chemical, polymer and rubber product manufacturing	10	12	15	2	5	16%	51%	0%	0%	9%	0.37	0.16
Non-metallic mineral product manufacturing	7	9	12	2	5	26%	63%	0%	0%	6%	0.24	0.28
Primary metal and metal product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Fabricated metal product manufacturing	27	33	42	6	15	21%	54%	1%	1%	12%	0.46	0.59
Transport equipment manufacturing	35	40	51	5	16	14%	46%	1%	1%	22%	0.87	1.62
Machinery and equipment manufacturing	16	20	28	3	12	21%	73%	0%	1%	25%	0.97	0.34
Furniture and other manufacturing	5	6	6	0	1	10%	28%	0%	0%	20%	0.77	0.47
Electricity generation and supply	118	130	155	13	37	11%	31%	3%	3%	43%	1.68	0.91
Gas supply	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Water, sewerage, drainage and waste services	19	21	25	2	6	12%	32%	1%	0%	22%	0.85	0.67
Construction	363	469	584	106	221	29%	61%	10%	11%	27%	1.05	0.97
Wholesale trade	67	77	100	10	33	15%	49%	2%	2%	18%	0.69	0.35
Retail Trade	195	209	231	14	35	7%	18%	5%	4%	34%	1.32	1.65
Accommodation and food services	147	151	156	5	10	3%	7%	4%	3%	50%	1.96	2.06
Road transport	116	135	178	19	63	17%	54%	3%	3%	29%	1.16	1.47
Other transport, postal, courier, transport support and warehousing services.	67	75	92	8	25	12%	37%	2%	2%	24%	0.95	0.70
Air and space transport	1	1	1	0	0	7%	20%	0%	0%	6%	0.22	0.01
Information media and telecommunications	21	23	26	2	5	8%	22%	1%	0%	16%	0.62	0.18
Finance	70	76	87	6	17	9%	24%	2%	2%	32%	1.24	0.61
Insurance and superannuation funds	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Auxiliary finance and insurance services	31	34	41	3	10	11%	32%	1%	1%	24%	0.95	0.62
Rental, hiring and real estate services	408	457	552	48	143	12%	35%	11%	10%	38%	1.47	1.55
Ownership of owner-occupied dwellings	257	267	271	10	14	4%	6%	7%	5%	33%	1.28	1.92
Professional, scientific, technical, administrative and support services	220	250	313	30	93	14%	43%	6%	6%	28%	1.09	0.52
Central government administration, defence and public safety	79	83	88	4	10	6%	12%	2%	2%	27%	1.07	0.82
Local government administration	27	28	30	2	3	6%	11%	1%	1%	40%	1.58	2.31
Education and training	139	144	148	5	9	4%	7%	4%	3%	32%	1.24	1.36
Health care and social assistance	205	215	223	10	18	5%	9%	6%	4%	24%	0.92	1.32

Sector	Gross Output (\$m <sup>2016</sup> )							Structure		Significance		
	Output 2016	Output 2023	Output 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	Output 2016 %	Output 2043 %	Share of Region 2016	L.Q. Region	L.Q. NZ
Arts and recreation services	37	40	46	3	9	9%	24%	1%	1%	33%	1.30	0.84
Personal and other services	70	78	92	8	22	11%	32%	2%	2%	29%	1.13	1.06
<b>Total</b>	<b>3,713</b>	<b>4,250</b>	<b>5,319</b>	<b>537</b>	<b>1,606</b>	<b>14%</b>	<b>43%</b>	<b>100%</b>	<b>100%</b>	<b>26%</b>		

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario.

Sector	Value Added (\$m <sup>2016</sup> )							Structure		Significance		
	VA 2016	VA 2023	VA 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	VA 2016 %	VA 2043 %	Share of Region 2016	L.Q. Region	L.Q. NZ
Horticulture and fruit growing	37	42	57	5	20	15%	55%	2%	2%	50%	1.58	3.90
Sheep, beef cattle and grain farming	69	77	97	8	29	11%	41%	4%	4%	42%	1.31	2.41
Dairy cattle farming	52	64	98	12	46	24%	90%	3%	4%	26%	0.82	1.99
Poultry, deer and other livestock farming	4	4	6	1	2	17%	63%	0%	0%	42%	1.33	1.18
Forestry and logging	43	59	106	17	63	39%	148%	2%	4%	38%	1.20	3.68
Fishing and aquaculture	21	30	55	9	34	42%	159%	1%	2%	74%	2.32	7.65
Agriculture, forestry and fishing support services	29	36	53	6	24	22%	82%	2%	2%	53%	1.66	2.21
Mining, quarrying, exploration and other mining support services	14	20	35	6	21	40%	147%	1%	1%	40%	1.27	1.81
Oil and gas extraction	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Meat and meat product manufacturing	10	11	12	1	2	6%	19%	1%	1%	56%	1.75	2.40
Dairy product manufacturing	1	1	2	0	1	19%	70%	0%	0%	15%	0.48	0.11
Other food manufacturing	7	8	10	1	3	12%	39%	0%	0%	49%	1.54	0.55
Beverage and tobacco product manufacturing	7	8	11	1	4	17%	60%	0%	0%	58%	1.82	0.36
Textile, leather, clothing and footwear manufacturing	1	1	1	0	0	0%	0%	0%	0%	26%	0.81	0.31
Wood product manufacturing	23	26	31	3	8	15%	36%	1%	1%	37%	1.15	3.70
Pulp, paper and converted paper product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Printing	1	1	2	0	0	11%	32%	0%	0%	20%	0.63	0.15
Petroleum and coal product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Chemical, polymer and rubber product manufacturing	4	4	6	1	2	16%	51%	0%	0%	15%	0.48	0.21
Non-metallic mineral product manufacturing	3	3	4	1	2	26%	63%	0%	0%	6%	0.20	0.30
Primary metal and metal product manufacturing	-	-	-	-	-	0%	0%	0%	0%	0%	-	-
Fabricated metal product manufacturing	10	12	15	2	5	21%	54%	1%	1%	15%	0.46	0.68

Sector	Value Added (\$m <sup>2016</sup> )								Structure		Significance		
	VA 2016	VA 2023	VA 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	VA 2016 %	VA 2043 %	Share of Region 2016	L.Q. Region	L.Q. NZ	
Transport equipment manufacturing	11	12	16	2	5	14%	46%	1%	1%	29%	0.90	3.24	
Machinery and equipment manufacturing	7	8	12	1	5	21%	73%	0%	0%	37%	1.16	0.38	
Furniture and other manufacturing	2	2	2	0	1	10%	28%	0%	0%	25%	0.77	0.51	
Electricity generation and supply	55	61	72	6	17	11%	31%	3%	3%	34%	1.06	0.81	
Gas supply	-	-	-	-	-	0%	0%	0%	0%	0%	-	-	
Water, sewerage, drainage and waste services	9	10	12	1	3	12%	32%	1%	0%	23%	0.73	0.47	
Construction	102	132	164	30	62	29%	61%	6%	7%	33%	1.03	1.28	
Wholesale trade	32	36	47	5	15	15%	49%	2%	2%	20%	0.63	0.34	
Retail Trade	119	127	140	8	22	7%	18%	7%	6%	40%	1.26	1.85	
Accommodation and food services	65	67	70	2	4	3%	7%	4%	3%	61%	1.90	2.85	
Road transport	49	57	75	8	26	17%	54%	3%	3%	39%	1.23	2.01	
Other transport, postal, courier, transport support and warehousing services.	37	41	50	4	13	12%	37%	2%	2%	27%	0.84	0.58	
Air and space transport	0	0	0	0	0	7%	20%	0%	0%	4%	0.13	0.02	
Information media and telecommunications	10	11	12	1	2	8%	22%	1%	0%	19%	0.58	0.14	
Finance	43	46	53	4	10	9%	24%	2%	2%	33%	1.05	0.52	
Insurance and superannuation funds	-	-	-	-	-	0%	0%	0%	0%	0%	-	-	
Auxiliary finance and insurance services	16	17	21	2	5	11%	32%	1%	1%	31%	0.97	0.71	
Rental, hiring and real estate services	235	263	317	28	82	12%	35%	13%	13%	34%	1.07	0.99	
Ownership of owner-occupied dwellings	178	185	188	7	10	4%	6%	10%	8%	30%	0.95	1.21	
Professional, scientific, technical, administrative and support services	125	142	178	17	53	14%	43%	7%	7%	32%	0.99	0.50	
Central government administration, defence and public safety	45	48	51	3	6	6%	12%	3%	2%	53%	1.68	1.70	
Local government administration	17	18	19	1	2	6%	11%	1%	1%	57%	1.79	3.36	
Education and training	103	107	110	4	7	4%	7%	6%	5%	53%	1.66	2.10	
Health care and social assistance	125	131	136	6	11	5%	9%	7%	6%	36%	1.14	1.89	
Arts and recreation services	17	19	21	2	4	9%	24%	1%	1%	76%	2.38	0.72	
Personal and other services	37	41	49	4	12	11%	32%	2%	2%	36%	1.15	1.24	
<b>Total</b>	<b>1,773</b>	<b>1,991</b>	<b>2,417</b>	<b>218</b>	<b>644</b>	<b>12%</b>	<b>36%</b>	<b>100%</b>	<b>100%</b>	<b>32%</b>			

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario.

**Appendix D:**

**Population Projections Underpinning Economic Futures Mode**

Age Group	Usually Residednt Population								Structure		Significance		
	Pop 2016	Pop 2023	Pop 2043	Growth 2016-2023	Growth 2016-2043	Growth 2016-2023 %	Growth 2016-2043 %	Pop 2016 %	Pop 2043 %	Share of Region 2016	L.Q. Region	L.Q.NZ	
0-4 years	4,360	4,280	3,640	- 80	- 720	-2%	-17%	7%	6%	37%	1.03	1.08	
5-9 years	4,660	4,430	3,940	- 230	- 720	-5%	-15%	8%	6%	36%	1.02	1.13	
10-14 years	4,620	4,730	4,170	110	- 450	2%	-10%	8%	7%	37%	1.03	1.16	
15-19 years	3,920	3,620	3,450	- 300	- 470	-8%	-12%	6%	6%	36%	1.00	0.96	
20-24 years	2,930	2,460	2,220	- 470	- 710	-16%	-24%	5%	4%	33%	0.93	0.66	
25-29 Years	2,930	3,000	2,320	70	- 610	2%	-21%	5%	4%	34%	0.94	0.67	
30-34 years	2,720	3,410	2,860	690	140	25%	5%	4%	5%	33%	0.93	0.68	
35-39 years	2,800	3,010	2,820	210	20	8%	1%	5%	5%	34%	0.94	0.75	
40-44 years	3,300	2,750	2,990	- 550	- 310	-17%	-9%	5%	5%	34%	0.95	0.84	
45-49 years	3,950	3,110	3,510	- 840	- 440	-21%	-11%	6%	6%	36%	0.99	0.95	
50-54 years	4,440	3,970	3,860	- 470	- 580	-11%	-13%	7%	6%	37%	1.03	1.08	
55-59 years	4,630	4,480	3,520	- 150	- 1,110	-3%	-24%	8%	6%	37%	1.05	1.19	
60-64 years	4,480	4,950	3,450	470	- 1,030	10%	-23%	7%	6%	38%	1.06	1.32	
65-69 years	4,100	4,570	3,780	470	- 320	11%	-8%	7%	6%	38%	1.07	1.40	
70-74 years	3,210	3,930	4,140	720	930	22%	29%	5%	7%	37%	1.04	1.37	
75-79 years	2,150	3,010	4,020	860	1,870	40%	87%	3%	7%	36%	1.00	1.29	
80-84 years	1,280	1,850	3,550	570	2,270	45%	177%	2%	6%	34%	0.94	1.13	
85 years and over	960	1,190	3,330	230	2,370	24%	247%	2%	5%	29%	0.81	0.89	
<b>Total</b>	<b>61,440</b>	<b>62,750</b>	<b>61,570</b>	<b>1,310</b>	<b>130</b>	<b>2%</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>36%</b>			

Source: Far North District Economic Futures Model (2017), M.E. Medium Growth Scenario. Based on 2013 Census base year to 2043 Projections (released by StatisticsNZ 2015). 2016 is an interpolated value.

**Appendix E:**

**Approach for Reconciling Business and Employment to Properties**



This Appendix provides further information relevant to the modelling approach discussed in Section 3 - reconciling an employment meshblock dataset to Council's property/parcel dataset.

### **Parcel Dataset**

FNDC supplied – in the form of a GIS shapefile – a polygon file showing current parcel boundaries for the total District. The data included attributes as follows:

- Parcel ID.
- Legal Description (i.e. lot number and DP).
- Property Number / Valuation Number – joined from rating database.
- High level LINZ land use code – joined from rating database.
- Land Value, Improvement Value, Capital Value – joined from rating database.

While the parcels covered the total district area, the parcels that were able to be matched with property data from the rating database was not complete. For example, the total area of land use zones in the District supplied by Council is 671,647ha. The parcels that were able to be matched with property data covered an area of 622,568ha (93% of the district land area). This is evident in some of the maps included in this report – particularly in the Aupouri Peninsula where large parcels on the western coast did not match successfully with the property data (i.e. LINZ code and valuation information), and have therefore been excluded from M.E's modelling because the analysis is totally reliant on the LINZ code. The implication of this for the forestry sector analysis in particular is discussed further in Section 4.

The parcel (with property data) file contained a large number of overlapping parcels. The sum of the parcel area was, for example, 785,484ha – 126% of the land area covered by these parcels. Duplicate parcels arise when there are unit title properties, and the parcel is included in the dataset multiple times (including for the parent lot). M.E removed unit titles from the analysis (largely focussed on the urban environment), leaving the parent lot only. This meant that the sum of the property parcels came down to 110% of the land area covered by these parcels.

Remaining duplicates occurred when a parcel was matched to multiple LINZ (land use) codes – and so the parcel (and its area occurs in the dataset for each code). As M.E had no insight as to how properties were assigned multiple LINZ codes, and which one was most representative, these overlaps were left in the dataset. M.E's has taken the approach that those parcels could have multiple land uses – including multiple primary production land uses, and so the property is identified for each and all primary production sectors considered in this report.

In total, all properties in the cleaned dataset for Far North District are assigned to one (or more in some cases) of 72 unique land use codes.

### **Base Data – SNZ Business Directory 2016**

M.E has relied on the Statistics NZ (SNZ) Business Directory (BD) which has a time series of business counts and employee counts by detailed industry types located in each meshblock of New Zealand. M.E sources this dataset annually from SNZ – it is a core dataset for all M.E work. For this analysis, Far North District meshblocks and associated 2016 data has been extracted. Metrics used include:

#### 2016 Geographical Units (GU)

Defined by SNZ as a separate operating unit (business) registered in New Zealand at a single physical location or base (but reported at the meshblock level only) and categorised to a specific economic activity (industry) defined by ANZSIC code.

#### 2016 Modified Employment Count (MEC)

The BD records an Employee Count (EC) which is the count of all full or part time employees. Employees are categorised according to the specific economic activity (industry) of the businesses they work for (defined by ANZSIC code). M.E has added to this count (as part of its proprietary BD database) the estimated count of working proprietors to ensure that these 'workers' are not underrepresented. All employment reported for this analysis is therefore M.E's Modified Employment Count (MEC). The BD records the total EC/MEC in each meshblock. It is not possible to understand the distribution of employees across the businesses of the same industry within each meshblock. As such, if there are 10 MECs and 2 businesses in a particular industry, we assume an average business size of 5 MECs/GU. This

is a limitation of the BD (i.e. it does not help identify the relative size of similar businesses when there is more than one in the same meshblock).

#### 48 Sector Level Activity

The BD provides business count and employment data according to 506 detailed ANZSICs. This is commonly referred to as the 6-digit level (or class level). These can be aggregated up to a number of different groupings, with the broadest aggregation the 1-digit ANZSIC codes – there are 19 1-digit economic sectors. To be consistent with the outputs of the EFM, M.E has grouped employment and business activity to 48 economic sectors. The exception to this is that the beekeeping sector falls within the wider sector called “Poultry, deer and other livestock farming”. As apiculture is a key sector of interest for this study, this has been identified at the 6-digit ANZSIC level and separated out from the “Poultry, deer and other livestock farming” sector. Apiculture employment and business counts are excluded from this reconciliation process (on the basis that the industry does not occupy land in the same way as other primary production sectors in particular – this is discussed more in the detailed discussion of the apiculture industry). The balance of “Poultry, deer and other livestock farming” sector is included in the reconciliation process.

While the BD is the most detailed public data available on the spatial location of businesses and employment by detailed industry, it is important to outline what it can and cannot show:

- The location of employment is linked to the location of the business.
  - Specifically, the business location is usually the registered office of the business and may not be the location of some of their activities or landholdings. This may apply (but is not limited to) to agriculture, forestry and mining related activity for example.
  - This means that workers who carry out their jobs in Far North District but work for companies based outside the district will not be counted. Conversely, workers who carry out their jobs outside of Far North District but work for companies based inside the district will be counted.
- It captures businesses and workers registered with the IRD as at February each year.
  - This means that some businesses that have appeared since February 2016 will not be captured.
  - Businesses are registered to an ANZSIC code which may differ from perceptions of what sort of business is being operated. ANZSICs relate to specific categories of primary activities as defined by SNZ. This may account for instances where the LINZ code does not closely align with ANZSIC codes in a particular meshblock.
  - This may under-represent employment in some sectors that increase their staff numbers during other periods of the year (i.e. harvesting periods, shearing periods, ski season etc). Conversely, it may over-represent employment in some sectors that have higher staff numbers in February compared to other periods of the year.
  - It does not capture staff paid by cash.
  - It does not capture small businesses that are not registered for GST. This may be applicable for low turnover businesses such as those selling a relatively small volume of produce for example, or artisan businesses that sell only small volumes of product (including cash/market sales).
- In some sectors, it is possible to have a business with no employment (although the opposite does not generally apply). This is particularly common in the Property, Real Estate and Finance sectors where, for example, individual operators/agents/advisors/insurance brokers often need to set themselves up as individual companies for tax and other legal reasons.

For all the above reasons, including any inherent errors in SNZ’s data collection and reporting, the BD may not always reconcile with what activity can be seen ‘on the ground’. The results are estimates subject to a number of assumptions.

## Allocation Approach

This is discussed in Section 3.1.

## Limitations

The analysis has a number of limitations, mainly driven by the quality of the data available.

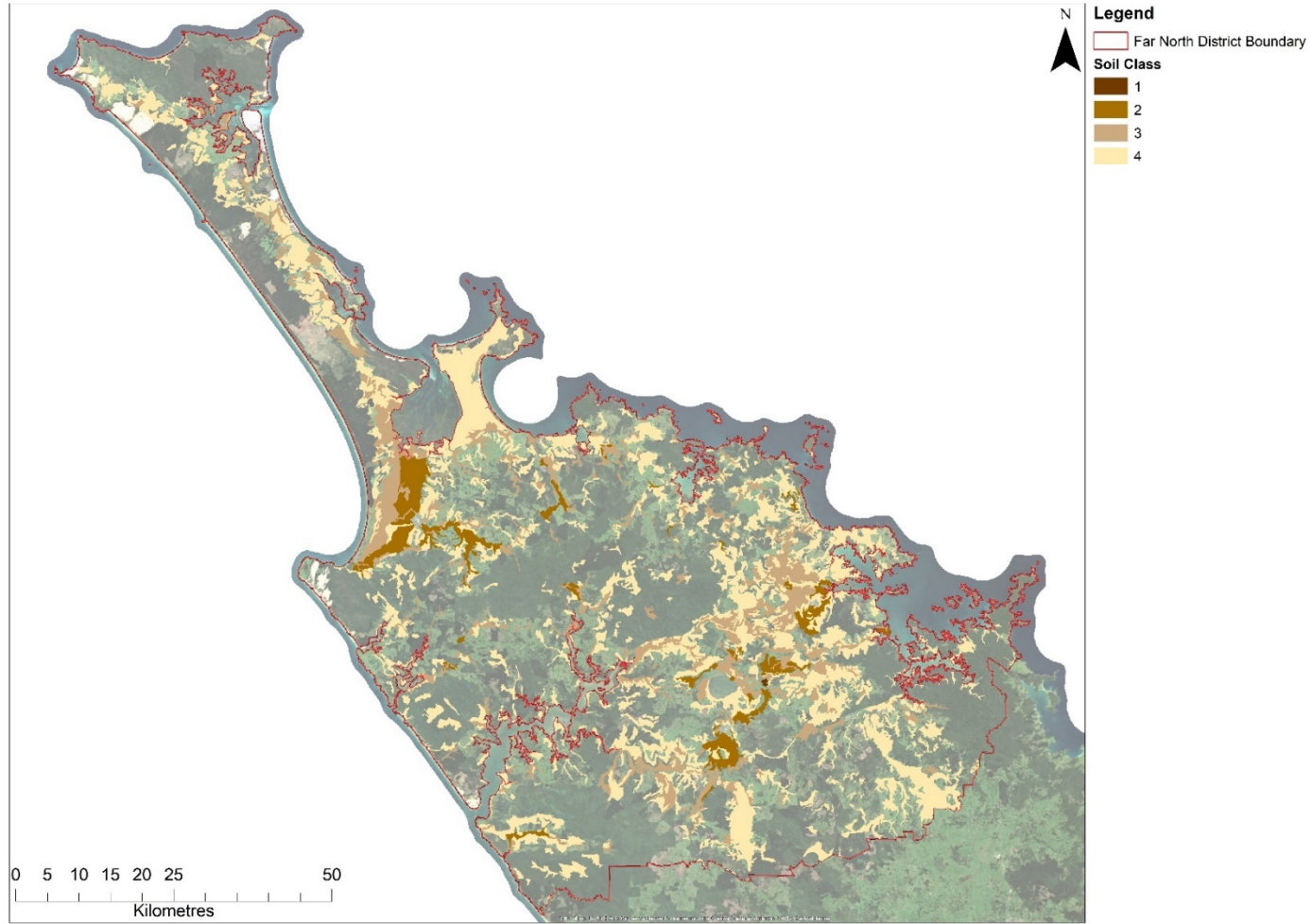
- The analysis relies totally on the LINZ codes to allocate primary production in each sector on the ground.
  - There are some apparent errors in the LINZ codes when compared with aerial photographs. It is expected that Horticultural analysis is most sensitive to these errors.
  - It is evident that some Lifestyle properties (a LINZ code category) can include primary production- e.g. orchards. M.E has not further investigated the approach used by QV in assigning LINZ codes. It is therefore possible that by excluding Lifestyle properties from consideration in allocating primary production employment to property parcels, that the area of primary production is under-represented in some locations. This is likely to be most problematic for the allocation of the Horticultural sector as some orchards are viable at relatively small sizes – sizes also similar to Lifestyle blocks.
- Within a meshblock, a constant MEC/ha ratio is adopted. That is, within a meshblock containing more than one horticultural property for example, employment is allocated pro rata by parcel size. Variations within meshblocks are likely, particularly if there are different types of orchards. This is a limitation of the analysis.
- All parcels with a matching LINZ code are assigned employment irrespective of size. That is, small parcels are assigned a small share of employment in a meshblock, and large parcels are assigned a large share of meshblock employment. It is likely however that small farming parcels have little or no employment (i.e. are managed by the home owner) and large parcels have the majority of the employment – as they are likely to be much bigger operations. This is relevant because gross output and value added is allocated on the basis of employment allocation. It implies that all sized parcels contribute to the gross output/value added of the sector, when in reality, some small properties are likely to be ‘hobby farms’ that just use their stock for personal food consumption, rather than sell it in the commercial market. This is a limitation of the approach and is most applicable for dairy and sheep and beef farming analysis. It is evident in section 5.1 which shows a vast array of property sizes contributing to gross out in those sectors – when in fact it is the more economic lot sizes that will be responsible for the majority of sector output. LINZ data does contain detail on economic versus uneconomic primary production properties, but this detail was not included in the data supplied by Council (only the high-level land use category).

As a result of these limitations, including the limitations of the BD discussed further above, the following caveat applies to any analysis based on the outputs of this BD reconciliation:

*“2016 business and employment counts at the property level are estimates only and may not accurately reflect business and employment counts and distributions across properties in all cases. Employment includes employees and estimated counts of working proprietors”.*

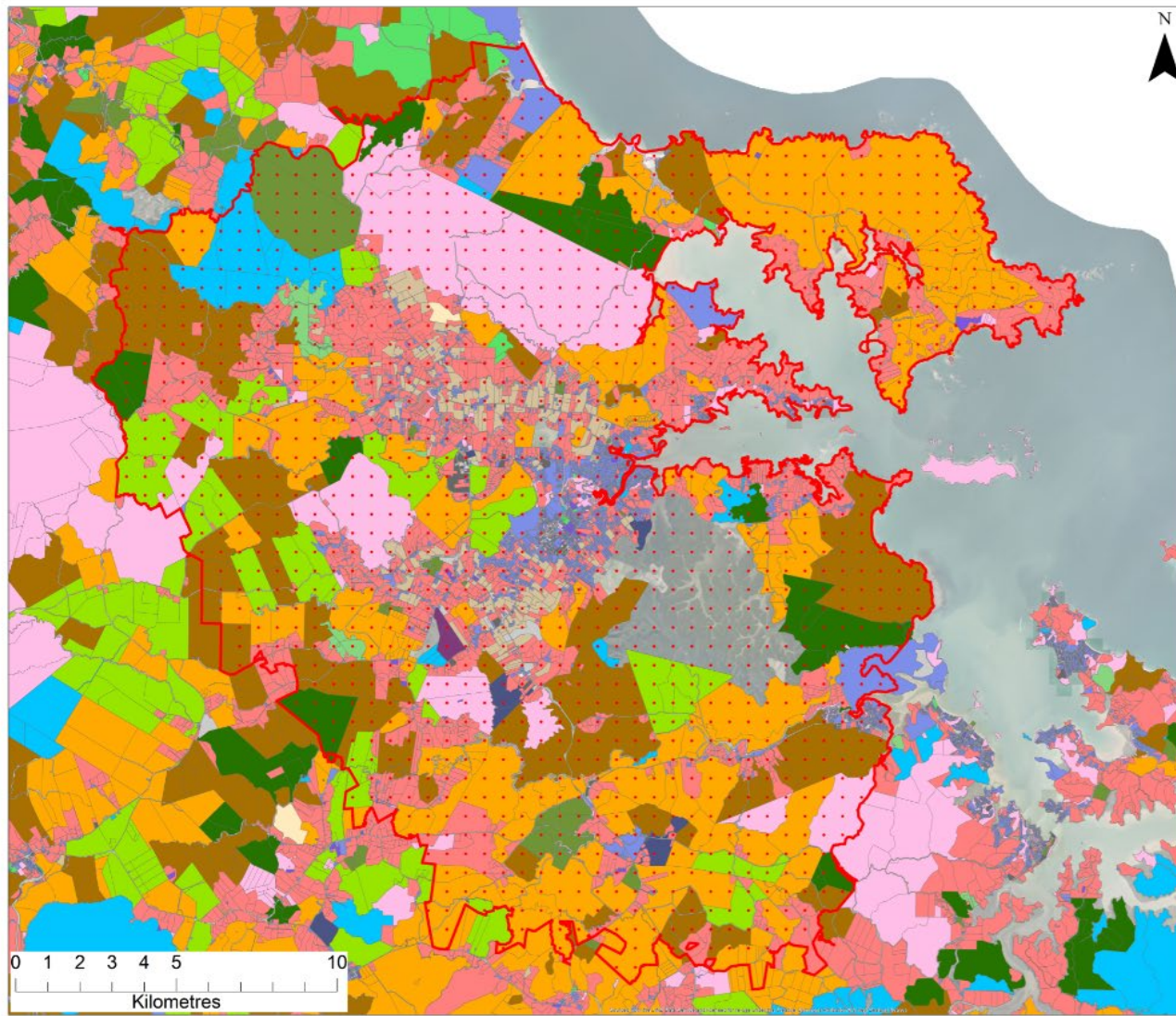
**Appendix F:**

**Map of Soil Classes 1-4 in Far North District**



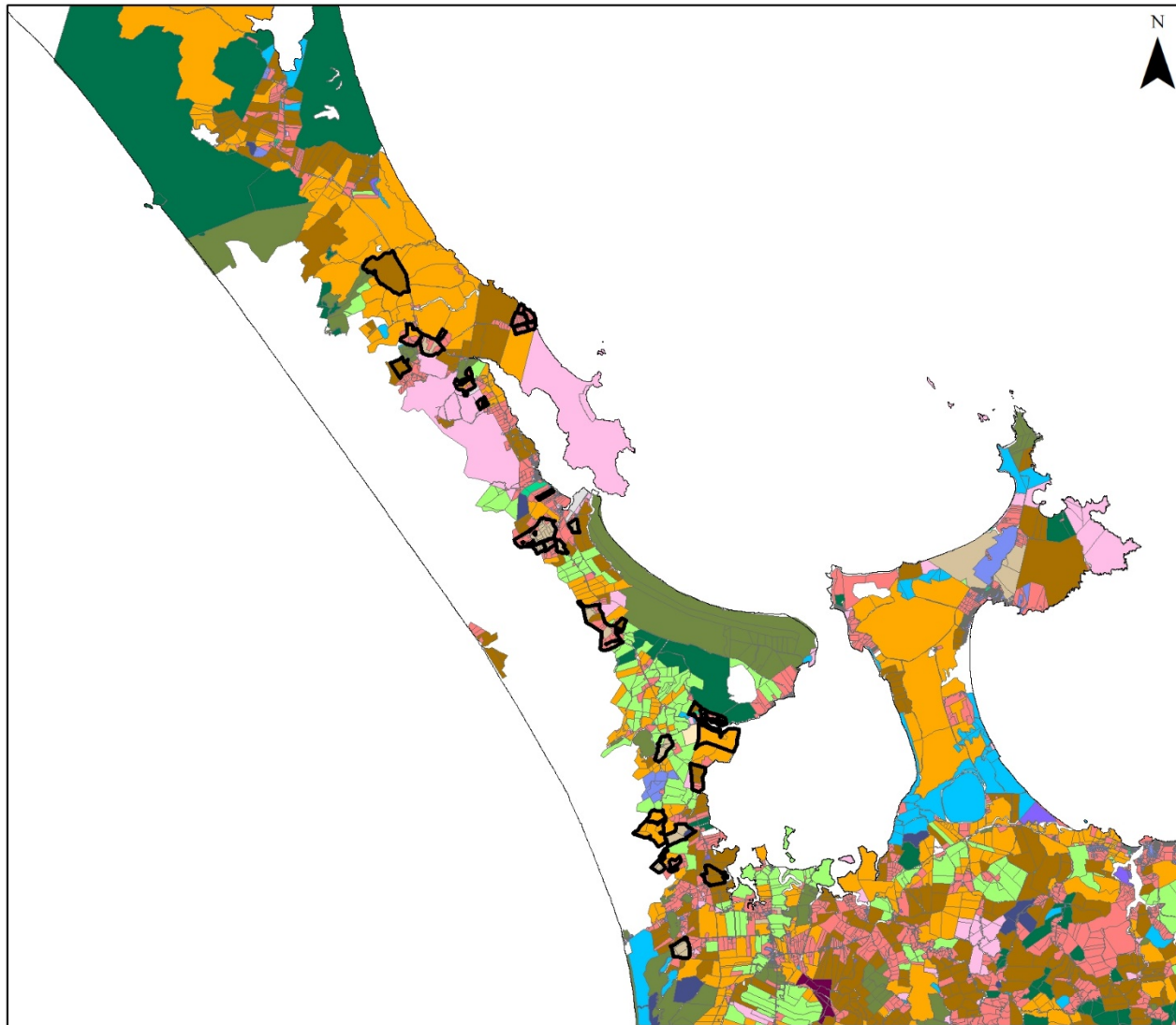
**Appendix G:**

**Horticultural Sector – Key Growing Area Catchments and Analysis**



- Legend**
- Kerikeri High School Zone
  - LINZ Summary Land Uses**
  - Commercial
  - Community Services
  - Industrial
  - Lifestyle
  - Multi Use
  - Primary Industry-Dairying
  - Primary Industry-Forestry
  - Primary Industry-Market Gardens & Orchards
  - Primary Industry-Multi Use
  - Primary Industry-Specialist Livestock
  - Primary Industry-Stock Fattening
  - Primary Industry-Store Livestock
  - Primary Industry-Vacant or Idle
  - Recreational
  - Residential
  - Transport
  - Utility
  - Vacant
  - Unknown

Kerikeri High School Enrolment Zone



- Legend**
-  Far North District Boundary
  -  Northern Horticultural Areas
  - LINZ Summary Land Use**
  -  Unknown
  -  Commercial
  -  Community Services
  -  Industrial
  -  Lifestyle
  -  Multi Use
  -  Primary Industry-Dairying
  -  Primary Industry-Forestry
  -  Primary Industry-Market Gardens & Orchards
  -  Primary Industry-Multi Use
  -  Primary Industry-Specialist Livestock
  -  Primary Industry-Stock Fattening
  -  Primary Industry-Store Livestock
  -  Primary Industry-Vacant or Idle
  -  Recreational
  -  Residential
  -  Transport
  -  Utility
  -  Vacant

Northern Horticultural Areas



*Intersection of estimated horticultural sector properties by horticultural growing area:*

Variable (2016)	Total Far North District
<b>Sector Location Relative to Key Horticultural Areas ****</b>	
Count of Properties in Kerikeri High School Zone	223
Count of Properties in Northern Hort. Areas	55
Count of Properties in Rest of District	88
Total Count of Properties	366
<i>Share of Properties in Kerikeri High School Zone</i>	61%
<i>Share of Properties in Northern Hort. Areas</i>	15%
<i>Share of Properties in Rest of District</i>	24%
<i>Total Properties</i>	100%
Hectares of Properties in Kerikeri High School Zone	1,494
Hectares of Properties in Northern Hort. Areas	630
Hectares of Properties in Rest of District	1,911
Total Hectares of Properties	4,035
<i>Share of Properties in Kerikeri High School Zone</i>	37%
<i>Share of Properties in Northern Hort. Areas</i>	16%
<i>Share of Properties in Rest of District</i>	47%
<i>Total Properties</i>	100%
Emp. of Properties in Kerikeri High School Zone	389
Emp. of Properties in Northern Hort. Areas	157
Emp. of Properties in Rest of District	217
Total Emp. of Properties	763
<i>Share of Properties in Kerikeri High School Zone</i>	51%
<i>Share of Properties in Northern Hort. Areas</i>	21%
<i>Share of Properties in Rest of District</i>	28%
<i>Total Properties</i>	100%
Output of Properties in Kerikeri High School Zone *	\$ 45.6
Output of Properties in Northern Hort. Areas *	\$ 18.4
Output of Properties in Rest of District *	\$ 25.5
Total Output of Properties *	\$ 89.4
<i>Share of Properties in Kerikeri High School Zone</i>	51%
<i>Share of Properties in Northern Hort. Areas</i>	21%
<i>Share of Properties in Rest of District</i>	28%
<i>Total Properties</i>	100%
Value Add. of Properties in Kerikeri High School Zone *	\$ 18.7
Value Add. of Properties in North Hort. Areas *	\$ 7.5
Value Add. of Properties in Rest of District *	\$ 10.4
Total Value Add. of Properties *	\$ 36.7
<i>Share of Properties in Kerikeri High School Zone</i>	51%
<i>Share of Properties in Northern Hort. Areas</i>	21%
<i>Share of Properties in Rest of District</i>	28%
<i>Total Properties</i>	100%

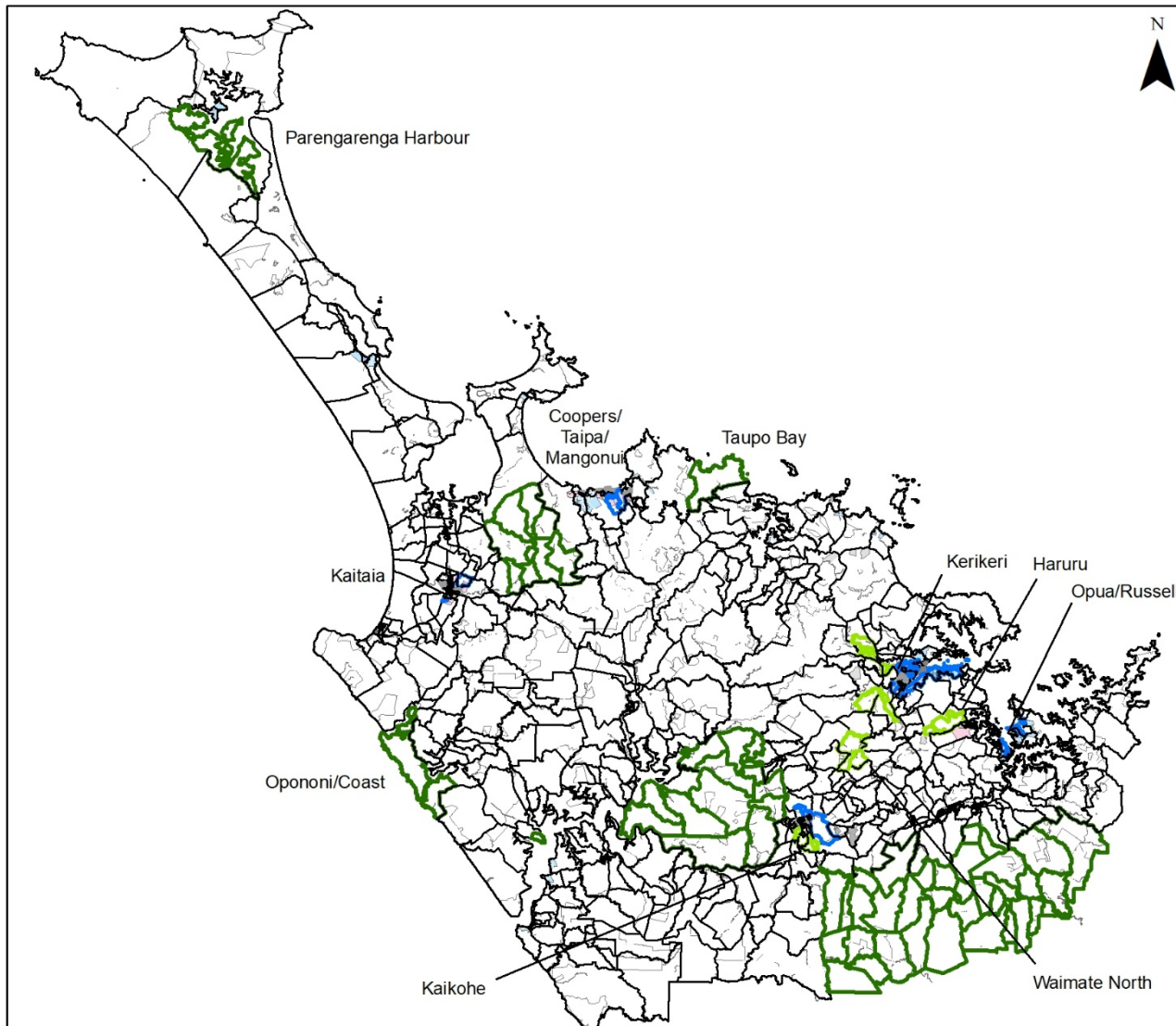
Source: FNDC and M.E. \* Output and Value Added includes income from all business sources and is estimated in the FND Economic Futures Model. Output and Value Added put on the ground via an allocation of employment to property parcels (using a combination of land use codes and parcel area). ^ Includes Sensitive Area sub-zone. Attribution of parcels to zones approximate only and based on the centroid of the parcel relative to operative zone boundaries. Parcels are allocated wholly to a single zone.

2016 employment counts at the property level are estimates only and may not accurately reflect employment counts and distributions across properties in all cases. Employment includes sector employees and estimated counts of working proprietors.

\*\*\*\* Based on properties that include an area of the Kerikeri High School Zone or the Northern Horticultural Areas (defined for the purpose of this study). This may cover all or only a portion of the tagged properties.

**Appendix H:**

**Social and Economic Profile – Case Study Area Definition**



**Legend**

**FNDC Operative Zones**

**Name**

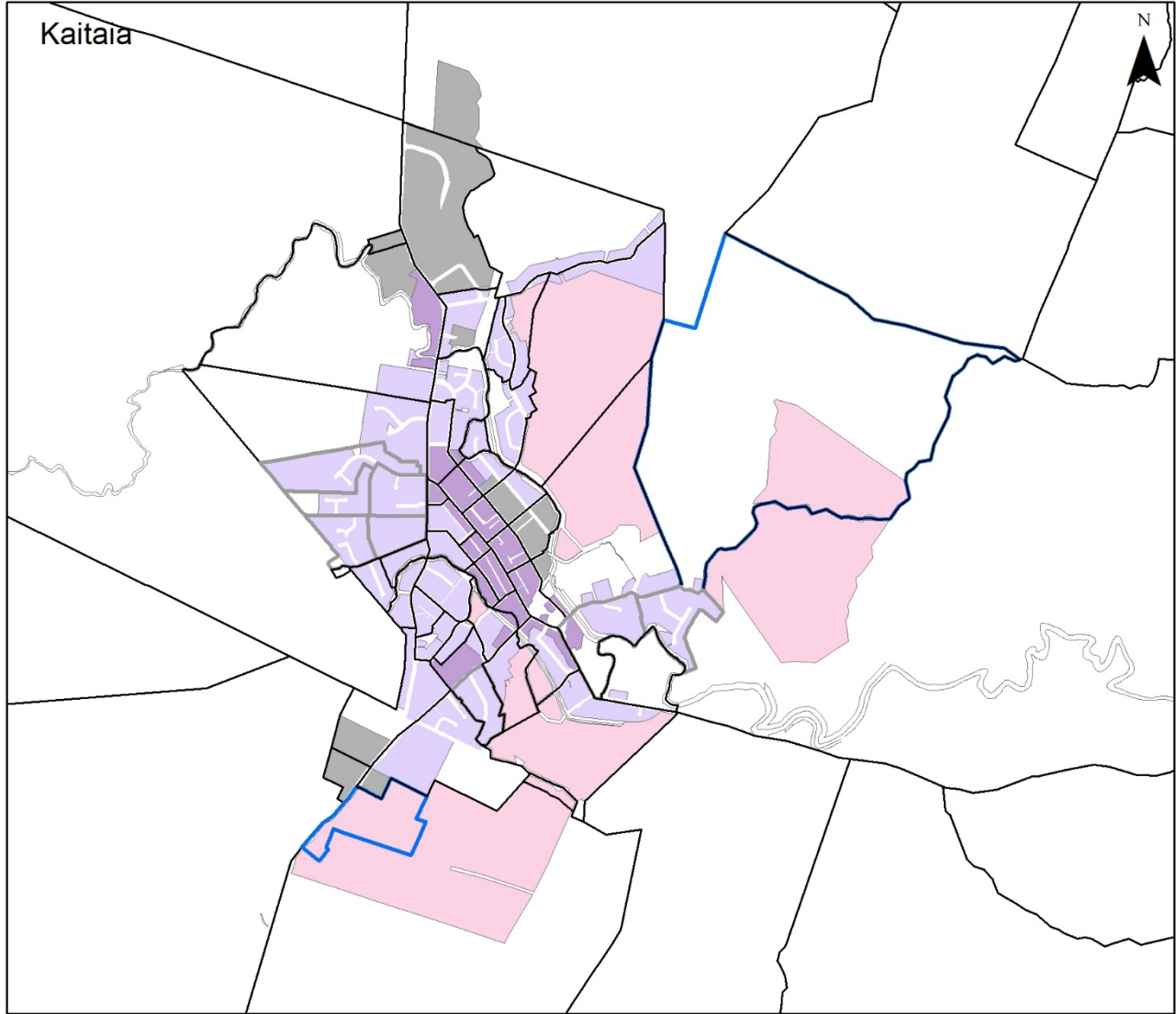
- Horticultural Processing
- Industrial
- Minerals
- Coastal Living
- Coastal Residential
- Commercial
- Residential
- Rural Living
- South Kerikeri Inlet Zone
- South Kerikeri Inlet Zone Sensitive Area
- Lakes & RIVERS
- Recreational Activities
- Conservation
- Road

**Meshblocks 2013**

**Profile Meshblocks**

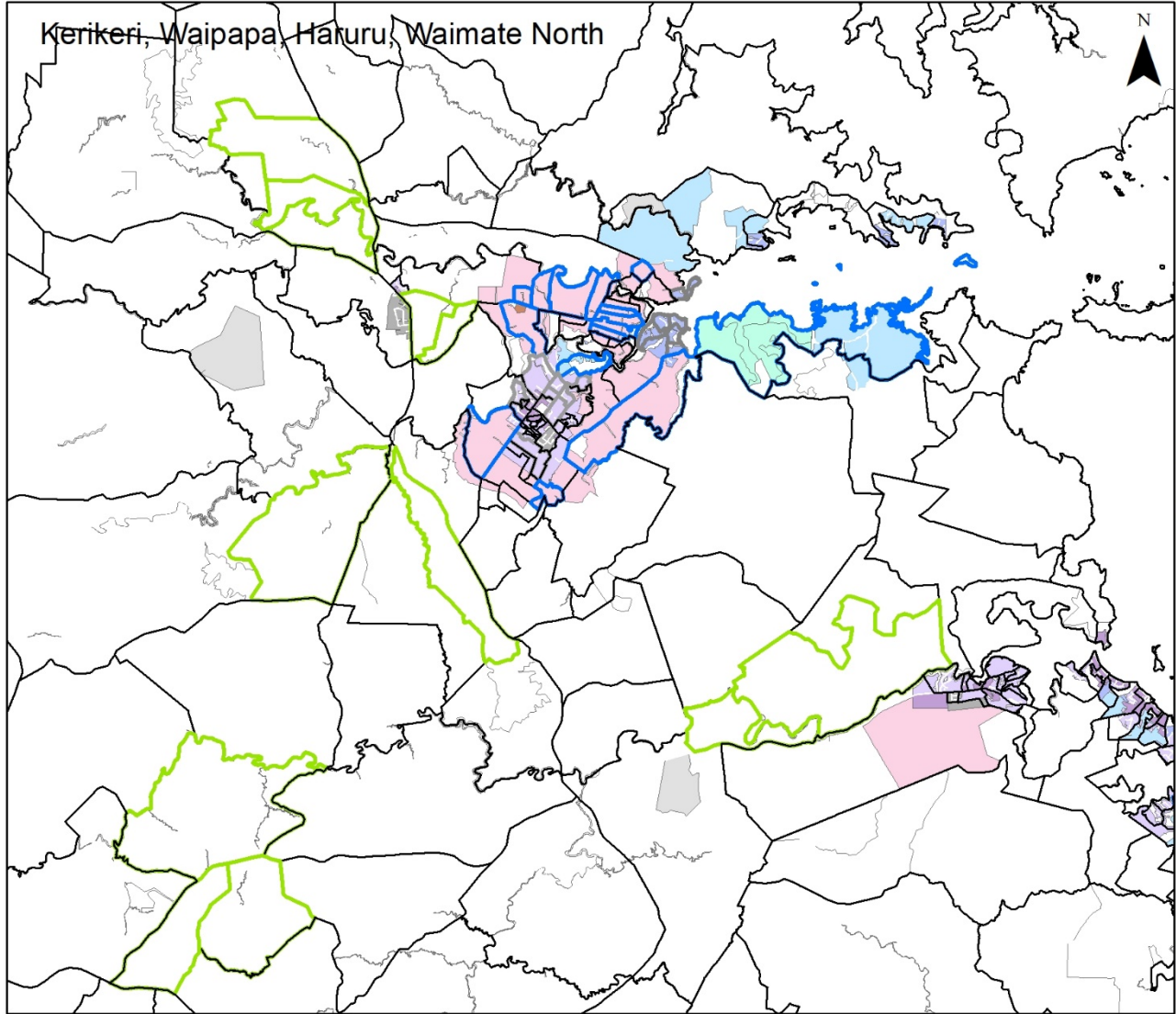
- 
- Coastal Living - Kerikeri
- Coastal Living - Opua\_Russell
- Coastal Residential - Kerikeri
- General Coastal - Opononi\_Coast
- General Coastal - Parengarenga\_Harbour
- General Coastal - Taupo Bay
- Residential - Coopers\_Taipa\_Mangonui
- Residential - Kaikohe
- Residential - Kaitaia
- Residential - Kerikeri
- Rural Lifestyle - Haruru
- Rural Lifestyle - Kaikohe
- Rural Lifestyle - Kerikeri South
- Rural Lifestyle - Waimate North
- Rural Lifestyle - Waipapa
- Rural Living - Coopers\_Taipa\_Mangonui
- Rural Living - Kaikohe
- Rural Living - Kaitaia
- Rural Living - Kerikeri
- Rural Production - Central West
- Rural Production - North
- Rural Production - South East

**Social & Economic Profile Case Study Areas**



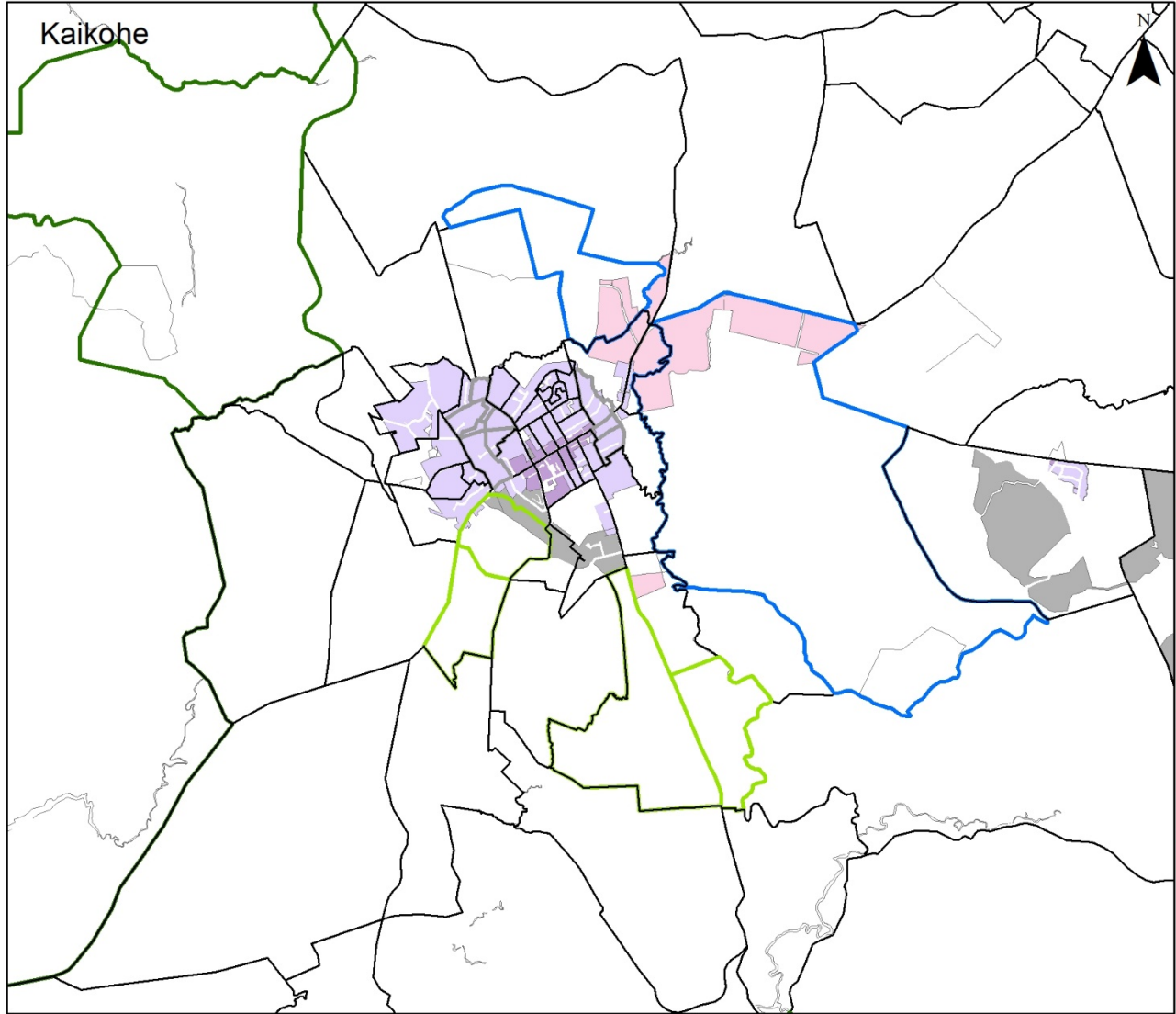
- Legend**
- FNDC Operative Zones**
- Name**
- Horticultural Processing
  - Industrial
  - Minerals
  - Coastal Living
  - Coastal Residential
  - Commercial
  - Residential
  - Rural Living
  - South Kerikeri Inlet Zone
  - South Kerikeri Inlet Zone Sensitive Area
  - Lakes & Rivers
  - Recreational Activities
  - Conservation
  - Road
- Meshblocks 2013**
- Profile Meshblocks**
- Coastal Living - Kerikeri
  - Coastal Living - Opua\_Russell
  - Coastal Residential - Kerikeri
  - General Coastal - Opononi\_Coast
  - General Coastal - Parengarenga\_Harbour
  - General Coastal - Taupo Bay
  - Residential - Coopers\_Taipa\_Mangonui
  - Residential - Kaikohe
  - Residential - Kaitiaki
  - Residential - Kerikeri
  - Rural Lifestyle - Haruru
  - Rural Lifestyle - Kaikohe
  - Rural Lifestyle - Kerikeri South
  - Rural Lifestyle - Waimate North
  - Rural Lifestyle - Waipapa
  - Rural Living - Coopers\_Taipa\_Mangonui
  - Rural Living - Kaikohe
  - Rural Living - Kaitiaki
  - Rural Living - Kerikeri
  - Rural Production - Central West
  - Rural Production - North
  - Rural Production - South East

**Social & Economic Profile Case Study Areas**



- Legend**
- FNDC Operative Zones**
- | Name                                     |
|--|
| Horticultural Processing                 |
| Industrial                               |
| Minerals                                 |
| Coastal Living                           |
| Coastal Residential                      |
| Commercial                               |
| Residential                              |
| Rural Living                             |
| South Kerikeri Inlet Zone                |
| South Kerikeri Inlet Zone Sensitive Area |
| Lakes & Rivers                           |
| Recreational Activities                  |
| Conservation                             |
| Road                                     |
- Meshblocks 2013**
- Profile Meshblocks**
- |  |
|--|
| Coastal Living - Kerikeri              |
| Coastal Living - Opua_Russell          |
| Coastal Residential - Kerikeri         |
| General Coastal - Opononi_Coast        |
| General Coastal - Parengarenga_Harbour |
| General Coastal - Taupo Bay            |
| Residential - Coopers_Taipa_Mangonui   |
| Residential - Kaikohe                  |
| Residential - Kaitia                   |
| Residential - Kerikeri                 |
| Rural Lifestyle - Hauru                |
| Rural Lifestyle - Kaikohe              |
| Rural Lifestyle - Kerikeri South       |
| Rural Lifestyle - Waimate North        |
| Rural Lifestyle - Waipapa              |
| Rural Living - Coopers_Taipa_Mangonui  |
| Rural Living - Kaikohe                 |
| Rural Living - Kaitia                  |
| Rural Living - Kerikeri                |
| Rural Production - Central West        |
| Rural Production - North               |
| Rural Production - South East          |

**Social & Economic Profile Case Study Areas**



- Legend**
- FNDC Operative Zones**
- | Name                                     |
|--|
| Horticultural Processing                 |
| Industrial                               |
| Minerals                                 |
| Coastal Living                           |
| Coastal Residential                      |
| Commercial                               |
| Residential                              |
| Rural Living                             |
| South Kerikeri Inlet Zone                |
| South Kerikeri Inlet Zone Sensitive Area |
| Lakes & Rivers                           |
| Recreational Activities                  |
| Conservation                             |
| Road                                     |
- Meshblocks 2013**
- Profile Meshblocks**
- |  |
|--|
| Coastal Living - Kerikeri              |
| Coastal Living - Opua_Russell          |
| Coastal Residential - Kerikeri         |
| General Coastal - Opononi_Coast        |
| General Coastal - Parengarenga_Harbour |
| General Coastal - Taupo Bay            |
| Residential - Coopers_Taipa_Mangonui   |
| Residential - Kaikohe                  |
| Residential - Kaitia                   |
| Residential - Kerikeri                 |
| Rural Lifestyle - Haruru               |
| Rural Lifestyle - Kaikohe              |
| Rural Lifestyle - Kenkeri South        |
| Rural Lifestyle - Waimate North        |
| Rural Lifestyle - Waipapa              |
| Rural Living - Coopers_Taipa_Mangonui  |
| Rural Living - Kaikohe                 |
| Rural Living - Kaitia                  |
| Rural Living - Kerikeri                |
| Rural Production - Central West        |
| Rural Production - North               |
| Rural Production - South East          |

**Social & Economic Profile Case Study Areas**

**Appendix I:**

**District Plan Examples of Rural Residential/Lifestyle Zone**

District Plan	Zone Name	Zone Purpose	Subdivision Minimum Lot Size <sup>199</sup>	Key Effects Managed
Waikato District Plan (Waikato Section)	Rural Zone	<ul style="list-style-type: none"> <li>▪ Most of Waikato District is in the Rural Zone. Anticipated activities are traditional extensive dairy and sheep farming, and horticulture with rural residential lifestyle lots interspersed. Rules seek to maintain rural land for productive rural activities, manage activities so that the effects of traditional farming can be accommodated alongside existing lifestyle blocks, to provide a level of lifestyle choice, and to preserve landscape and ecological values. It is anticipated that the amenity values experienced by residents of the Rural Zone will be lower than those enjoyed in the Living Zone.</li> <li>▪ Activities locating in the Rural Zone need to accept existing amenity levels associated with land use management practices and the effects from activities (including agricultural and horticultural activities) that are already lawfully established. New residents need to recognise the accepted management practices including the presence, behaviour and effects of livestock, agrichemical spraying, use of farm machinery, seasonal operation of bird scarers, odour and night harvesting. Mineral extraction and intensive farming are also expected in the Rural</li> </ul>	<ul style="list-style-type: none"> <li>▪ Parent lot at least 20ha and               <ul style="list-style-type: none"> <li>– Every child certificate of title has a minimum net site area of 8000m<sup>2</sup> and a maximum of 1.6ha, except for an access allotment or a utility allotment, and</li> <li>– no more than one certificate of title produced by the subdivision has an area greater than 1.6ha, and</li> <li>– a utility allotment for a network utility does not exceed 50m<sup>2</sup>.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Subdivision layout.</li> <li>▪ Rural character.</li> <li>▪ Subdivision layout supporting the efficient use of soils.</li> <li>▪ Potential for reverse sensitivity.</li> <li>▪ Dimensions, shapes and orientation of certificate of title.</li> <li>▪ Effects on runoff rate and water quality.</li> <li>▪ Amenity and visual values.</li> </ul>

<sup>199</sup> Key site areas have been summarised



		Zone, subject to resource consent. Residential development is kept away from these activities, to avoid reverse sensitivity issues.		
	Country Living Zone	<ul style="list-style-type: none"> <li>▪ The Country Living Zone provides for low density living at specific locations in rural areas.</li> <li>▪ Rules seek to manage activities to maintain a high standard of amenity.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 5000m<sup>2</sup> net site area.</li> <li>▪ Every allotment in the Tamahere Country Living Zone other than a utility allotment, has sufficient site area to allow stormwater from a 700m<sup>2</sup> impervious surface to be disposed of on site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Shape, location and orientation.</li> <li>▪ matters referred to in Appendix B: (Engineering Standards).</li> <li>▪ Amenity and streetscape.</li> <li>▪ Vehicle and pedestrian networks.</li> <li>▪ Effects on Hauraki Gulf Catchment area.</li> <li>▪ Matters referred to in Appendix M Acoustic Insulation, M4 Airport Noise Outer Control.</li> <li>▪ Boundary Consent Notice.</li> <li>▪ Reverse sensitivity.</li> </ul>
Tairāwhiti Resource Management Plan (Gisborne District Council)	Rural Productive Zone	<ul style="list-style-type: none"> <li>▪ Enable subdivision, use and development in all rural zones provided that adverse environmental effects can be avoided, remedied or mitigated.</li> <li>▪ Maintain rural amenity values.</li> <li>▪ Sustainable management of the life supporting capacity of the soils on the Poverty Bay Flats.</li> <li>▪ Enable peri-urban living in appropriate areas, and at densities where the adverse effects of this activity can be avoided, remedied or mitigated.</li> <li>▪ Locate structures and plant trees in such a manner as not to cause adverse environmental effects across property boundaries.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minimum Net Site Area – 8 hectares.</li> <li>▪ Shape Factor and Road Frontage Requirements - Every site shall be capable of containing a rectangle of 100m x 200m.</li> <li>▪ In Rural Productive and Rural Residential zones where an existing site used for farming purposes is occupied by more than one dwelling-house erected prior to 31 March 1987, and any of those dwelling houses, excluding at least one to remain on the site, is no longer required for farming the site, a new site may be created notwithstanding that the site does not meet the requirements in Figure C10.1, but subject to compliance with the following:</li> </ul>	<ul style="list-style-type: none"> <li>▪ Suitability of building platform;</li> <li>▪ Suitability of Infrastructure works and services;</li> <li>▪ The extent to which the amenity values of the surrounding areas are affected;</li> <li>▪ Financial contributions;</li> <li>▪ Any adverse effects of exotic flora and fauna on values identified in the overlays of Chapter 4 – Natural Heritage (excluding the Coastal Environment Overlay and Protection Management Area Overlay);</li> <li>▪ Amenity values;</li> <li>▪ Site function;</li> <li>▪ Access;</li> <li>▪ Health and Safety;</li> </ul>

			<ul style="list-style-type: none"> <li>- minimum area - 1000m<sup>2</sup>,</li> <li>- maximum area - 2000m<sup>2</sup></li> <li>- maximum shape factor and road frontage requirement. Every site shall be of such a shape as to contain a rectangle 13m x 18m without encroachment on to any yard,</li> <li>- the new boundaries of the site to be created are to be so located as to ensure that the existing buildings conform with the requirements of the Plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Effects on existing rural activities;</li> <li>▪ Any consequential impacts on network utility services.</li> </ul>
	<p>Rural Residential Zone</p>	<ul style="list-style-type: none"> <li>▪ To provide for peri-urban development on the fringes of the Gisborne Urban Area and the fringes of the rural townships, where the adverse effects of this activity can be avoided, remedied or mitigated.</li> <li>▪ To preserve areas on the fringes of the Gisborne Urban Area where sustainable quality future residential development may be appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minimum Net Site Area – 1 hectare</li> <li>▪ Shape Factor and Road Frontage Requirements - Every site shall be capable of containing a rectangle of 50m x 80m.</li> <li>▪ In Rural Productive and Rural Residential zones where an existing site used for farming purposes is occupied by more than one dwelling-house erected prior to 31 March 1987, and any of those dwelling houses, excluding at least one to remain on the site, is no longer required for farming the site, a new site may be created notwithstanding that the site does not meet the requirements in Figure C10.1, but subject to compliance with the following: <ul style="list-style-type: none"> <li>- minimum area - 1000m<sup>2</sup>,</li> <li>- maximum area - 2000m<sup>2</sup>,</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Suitability of building platform;</li> <li>▪ Suitability of infrastructure, works and services;</li> <li>▪ The extent to which the amenity values of the surrounding areas are affected;</li> <li>▪ Financial contributions;</li> <li>▪ Any adverse effects of exotic flora and fauna on values identified in the overlays of Chapter 4 – Natural Heritage (excluding the Coastal Environment Overlay and Protection Management Area Overlay);</li> <li>▪ Amenity values;</li> <li>▪ Site function;</li> <li>▪ Access;</li> <li>▪ Health and Safety;</li> <li>▪ Effects on existing rural activities;</li> <li>▪ Any consequential impacts on network utility services.</li> </ul>

			<ul style="list-style-type: none"> <li>- maximum shape factor and road frontage requirement. Every site shall be of such a shape as to contain a rectangle 13m x 18m without encroachment on to any yard,</li> <li>- the new boundaries of the site to be created are to be so located as to ensure that the existing buildings conform with the requirements of the Plan.</li> </ul>	
	Rural Lifestyle Zone	<ul style="list-style-type: none"> <li>▪ To provide for a variety of scales of rural living, whilst sustainably managing the physical constraints within the peri-urban environment.</li> <li>▪ To provide for quality peri-urban development in areas where sites are already generally below one hectare as at 25 March 2000.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Minimum Net Site Area: <ul style="list-style-type: none"> <li>- Glenelg Corner &amp; Nelson Road – 5000m<sup>2</sup>.</li> <li>- Rural Lifestyle (Rest of Rural Lifestyle Zone) - 5000m<sup>2</sup> or Existing sites held as separate Certificates of Title as at 1 October 1982 and comprising less than 1 hectare may be subdivided once only to create one new allotment and a balance allotment each comprising at least 2000m<sup>2</sup>.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Suitability of building platform;</li> <li>▪ Suitability of infrastructure, works and services;</li> <li>▪ The extent to which the amenity values of the surrounding areas are affected;</li> <li>▪ Financial contributions;</li> <li>▪ Any adverse effects of exotic flora and fauna on values identified in the overlays of Chapter 4 – Natural Heritage (excluding the Coastal Environment Overlay and Protection Management Area Overlay);</li> <li>▪ Amenity values;</li> <li>▪ Site function;</li> <li>▪ Access;</li> <li>▪ Health and Safety;</li> <li>▪ Effects on existing rural activities;</li> <li>▪ Any consequential impacts on network utility services;</li> <li>▪ In respect of any subdivision in the Rural Lifestyle Zone (Nelson Road) Council may exercise control over the</li> </ul>

				reverse sensitivity effects of any rural lifestyle development in respect of any lawfully established agricultural activities and dog pound and cattery activities. This control may include the use of anti-complaint instruments and the requirement of planting trees acting as a buffer.
Selwyn District Plan	N/A Rural Volume	N/A	<ul style="list-style-type: none"> <li>▪ Existing Development Areas 2000m<sup>2</sup> - 1.9ha.</li> <li>▪ Other Areas: <ul style="list-style-type: none"> <li>– Port Hills (Lower Slopes) 40ha.</li> <li>– Port Hills Upper Slopes 100ha.</li> <li>– Inner Plains 4ha.</li> <li>– Outer Plains 20ha.</li> <li>– Malvern Hills 20ha.</li> <li>– High Country -120ha.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Allotment shape;</li> <li>▪ Servicing and utilities;</li> <li>▪ Reverse sensitivity effects on the existing intensive livestock production activity;</li> <li>▪ The effectiveness of any proposed mitigation measures to address potential reverse sensitivity effects.</li> </ul>
	Township Volume – Rural Residential Areas (Living 3 Zoning)		<ul style="list-style-type: none"> <li>▪ The Plan provisions provide for a range of section sizes in Living zones by having an average lot size, not a minimum.</li> <li>▪ Huge variance in lot sizes.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Access;</li> <li>▪ Servicing and utilities;</li> <li>▪ Natural hazards;</li> <li>▪ Allotment shape;</li> <li>▪ Rural character;</li> <li>▪ Density that delivers rural residential character, form and function.</li> </ul>

