

Rural Subdivision in the Waikato District

An analysis of the economic consequences resulting from rural subdivision, especially those associated with the decline in primary productivity within the subdivision and across the district.

Report prepared by Professor Frank Scrimgeour

23 August 2020



Rural Subdivision in the Waikato District

1. Introduction

My full name is Francis Gordon Scrimgeour. I hold a Bachelor of Agricultural Science with 1st Class Honours from Lincoln College (1977) and a PhD from the University of Hawaii at Manoa (1989). I am a Professor of Economics at Waikato University. I am also Head of the School of Accounting, Finance and Economics. Since 1997, I have held leadership positions at the University as a Chairperson of Department, Associate Dean, Dean, Director and Head of School while maintaining an active programme of research.

The focus of my research is on the economics of agriculture, economics of the environment, regional economics and financial economics. During the last 30 years, I have regularly completed commissioned research reports for international agencies, Government Departments, Local and Regional Government, private sector firms and industry organisations.

I am the Editor-in-chief for the *Australian Journal of Agricultural and Resource Economics* (2017-2020) and a former Editor of *New Zealand Economic Papers* (1998-2001). I am a past President and Life Member of both the New Zealand Agricultural and Resource Economics Society and The New Zealand Association of Economists. I am a Fellow of the Modelling and Simulation Society of Australia and New Zealand. I am a Distinguished Fellow of the Australasian Agricultural and Resource Economics Society.

I am a regular referee of research papers for leading economics journals. I have participated in panels to review business school research across Asia, Europe and the Americas. I have reviewed research programmes for MBIE and Crown Research Institutes.

I confirm that I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014 and that I have complied with it when preparing this report. Other than when I state that I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

WDC is working through a process to establish a new Waikato District Plan. One consideration is subdivision in rural zones. This paper provides economic analysis and reflection on matters relevant in plan development.

The paper reviews the publicly available information that informs this decision process and provides analysis of alternative regulations. It should be read in conjunction with complementary reports. It focuses on assessing the potential for losses in district productivity associated with subdivision and the potential for adverse effects in the agricultural and related sectors. The report consists of 7 sections, 5 sections of analysis and a conclusion.

When considering rural subdivisions a large number of issues should be considered if the Plan is to be both built on learning from the past and provide a robust foundation for the future.

Subdivision aspirations have evolved as a result of changing pressures. A history of development has revealed diverse opportunities for development and alternative ways of development. Social preferences have evolved in response to new technologies and changing values. The evolving legal context brings new perspectives, processes and requirements for subdivision planning. The experience of land owners, property professionals, Council officers, and citizens all provides rich insight to inform Plan development. There is opportunity for learning from the experiences over the life of the last Plan, especially through planning processes.

The paper reviews the publicly available information that informs this decision process and provides analysis of alternative regulations.

This report focuses on potential losses associated with subdivision if the District Plan is less than optimal. The report is particularly concerned to assess the potential for losses in district productivity associated with subdivision and the potential for adverse effects in the agricultural and related sectors. Avoiding the loss of productive land though loss of high quality soils and or, inappropriate parcel size, or access constraints is important. Further, there are additional challenges associated with: landscape and rural character effects; population density and location (reverse sensitivity effects); travel and transport. Plan subdivision rules impact on the land owners (and future owners), neighbours, and the wider community.

This analysis should not be read in isolation. It should be read in conjunction with complementary reports such as those from Dr Doug Fairgray and Dr Reece Hill and the associated planning reports including the Section 32 analysis.

2. Introduction to the Rural Zone and the Practice of Subdivision

The Waikato District Rural zone is the site of a range of distinctive rural activities. Waikato rural land is used for pastoral farming where the main farming use is the grazing of livestock; dairying farming; lifestyle land uses with titles of variable size, but larger than an ordinary residential allotment; forestry; horticultural activities such as orchards, market gardening, and glass houses; specialist livestock operations; mining and/or other mineral extraction; operation of utilities; residential land; industrial; and commercial uses.

In developing an appropriate District Plan it is appropriate to recognise the nature of the rural zone and the practice of subdivision. In establishing this local decision context it is important to appreciate the purpose of the zone and understand its significance. These characteristics can be compared with those of other zones in Waikato District. It is also important to understand the process of subdivision, key variables driving the activity, and associated timelines and impacts.

The purpose of the rural zone is to sustain productive rural communities and activities. The proposed District Plan states Objective 5.1.1 is the strategic objective for the rural environment and has primacy over all other objectives in Chapter 5. 5.1.1 Objective states “(a) Subdivision, use and development within the rural environment where:

- (i) high class soils are protected for productive rural activities;
- (ii) productive rural activities are supported, while maintaining or enhancing the rural environment; and
- (iii) urban subdivision, use and development in the rural environment is avoided.”

The rural zone is of major significance to Waikato District. The rural zone is important in that it includes approximately 95% of Waikato District land area and 53% of Waikato District titles (See Table 1). This land has an estimated value of \$12.8b at June 2020 and generates annual revenue of \$833m to the District. It is the home of significant agricultural, horticultural and forest activity. This income sustains input expenditures, consumption expenditure and investment expenditure in the region and provides a platform that underpins significant manufacturing and service activity in the District and the upper North Island.

The rural zone is complementary to other zones in the District. The diversity of zones in Waikato District can be seen with zones for Business, Business Town Centre, Heavy Industrial, Residential and Reserves which are clearly activities that are appropriate to separate from rural zone activities. However, it is important to note the Village zone and the Country Living zone provide opportunities for rural living without compromising the rural zone.

The existence of zones reduces economic and social externalities and provides synergies through complementary economic and social activities that are near but not too close.

The Waikato District is home to significant areas of high quality soils. Soil surveys show that 48% of titles are partly or fully covered with high class soils, with 12% being fully covered with high class soils. These soils are spread across the District as shown in Figure 8. They are important because they are the most productive and versatile soils, comprising of Land Use Capability classes 1-3.

It is important to recognise the Waikato District is already highly fragmented (see Figures 1 & 2). The large number of rural titles can be seen in Figure 3. This shows the number of titles has continued to grow over the last 23 years. Of those issued before 6 December 1997 74% are less than 20 ha and of those issued after 6 December 1997 82% are less than 20 ha. Further, as Figures 4 and 5 show they are distributed widely throughout the District.

This pattern of fragmentation has occurred across the District including land that was part of the former Franklin District Council and land that was not part of the Waikato District Council.

Zoning and subdivision rules are further complicated by other factors such as unique environmental features and urban expansion pressures. The planning challenge is defining policies and rules that enable opportunities that potentially add investment to the District while not adversely impacting rural production, the rural environment and landscape. Both Auckland City and Hamilton population growth results in demand for country living opportunities which can potentially occur in country living or rural zones. Further, lifestyle opportunities such as associated with the lakes, waterways or other environmental features may attract potential land uses which do not easily fit with land utilisation for primary industry.

Zoning and subdivision rules must also fit with legislative requirements and associated policy statements. Section 11 of the Resource Management Act 1991 allows the subdivision of land where the subdivision:

- Is expressly allowed by a resource consent; or
- Does not contravene a national environmental standard or a district rule (including a rule in a proposed district plan if there is one); and
- Is shown on a survey plan deposited by the Registrar-General of Land or approved by the Chief Surveyor.

Within Waikato District, the District Plan must comply with National Policy Statements, The Waikato Regional Policy Statement, The Vision and Strategy for the Waikato River, Futureproof 2009 (collaborative planning regime across territorial authorities) and Iwi Management Plans.

3. The Recent History of Rural Subdivision in the Waikato

There has been considerable subdivision of rural land during the last two decades. Rural subdivision has resulted in an increase of 118% in the number of titles between 1997 and 2020 to a total of 16,679. The largest increase has been in titles of 0-10 ha (132%) and between 10 and 20 ha (123%). Since 1997 additional titles of greater than 20 ha size have totalled 1,628 being 18% of the additional titles.

Rural subdivision has mostly generated benefits for the landowner. Landowner gains from rural subdivision are inferred from the owner's willingness to pay the costs of subdivision. Some subdivisions are motivated by a rural land owner seeking to transfer land to new management whilst wishing to remain in the locality. Some are motivated by the potential to release capital. The increased value of the land is demonstrated by willingness to pay a price for small rural parcels that exceeds their value in traditional land uses.

Rural subdivision also results in costs to the community. Productive rural land that is converted to residential uses cannot ever be expected to be available for future production. This is of particular concern for high class soils. Subdivision also brings external parties to live in a rural zone whose preferences and expectations may not align with existing rural use activity. This is known as reverse sensitivity. Further, additional buildings and developments detract from rural character and amenity. Land fragmentation also leads to decreased

opportunities for rural production of appropriate scale. Dairy and sheep farm businesses currently occur on land areas that are larger than the average lot size. Dairy and sheep farm sizes reported in Council data suggest that many of these businesses comprise of more than one land title. With increased use of technology in agriculture and horticulture it is highly likely the optimal land area per business unit in the rural zone is likely to be larger, rather than smaller.

There are multiple drivers of rural land subdivision for rural lifestyle. Rural subdivision is motivated by land owners wanting to separate off a rural-residential title for personal use or to release capital. The market for subdivided lots is largely driven by the economic centres of Hamilton and Auckland. As these cities grow people seeking rural living options seek opportunities within the Waikato District.

4. Potential Goals for Regulation of Rural Subdivision

When considering potential regulation of rural subdivision it is appropriate to consider multiple goals and constraints.

Subdivision rules are about maximising social welfare over the long run. This requires consideration of what land may be subdivided and the requirements associated with subdivision of land. This implies it is appropriate for land to be in its most valued use. This suggests the policy challenge is to appropriately classify land into different zones – rural; country living etc; and maximise the value of the land within each zone. This may not maximise the value of each individual lot within the zone. A productive rural zone has well protected soils, access to minerals and other resources, the absence of reverse sensitivity effects, rural landscape and character. It is also necessary to ensure environmental practices that sustain or enhance the natural environment and land titles that are appropriate for rural business activity.

When seeking to determine a regulatory regime that approaches optimality it is appropriate to have a clear objective function. An appropriate objection function for a rural zone is to maximise the net benefits within the zone from productive activities and non-market value from zone activities plus the net effects of any external effects on other zones, less the net costs of the infrastructure and service costs to the Council less any other external effects on

infrastructure and the environment resulting from the associated land use and population associated with zone rules and regulations.

Explicit consideration of conflicts and trade-offs is appropriate when evaluating alternative subdivision regulations.

More restrictive subdivision rules reduces subdivision activity. This imposes losses on those who would have subdivided (the capital gain not achieved though land use change – representing gains from rural living) but provide benefits through the greater area of productive land; the greater productivity from that land; and the sustained rural landscape and character. The challenge is to estimate the magnitude of the trade-offs and identify the winners and the losers.

The number of titles with potential for subdivision is already constrained and these must be identified in any forecasts of future activity.

There are 18,457 rural titles in the district without any exclusions (379,288 ha). Removal of 792 duplicate titles leaves 17,665 titles (361,606 ha). There are a further 1,733 titles with ownership precluding subdivision leaving 15,932 titles (294,533 ha) potentially subdividable. Of these remaining titles, 734 titles (1,137.58 ha) are affected by overlays associated with aggregate extraction; Hamilton urban expansion or Huntly East Mine subsidence.

5. Potential Instruments for Regulation of Rural Subdivision and their Mechanism of Impact

Waikato District Council has a range of options for addressing rural subdivision within the District Plan. Waikato District can allow or disallow rural subdivision subject to the District Plan complying with the Resource Management Act, National Policy Statements and other higher order policies. The degree of restriction/permisiveness is in large measure a subjective value judgment informed by Council aspirations pertaining to economic, cultural and environmental outcomes and wellbeing predicated on predictions of likely land use and behavioural choices in response to specific plan rules.

A key variable for Councils is determining the minimum size of a title that can be subdivided.

The size of parent lot has a significant relationship to the size of the new lot. Suppose a 100 ha lot has a 5 ha lot subdivided off it the reduction in the parent lot size is 5%. If a 20 ha lot

has a 5 ha lot subdivided this is a 25% reduction in parent lot size and is more likely to constrain the potential use of the parent lot. Agriculture and horticulture are increasingly using larger areas of land, often with multiple titles as the basis of a business unit. Dairy farms in the Waikato average 126 ha according to DairyNZ (2020) and Waikato Sheep and Beef Farms average 367 ha according to Beef+LambNZ (2020).

Within the Waikato vegetable growers are leasing significant areas of land and within Bay of Plenty commercial enterprises are operating multiple orchards and some of them are aggregating ownership of the land titles.

Another important variable is the allowable size of any new title that has been subdivided from a parent title.

A subdivided lot in a rural area has potential to be used as a productive unit for agriculture, horticulture or some other productive rural land use. Alternatively it can be used for rural-residential lifestyle living but within a rural zone. If such a lot is too big it potentially results in underutilised land. If it is too small it can result in insufficient space for waste disposal and conflicts with the minimum size requirements for the country living zone (5,000m²).

Another instrument used in some circumstances is that of transferable development rights.

This approach is not considered further in this report for two reasons. Firstly, there needs to be an adequate area of land where there is potential for the development right to be transferred to. Secondly, preliminary analysis suggests that at best it will have a modest impact on the issue relative to the complexity of the process from the perspective of citizens and Council personnel.

6. Potential Outcomes from Alternative Regulatory Regimes

This analysis has considered the outcomes from a range of regulatory scenarios. The first scenario was to assume that regulations were left substantially as they are in the Waikato section of the District Plan (status quo) – with one regime across the district. The second scenario was to consider a regulatory regime with a larger parent size requirement (minimum 40 hectares) and a relatively flexible child lot size and the third scenario was to consider a regulatory regime with a larger parent size requirement (40 hectares) and a larger child lot size (5000m²). Other scenarios were considered but not reported.

Each scenario was evaluated against a common set of criteria. The criteria used to evaluate the alternative scenarios were: The number of new lots established; the impact on rural output; and the number of properties exposed to reverse sensitivity effects.

Scenario 1 - The status quo of 320 new small lots per year

This scenario has significant risks for the District. The status quo development path could result in an additional 3,520 lots in the District by 2030 encompassing 17,600 ha. At this rate 22% of existing titles in the zone would be subdivided. This has the potential to reduce gross primary industry revenue into the district by \$70.8m per annum and potentially have a negative impact twice that given a multiplier effect associated with expenditure on inputs and expenditure from wages and profits. Such a rate of subdivision would potentially increase District asset values for 3,520 land owners but this consumptive value from Rural-residential lifestyle living in a rural zone has modest impact on cash flows though the District assuming the residential type cash flows would occur whatever zone a given person lived in. The annual loss of revenue plus second round impacts from each new title comes close to equalling the value of employment of one median employee in the District.

Scenario 2 - A Parent lot requirement of 40 ha for subdivision

This scenario has potential benefits for the District but still has challenges associated with it. The scenario 2 development path could result in an additional 1,536 lots in the District by 2020 encompassing 7,620 ha. This results in fewer existing titles being subdivided due to the titles of less than 40 hectares being unable to subdivide. This still has the potential to reduce gross primary industry revenue into the district by \$33.5m per annum and potentially have a negative impact of twice that. This scenario also has the potential to increase District asset values but as with the status quo scenario it is not associated with significant additional financial flows.

Scenario 3 - The 40 hectare parent lot requirement with child lot constraints

The potential benefits for the District appears to be the largest with this scenario. The scenario 3 development path could result in an additional 1,075 lots in the District by 2020 encompassing 5,334 ha. This results in fewer existing titles being subdivided. This still has

the potential to reduce gross primary industry revenue into the district by \$23.4m and potentially have a negative impact of which is much larger. This scenario would potentially increase District asset values but with the status quo scenario it is not associated with significant additional financial flows.

Each scenario has implications for stakeholders. The impact of alternative scenarios on different stakeholders was identified as follows:

- All rural title holders gain from greater restrictions through less reverse sensitivity impacts on their operations and greater protection of landscape values.
- Potentially subdividing title holders lose out on the loss of capital gain from subdivision.
- Firms (and employees of firms) who supply inputs or purchase outputs gain from the greater restrictions subdivision.
- Rural residents may gain socially from higher rural population densities but it should be noted the majority of rural residents in the Waikato are located within a modest distance from towns, cities and service centres, unlike some more dispersed and isolated districts.
- Waikato District Council gains more revenue but experiences more costs by allowing subdivision in the rural zone. Further, rural subdivision does not sit comfortably with Council planning goals.
- Restrictions on parent lot size have a more predictable effect on the number of new lots created. It is harder to accurately determine the magnitude of the impact of child lot restrictions.
- Restrictions on subdivision potentially increases the value of those lots that are able to be subdivided and the value of existing and new lots in the country living zone.
- Unsatisfied demand for rural living due to restrictions on subdivision within the rural zone suggests the Council may wish to consider the capacity of the existing Country Living zone and the Village zone as to whether or not this should be expanded.

It is plausible that all scenarios are potentially similar in the environmental effects given that environmental policies and regulations should mitigate any risks associated with land use change.

There are a number of confounding factors and risk factors that suggest caution when interpreting these results. A number of exogenous factors have the potential to impact current

forecasts. Demand for rural-residential living may increase or decrease based on economic circumstances and policy changes in other territorial authority areas. Further, the demand for rural-residential living in the rural zone in part depends on the amount of alternative land available in the country living and village zones. A possible concern is that restrictions may in part move the demand for subdivision to properties of a larger size and potentially undesirable locations.

7. Conclusions

There is a compelling case for seeking to limit the subdivision in the rural zone of Waikato District. The current trajectory of rural subdivision within Waikato District is transforming rural character and landscapes within the zone. Unless there is planning changes the result will be the area of rural-residential living within the rural zone will exceed the area of dairy farm land. This is of itself not an issue but there is the challenge of approximately \$70m of direct revenue taken out of the rural zone and in excess of another \$70m of expenditures within the Waikato region.

The most effective way to limit subdivision within the rural zone is to place a higher minimum parent lot size to allow subdivision.

Restricting subdivision to parent titles of greater than 40 hectares substantially limits the number of potential subdivisions. This could halve the economic losses to the community but each new title created still reduces District income by nearly as much as one FTE employed in the economy.

Specifying size restriction on the lots created also reduces the potential for subdivision.

Restrictions on the size of new lots further slows subdivision and provides some benefits. However the benefits largely rate to the factors such as consistency of planning rules associated with people living in the rural zone.

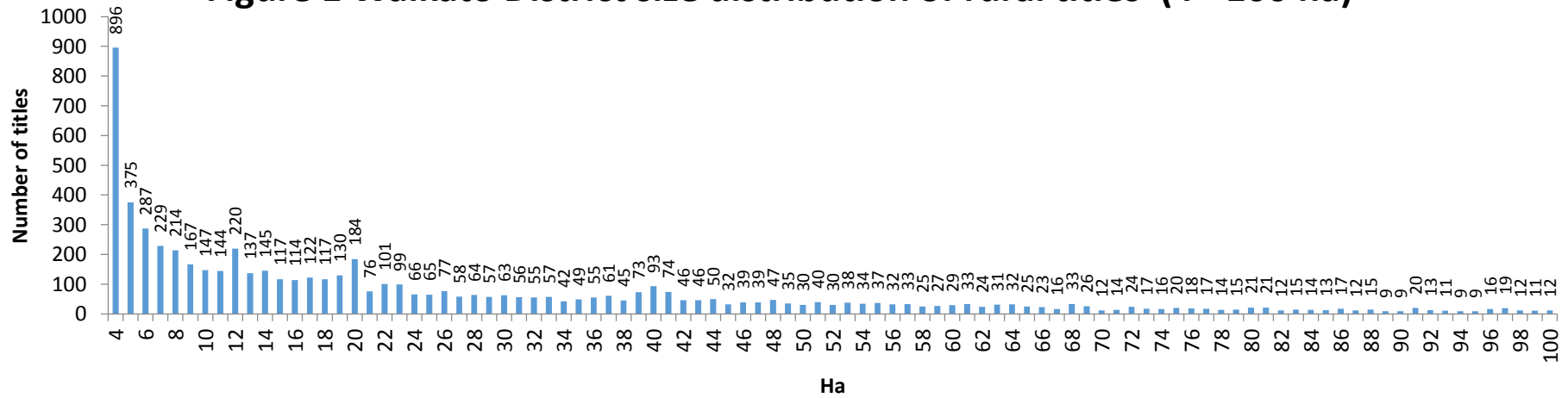
The enhancement of WDC information systems will improve analysis, forecasting and reporting. Enhanced information systems and data collection have the potential to enhance the efficiency of Council officers, planning processes and the analysis by researchers, land owners and other interested parties.

Table 1 Waikato District Council Zone Statistics

		Approx. area covered by zone (ha)	Approx. number of titles	Average size of titles (ha) ¹	Standard deviation of size of titles (ha)	Coefficient of variation	% of area	% of titles
	ZONES							
1	Business	118	372	0.32	1.33	4.2	0.0%	1%
2	Business Town Centre	35	356	0.10	0.23	2.4	0.0%	1%
3	Country Living	2,941	2,562	1.15	2.25	2.0	0.7%	7%
	Village	372	1,246	0.30	1.78	6.0	0.1%	4%
	Village 1000	341	134	2.54	6.03	2.4	0.1%	0%
5	Industrial	663	352	1.88	4.94	2.6	0.2%	1%
6	Heavy Industrial	216	27	8.02	14.79	1.8	0.1%	0%
7	Rural	379,288	18,457	20.55	69.24	3.4	95.3%	53%
8	Residential	2,421	10,925	0.22	1.82	8.2	0.6%	32%
9	Reserve	11,531	245	47.06	632.99	13.4	2.9%	1%
	Total	397,925	34,676				100.0%	100%

¹ Note: in some zones there are a number of tiny titles which may skew these numbers

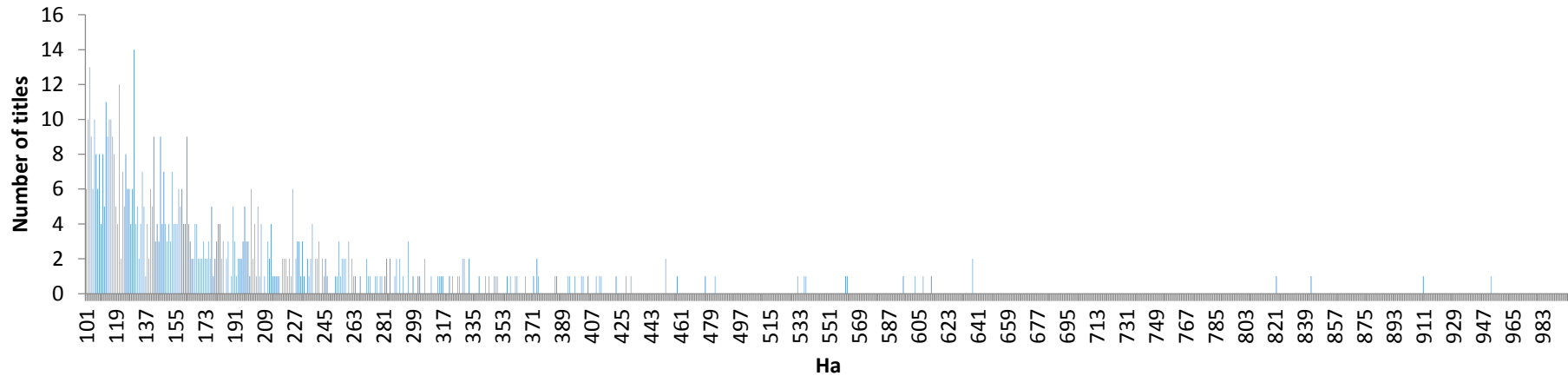
Figure 1 Waikato District size distribution of rural titles (4 - 100 ha)



Notes:

- Excludes the following :
 - Where Title estate description is *Minerals, Coal or Clay*
 - Where Title type is *Records Embodied in the Register, Supplementary Record Sheet, Gazette Notice, Life Estate or Unit*
 - Where Title type is *cross lease* and estate description *does not contain a flat or house*
 - DOC land (Reserve_DOC)
 - Maaori land (Parcel_Maori_prog)
 - Where Title owners are *Her Majesty the Queen, Council, or Land Information*
 - Where Title type is *leasehold* and owners are *BT Mining Limited, Genesis Energy Limited, Housing New Zealand limited, Spark New Zealand Trading Limited, Telecom Mobile Limited, Transpower New Zealand Limited or Vodaphone New Zealand Limited.*
- This is a snapshot of titles as at August 2019

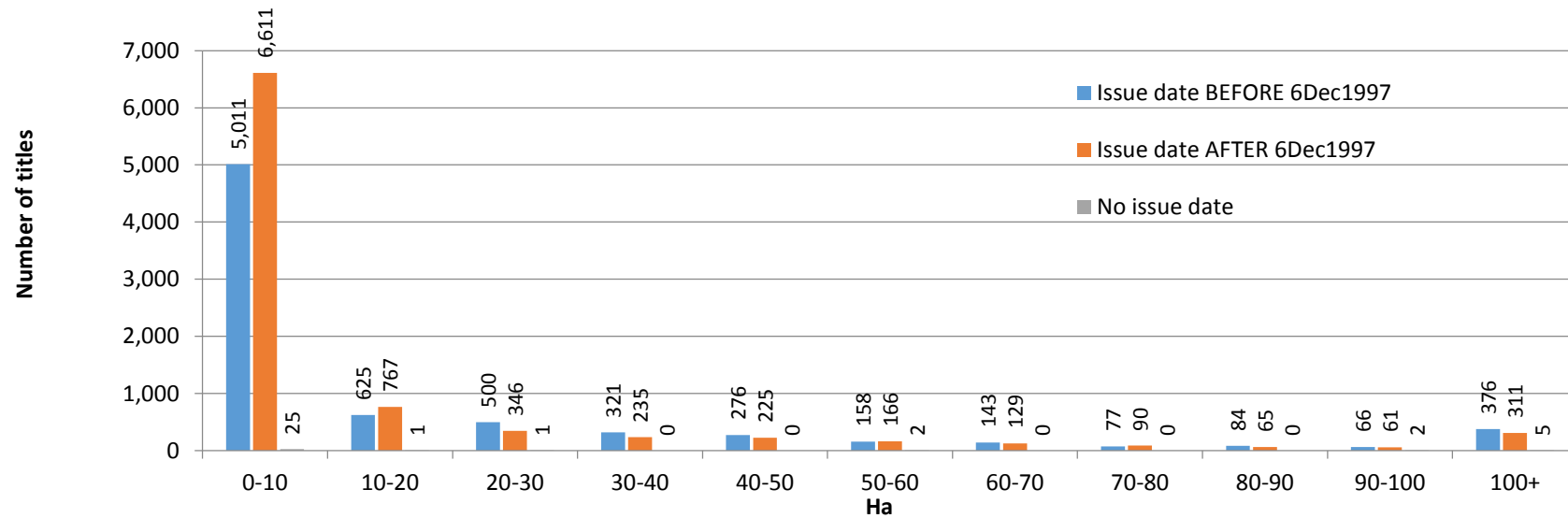
Figure 2 Waikato District size distribution of rural titles (101 - 1000+ ha)



Notes:

- Excludes the following :
 - Where Title estate description is *Minerals, Coal or Clay*
 - Where Title type is *Records Embodied in the Register, Supplementary Record Sheet, Gazette Notice, Life Estate or Unit*
 - Where Title type is *cross lease* and estate description *does not contain a flat or house*
 - DOC land (Reserve_DOC)
 - Maaori land (Parcel_Maori_prog)
 - Where Title owners are *Her Majesty the Queen, Council, or Land Information*
 - Where Title type is *leasehold* and owners are *BT Mining Limited, Genesis Energy Limited, Housing New Zealand limited, Spark New Zealand Trading Limited, Telecom Mobile Limited, Transpower New Zealand Limited or Vodaphone New Zealand Limited.*
- This is a snapshot of titles as at August 2019

**Figure 3: Waikato District rural titles by size and issue date
(not cumulative)**

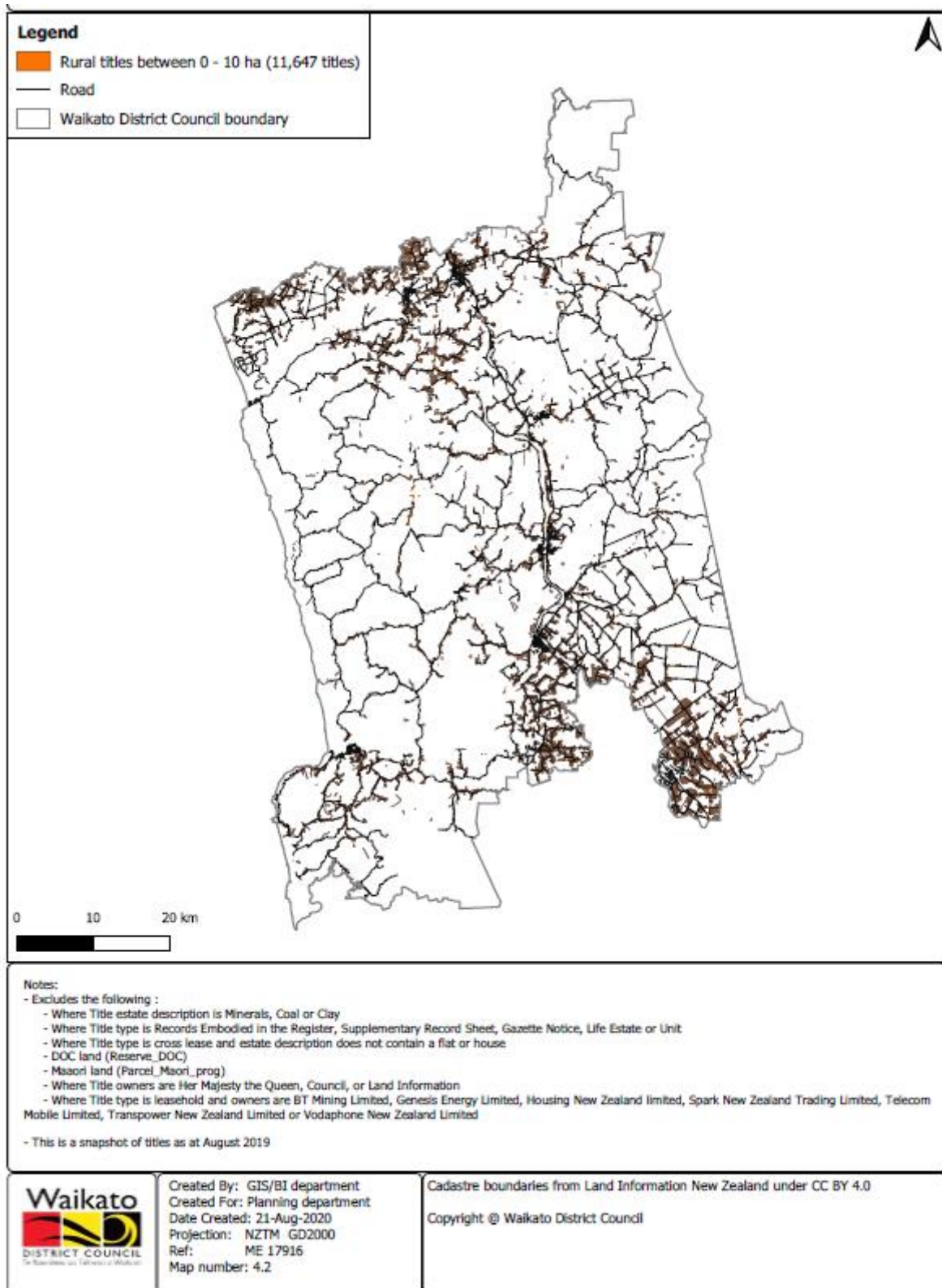


Notes:

- Excludes the following :
 - Where Title estate description is *Minerals, Coal or Clay*
 - Where Title type is *Records Embodied in the Register, Supplementary Record Sheet, Gazette Notice, Life Estate or Unit*
 - Where Title type is *cross lease* and estate description *does not contain a flat or house*
 - DOC land (Reserve_DOC)
 - Maaori land (Parcel_Maori_prog)
 - Where Title owners are *Her Majesty the Queen, Council, or Land Information*
 - Where Title type is *leasehold* and owners are *BT Mining Limited, Genesis Energy Limited, Housing New Zealand limited, Spark New Zealand Trading Limited, Telecom Mobile Limited, Transpower New Zealand Limited or Vodaphone New Zealand Limited.*

- This is a snapshot of titles as at August 2019

**Figure 4 Distribution of rural titles between 0 and 10ha
in proposed District Plan**



**Figure 5 Distribution of rural titles between 10 and 20 ha
in proposed District Plan**

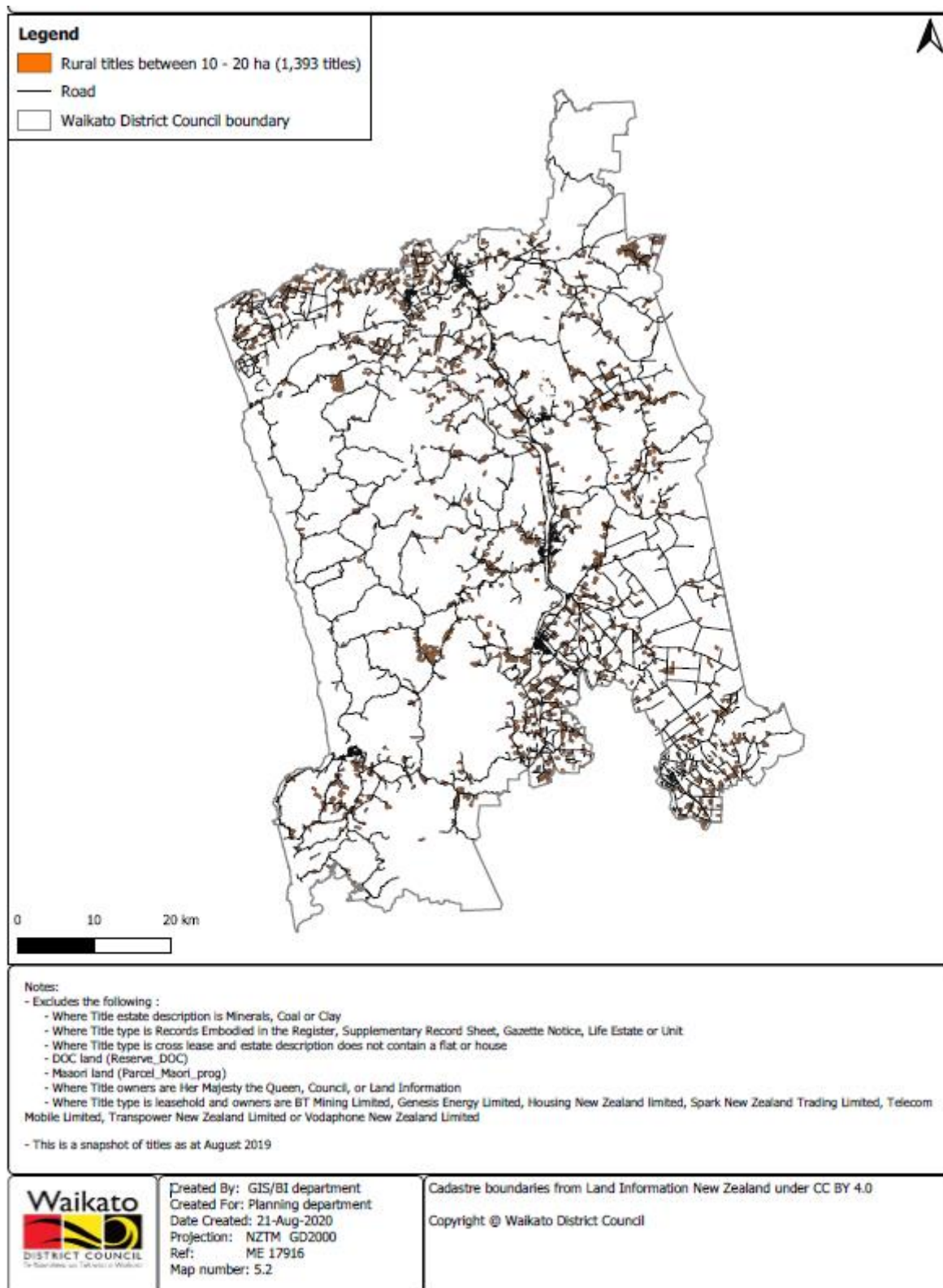
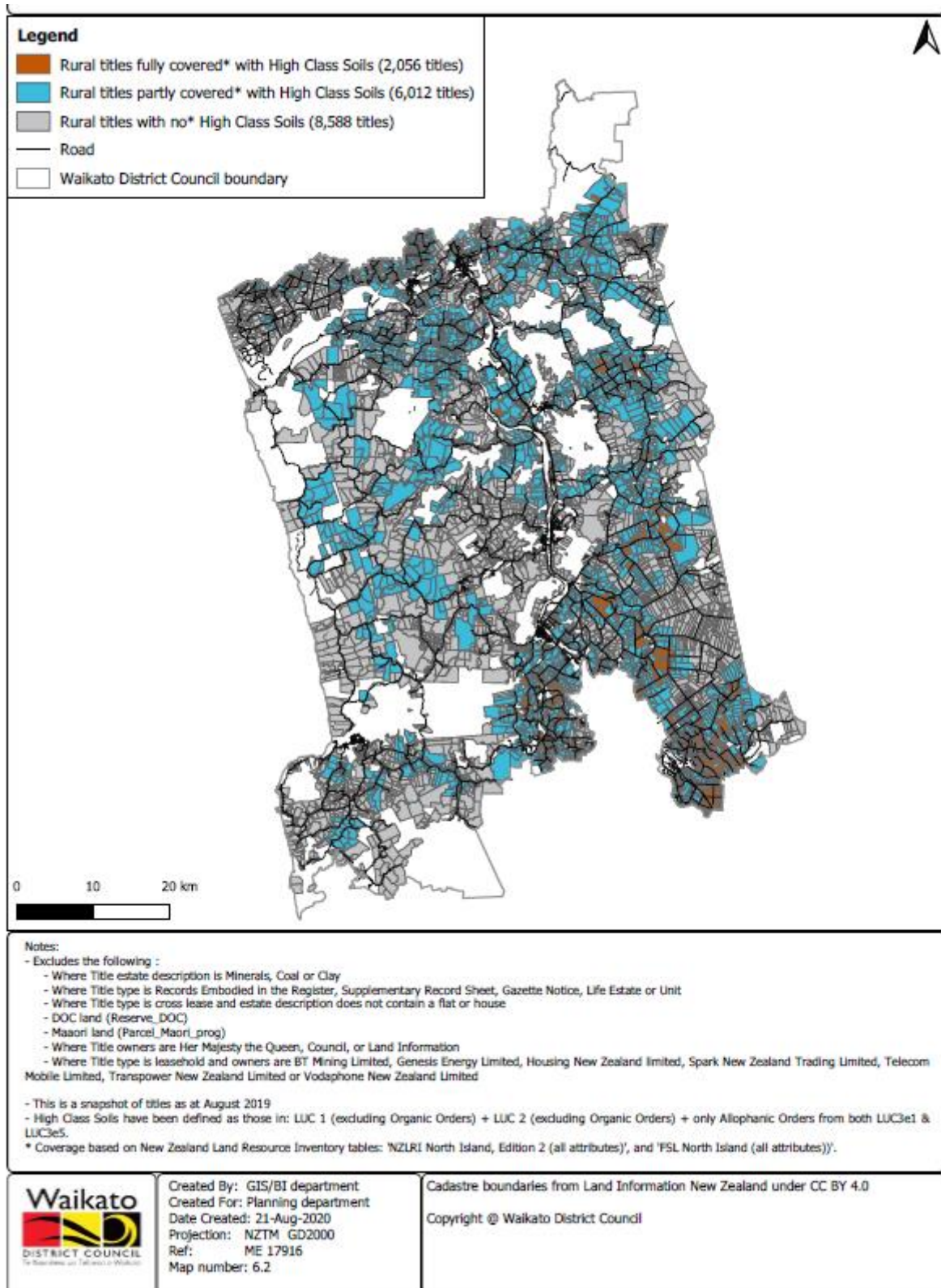


Figure 6 Waikato District Rural Titles containing High Class soils



**Table 2 Distance of new subdivisions from towns
in Waikato District**

Year	Average distance (km)
2006	5.07
2007	4.71
2008	5.74
2009	6.38
2010	7.10
2011	7.96
2012	9.39
2013	3.78
2014	9.03
2015	7.31
2016	7.09
2017	5.82
2018	8.03
2019	5.74
2020	6.51
Total	6.05

Appendix 1

Some key references considered when writing this report are referenced below.

Deaton, B. J., & Vyn, R. J. (2014). The effect of Ontario's greenbelt on the price of vacant farmland. *Canadian Journal of Agricultural Economics*, 63(2), 185–208.

Eagle, A. J., Eagle, D. E., Stobbe, T. E., & Kooten, G. C. (2014). (2014). Farmland protection and agricultural land values at the urban-rural fringe: British Columbia's agricultural land reserve. *American Journal of Agricultural Economics*, 97(1), 282.

Geniaux, G., Ay, J.-S., & Napoléone, C. (2011). A spatial hedonic approach on land use change anticipations. *Journal of Regional Science*, 51(5), 967–986.

Musgrave, W. (1986). Should agricultural land be protected from sub-division? – Economic considerations. *Review of Marketing and Agricultural Economics*, 54(3), 70–74.

Stobbe, T. E., Eagle, A. J., Cotteleer, G., & Kooten, G. C. V. (2011). Farmland Preservation Verdicts- Rezoning Agricultural Land in British Columbia. *Canadian Journal of Agricultural Economics*, 59(4), 555–572.

Vyn, R. J. (2012). Examining for evidence of the leapfrog effect in the context of strict agricultural zoning. *Land Economics*, 88(3), 457–477.

Vyn, R. J. (2014). The effect of agricultural zoning on rural residential property values: An application to Ontario's greenbelt. *Canadian Journal of Agricultural Economics*, 63(3), 281–307.