

# Upper Lakes Rohe Economic Snapshot

## Summary

The Upper Lakes Rohe (area) is one of the five Rohe within the Clutha/Mata-Au Freshwater Management Unit (FMU); it is located on the western boundary of the Otago Region and stretches to include the outlets of lakes Wakatipu, Wānaka and Hāwea. This area generally has four distinct seasons with a continental-style climate. The Upper Lakes Rohe also comprises a large part of Mt Aspiring National Park.

While policies might be designed and applied specifically to the Upper Lakes Rohe, the impact of policies are not limited to the Rohe boundary and may be felt beyond the area where they apply. Hence the Upper Lakes and the neighbouring Dunstan Rohe are combined when presenting socio-economic information.

An understanding of Māori history and Māori economy is essential for policy development and policy impact assessment. Not only does pre-European Māori history help shape modern day New Zealand, but the Māori economy is also integral to the New Zealand economic system. ORC is cooperating with Aukaha<sup>1</sup> to develop a comprehensive overview of Kāi Tahu history and economy. This work will be included in the policy impact assessment.

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1. Aukaha is 'a Rūnaka based consultancy service with Governance from our five Rūnaka owners: Te Rūnanga o Waihao, Te Rūnanga o Moeraki, Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Ōtākou, Hokonui Rūnanga'  
<https://aukaha.co.nz/about/>



*Image 1. Upper Lakes Rohe*

The local communities and the economy in the Upper Lakes and Dunstan Rohe are especially reliant on water resources. The most populated towns in this Rohe are built around the lakes. Tourism, the most important industry sector in the Rohe, relies on fresh water in some way or form (including snow, which is essential for the ski resorts operating in the Rohe). Agricultural activities, mainly drystock (incl. deer and with little/no dairy in the Upper Lakes Rohe) and horticulture/viticulture operations, are dependent on freshwater supplies.

In 2018, the Upper Lakes Rohe and Dunstan Rohe were home to around 47,400 residents (21% of Otago's population). In the previous 12 years, the population in these Rohe increased by 19,300 people (or 69%) from 28,000 residents in 2006. This rapid population growth is putting increasing pressure on water use (water takes and discharges of pollutants or contaminants) and its infrastructure.

Overall, these Rohe have relatively low social deprivation<sup>2</sup>, when considering factors such as income, home ownership, employment, access to transport and communications, and access to internet. Compared with other parts of Otago, more people in these Rohe have higher formal qualifications (Bachelors' degree and above) and earn higher personal income (above \$70,000 per annum).

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<sup>2</sup> The scores are calculated based on 2018 Census information.

## Geography and Climate

The Upper Lakes Rohe<sup>3</sup> (area) is one of the five Rohe within the Clutha/Mata-Au Freshwater Management Unit (FMU)<sup>4</sup>, is located on the western boundary of Otago Region and stretches to include the outlets of lakes Wakatipu, Wānaka and Hāwea; the catchments in the Rohe include the Greenstone, Dart, Rees, Makarora, Matukituki and Hunter Rivers, along with many smaller tributaries (e.g., Bullock Creek, Minaret Burn, Timaru River and the Von and Lochy Rivers)<sup>5</sup>. The Rohe also comprises a large part of Mt Aspiring National Park, which is part of Te Wāhipounamu<sup>6</sup>. Figure 1 below shows the Upper Lakes Rohe with its major water bodies and topography.



Figure 1. Map of the Upper Lakes Rohe

<sup>3</sup> 'An Rohe is a water body or multiple water bodies that ORC believe is the appropriate scale for managing water, including the setting of freshwater objectives and limits. This can be a river catchment, part of a catchment, or a group of catchments.' <https://www.orc.govt.nz/plans-policies-reports/regional-plans-and-policies/water/freshwater-management-units>

<sup>4</sup> 'An FMU is a water body or multiple water bodies that ORC believe is the appropriate scale for managing water, including the setting of freshwater objectives and limits. This can be a river catchment, part of a catchment, or a group of catchments.' <https://www.orc.govt.nz/plans-policies-reports/regional-plans-and-policies/water/freshwater-management-units>

<sup>5</sup> <https://www.orc.govt.nz/media/9239/final-catlins-fmu-snapshot.pdf>

<sup>6</sup> 'Known to the original Māori inhabitants as Te Wāi Pounamu – the greenstone waters, the 2.6 million hectare site covers almost 10% of New Zealand's total land area. It encompasses four national parks: Westland Tai Poutini, Aoraki/Mount Cook, Mount Aspiring and Fiordland.' <https://www.doc.govt.nz/te-wahipounamu>

In total, the Upper Lakes Rohe has a land area of around 701,000 hectares (or 22% of the Otago region). It is the largest Rohe by land area out of the five Rohe in the Clutha FMU, and also larger than the other four FMUs in Otago.

Due to its inland location, the Upper Lakes Rohe has four distinct seasons with a continental-style climate<sup>7</sup>. During the summer the days are long and hot and during the winter the days are cool and short. This part of Otago typically records more days with a maximum air temperature above 25°C and a minimum temperature below 0°C than Coastal Otago<sup>8</sup>.

The annual rainfall for Upper Lakes Rohe tends to be more evenly distributed throughout the year than the other parts of the Otago region. Queenstown receives around 750 mm rainfall per annum while Wānaka receives around 600 mm rainfall per annum<sup>7</sup>. On average, Queenstown has one dry spell<sup>9</sup> every six months, compared to one every three months in Alexandra (further east) or one every 13 months in Dunedin (Coastal Otago)<sup>7</sup>.

## Socio-economic Background

### Land use

Within the Upper Lakes Rohe, just under one third of the land is used for agriculture, the lowest proportion amongst the five Clutha Rohe and the lowest compared to the other four FMU in Otago. The agricultural land consists mostly of drystock properties; the land use map suggests that there is little to no dairy farming in the Upper Lakes while 43% of Otago's deer farming is in the Upper Lakes Rohe. There are roughly 380,000 hectares (more than half of the Rohe's land area) of public conservation land, the largest proportion amongst the five Rohe in the Clutha FMU and the other four FMUs in Otago. The urban areas cover around 17,000 hectares (2% of the Rohe). It is important to note that the extend of land use does not reflect the value created from or the number of jobs provided by the land use. Table 1 gives estimates of the extent of the main land use activities. Figure 2 below shows the distribution of these land uses within the Rohe.

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<sup>7</sup> <https://www.queenstownnz.co.nz/plan/seasons-and-weather/>

<sup>8</sup> <https://docs.niwa.co.nz/library/public/NIWAsts67.pdf>

<sup>9</sup> 'at least 15 consecutive days with less than 1 mm rainfall per day', <https://docs.niwa.co.nz/library/public/NIWAsts67.pdf>

Table 1. The extend of Land use in the Upper Lakes Rohe  
 Source: Otago Land Use Map (Great South, 2021)

<b>Land use in the Upper Lakes Rohe</b>	<b>Total land in this Rohe (ha)</b>	<b>Share of land use in this Rohe</b>	<b>Share of land use in Otago that is present in this Rohe</b>
<b>Total land use</b>	<b>701,209</b>	<b>100%</b>	<b>22%</b>
<b>Agriculture-use</b>	<b>223,568</b>	<b>32%</b>	<b>10%</b>
Sheep and beef	125,113	18%	10%
Mixed Livestock (incl. support)	60,888	9%	21%
Deer (incl. specialised and majority deer and mixed stock)	23,883	3%	43%
Other Agriculture use (incl. other animals and grazing pasture)	7,838	1%	8%
Beef	3,341	0%	8%
Sheep	2,223	0%	1%
Plantation Forest	199	0%	0%
Horticulture (incl. flower and bulb growers and nurseries, orchards, and vineyards)	83	0%	1%
Arable	0	0%	0%
Dairy (incl. support and Other livestock)	0	0%	0%
<b>Urban-use</b>	<b>17,453</b>	<b>2%</b>	<b>16%</b>
<b>Other (incl. conservation and nature)</b>	<b>460,188</b>	<b>66%</b>	<b>53%</b>

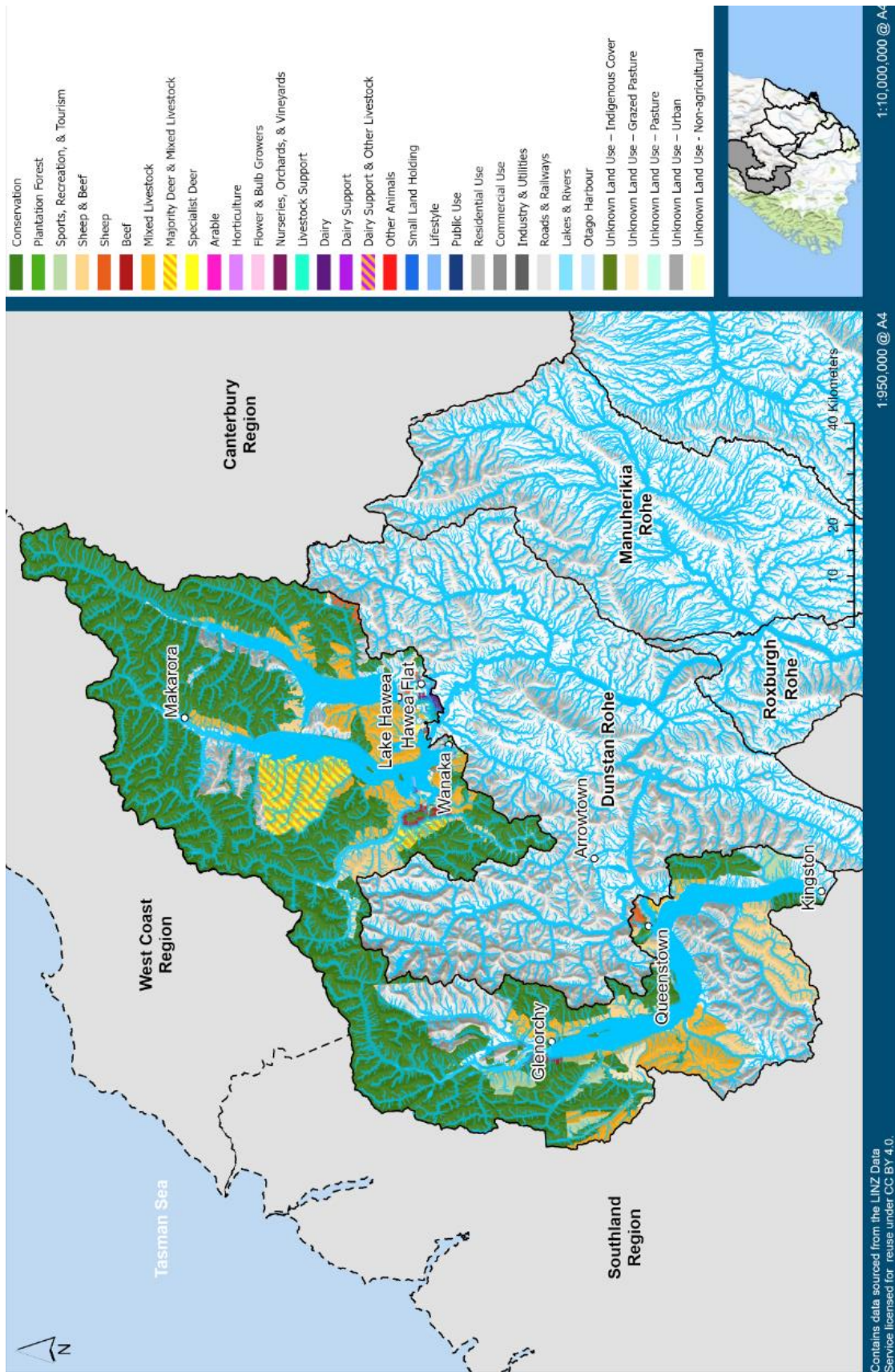


Figure 2. Land uses within the Upper Lakes Rohe  
 Source: Otago Land Use Map (Great south, 2021)

## The People and the Economy<sup>10</sup>

The Upper Lakes Rohe lies entirely within the Queenstown Lakes District. Some towns (e.g., Queenstown, Wānaka and Cardrona) are located on the border of the Upper Lakes Rohe and its neighbouring Dunstan Rohe, which lies partly in the Queenstown Lakes District and partly in the Central Otago District. Other towns (e.g., Arrowtown and Cromwell) are geographically in the Dunstan Rohe but are within 30 minutes driving distance to the Upper Lakes. Consequently, the economic impacts of policy for the Upper Lakes Rohe are not limited to the Rohe boundary and may be felt beyond the area where they apply. Hence the Upper Lakes and the Dunstan Rohe are combined for this analysis.

The Upper Lakes and Dunstan Rohe contain four large lakes – Lake Wakatipu, Lake Wānaka, Lake Hāwea and Lake Dunstan – and water resources are essential to local communities and the economy. The four most populous towns are located on the foreshores of these four lakes – Queenstown by Lake Wakatipu, Wānaka by Lake Wānaka, Crownwell by Lake Dunstan and Lake Hāwea by Lake Hāwea. Also in these Rohe are smaller towns of Lake Hāwea, Cardrona, Glenorchy, and Kingston, and surrounding rural areas of outer Wakatipu, outer Wānaka, Lindis-Nevis Valleys and Upper Clutha Valley.

As of 2018, there were approximately 47,400 residents in these Rohe (or 21% of the region), which was an increase of 19,300 people (or 69%) from 28,000 residents in 2006. This rapid population growth rate exceeded that of the Otago region (+16%), and New Zealand as a whole (+17%). It is putting increasing pressure on water use (water takes and discharges of pollutants or contaminants).



*Image 2. Lake Dunstan – artificial lake created by Clyde Dam*

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<sup>10</sup> Most data in this section are based on the 2018 NZ Census.

Both Queenstown and Wānaka are popular for their scenery and access to all-year round tourism activities. In the warmer months, tramping, mountain biking, fishing, jet boating, and wine-tasting are popular in the area; while during winter, the ski resorts in the areas (e.g., the Remarkable and Cardrona) attract both domestic and international visitors.

Cromwell, in the mid-1800s to the early-1900s, was a gold mining and pioneering town. Today, it is also known for its scenery and horticulture/viticulture industries. Fruit and wine exporting contributes to New Zealand’s and local economy; pick your own (PYO) fruit in the orchards and fruit stalls are popular with visitors. Arrowtown (2018 population 2,823) was also a historical mining settlement while attracting tourists today for its scenery, historical buildings and mining sites.

Figure 3 below shows, between 2006 and 2018, these Rohe experienced rapid population, particularly between 2013 and 2018. The populations of larger towns grew nearly 70% (or around 16,000 people); the smaller towns grew over 80% (or around 1,200 people); the population of rural areas also grew over 80% (or around 2,200 people).

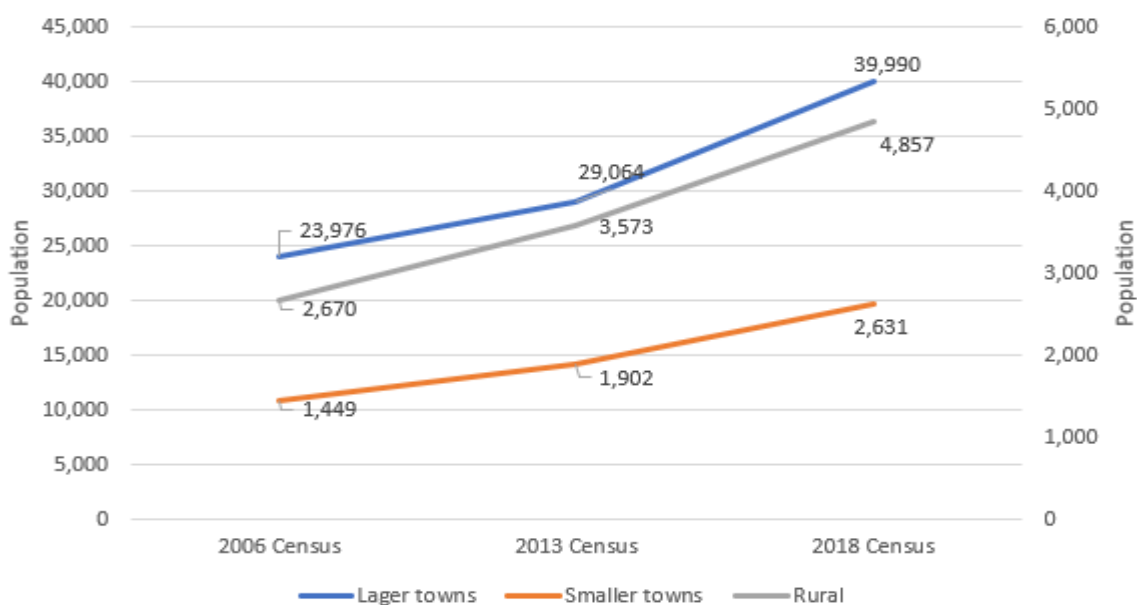


Figure 3. Upper Lakes and Dunstan Rohe population by selected group, 2006 – 2018  
 Source: Stats NZ Census 2018

Figure 4 below shows that, amongst the larger towns, Wānaka experienced the largest proportion of population growth (90%, or around 4,500 people) while Queenstown population grew the most in numbers (nearly 9,000 people or 70%). In smaller towns, Lake Hāwea experienced the most population growth by both percentage (more than double) and in numbers (around 650 people) while Arrowtown population grew the slowest proportionally (nearly 30% or 600 people). In rural area, Lindis-Nevis Valleys population more than doubled from 1,150 to 2,400 people while Outer Wānaka, population growth stabilised sitting at 290 people since 2013 after a 15% growth (from 250 to 290 people) between 2006 and 2013.



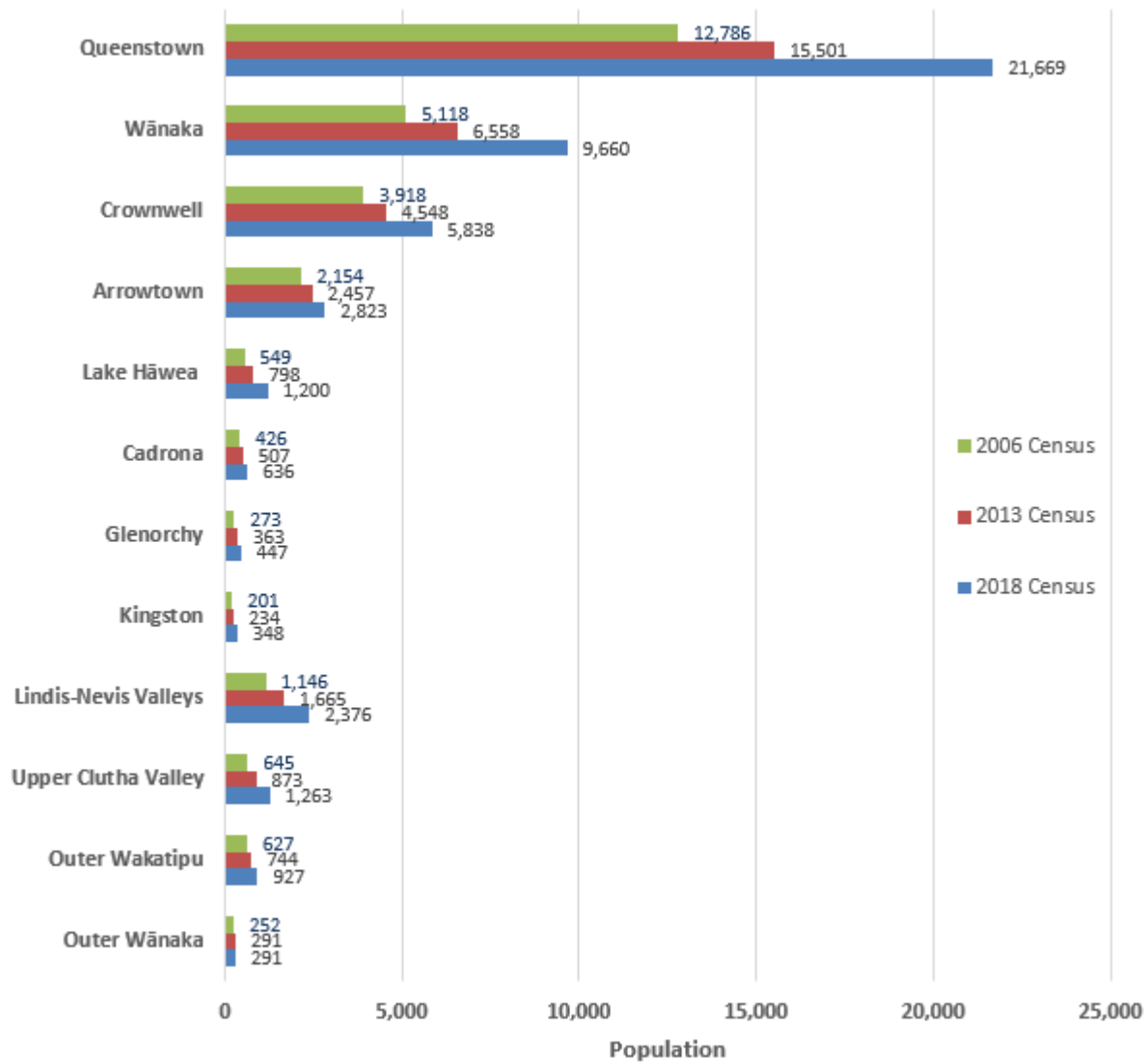


Figure 4. Upper Lakes and Dunstan Rohe population by towns and rural area, 2006 – 2018  
 Source: Stats NZ Census 2018

Overall, people who live in larger towns are younger, while those who live in the rest of the Rohe are slightly older. Figure 5 below shows that 40% of the larger town residents are under 30 years of age, compared to around 30% of people living in the smaller towns and rural area. Similarly, slightly higher proportion of 65 years and over population lives outside of the larger towns (12%) compared to smaller towns (13%) and rural area (14%).

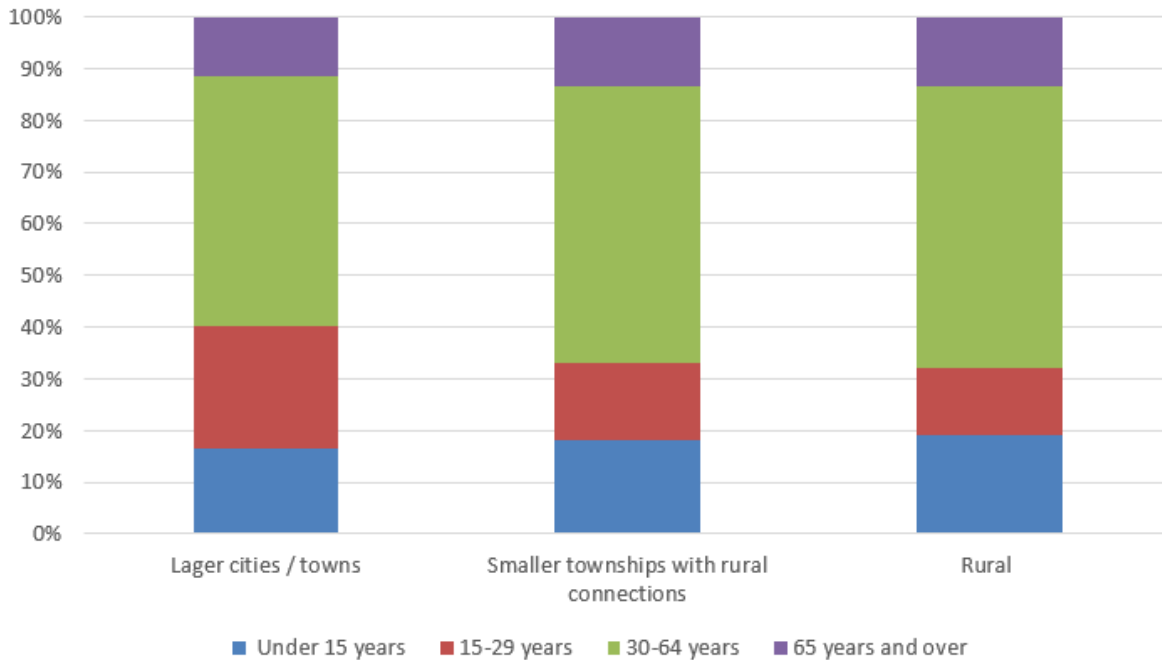


Figure 5. Upper Lakes and Dunstan Rohe population distribution by age group, 2018  
Source: Stats NZ Census 2018

As of 2018, 6% of the population in the Upper Lakes and Dunstan Rohe identified as Māori. This proportion has been relatively stable since at least 2006; it is also lower than the overall Māori population proportion in Otago (9%) in 2018. However, the Māori population share has been increasing steadily in Otago since 2006 (6%) and 2013 (7%).

People living in the Upper Lakes and Dunstan Rohe tend to move more often (both into and out of these Rohe) compared to Otago average. In 2018, 58% of the population in these Rohe were still living in the same residence as one year ago, which was lower than Otago average of 65% and also the lowest amongst all Rohe/FMUs in Otago. Around 5% of the population had arrived from overseas, which is two-thirds higher than the Otago average (3% overseas arrival).

The total business activity accounts for around 34,000 “jobs” (measured by employment counts, which does not include working proprietors<sup>11</sup>). In New Zealand 20% of all jobs are working proprietors<sup>12</sup>. In 2020, the largest industries by employment (using ANZSIC 2006<sup>13</sup>) in the Upper Lakes and Dunstan Rohe were tourism related sectors such as Accommodation and Food Services (23%) and Retail (12%). In addition, part of the Administrative Services (7%) and Building Construction (12%) are driven by tourism demand. Agriculture is also important (7%, and more than half of the employment is provided

<sup>11</sup> Employee Counts data are used by Stats NZ’s Business Frame. Employment Counts is a head count of salary and wage earners for a reference period. It includes most employees but does not capture all working proprietors – people who pay themselves a salary or wage (or ‘drawings’).

<sup>12</sup> 2019 numbers according to Stats NZ Linked employer-employee data  
<http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7240#>

<sup>13</sup> Australian and New Zealand Standard Industrial Classification (ANZSIC) was jointly developed by Statistics New Zealand and the Australian Bureau of Statistics. ANZSIC system classifies entities based on their main business activity and is used to collect and analyse data across industries. The 2006 edition is arranged into 19 broad industry divisions and 96 industry subdivisions.

for by the horticulture and viticulture sectors. Together, all these industries account for around two-thirds of employment in the Rohe.



*Image 3. Sunset sky at Queenstown port*

The working age (15 – 65 years) population in the Upper Lakes and Dunstan Rohe is likely to be earning a work-related income, or relatively more affluent. In 2018, 3% (990 people) in the Rohe had no source of income, which was less than the Otago average of 5%; and 8% (2990 people) were receiving some type of government benefit<sup>14</sup>, which was lower than the Otago average of 15%.

A lower proportion of the population in the Rohe receives pension income. In 2018, 15% (5,745 people) were receiving superannuation or veteran's pension, which was lower than the Otago average of 21%. Similarly, 1% (282 people) were receiving student allowance, which is lower than the Otago average of 4%. The Otago average is higher as the University of Otago is located in the Dunedin Coast FMU.

Figure 6 below shows that, compared with the Otago average, the Upper Lakes/Dunstan Rohe has higher proportion of the population with higher level formal qualification (bachelor's degrees and above). In addition, more people are in a higher personal income bracket (\$70,001 or more per annum) than Otago average.

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<sup>14</sup> The type of benefits includes ACC or private work accident insurer, job seeker, sole parent support, supported living payment, other govt benefits, govt income support payments, war pensions or paid parental leave, other sources of income including support payments from people who do not live in my household.

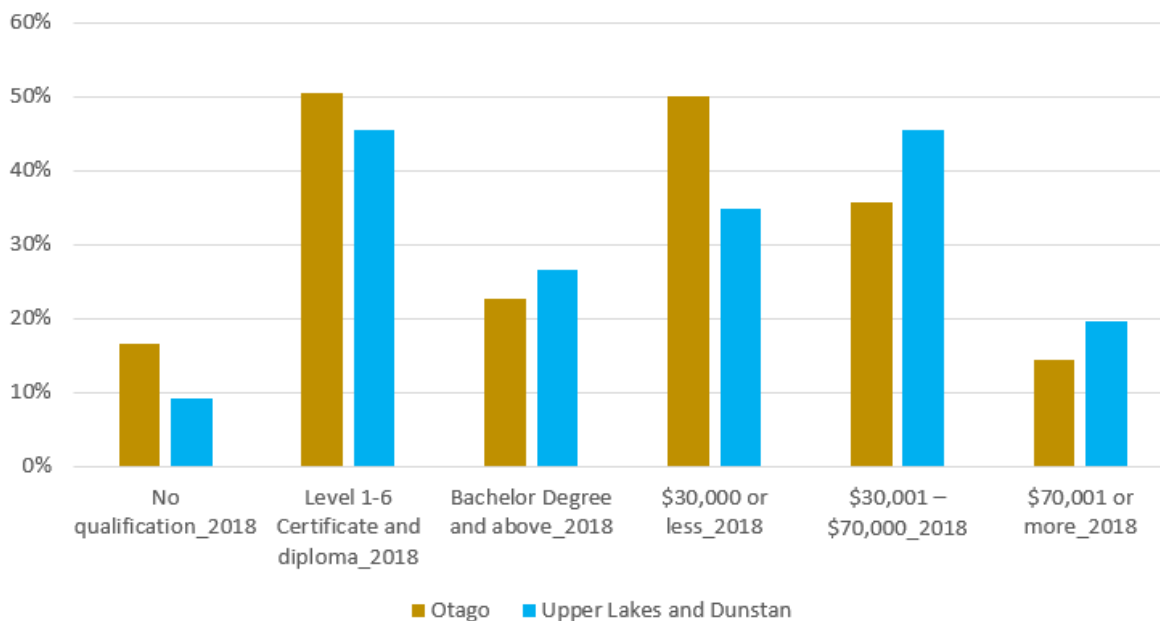


Figure 6. Academic qualification and personal annual income, Upper Lakes and Dunstan Rohe vs Otago average, 2018  
Source: Stats NZ Census 2018

University of Otago’s New Zealand Deprivation Index estimates the relative socio-economic deprivation of an area. The current version of the index is derived from 2018 census and combines census data relating to income, home ownership, employment, qualifications, family structure, housing, access to transport and communications, and access to internet<sup>15</sup>. In the Deprivation Index, decile 1 represents areas with the least deprived scores while decile 10 represents areas with the most deprived scores.

Figure 7 shows the relative deprivation in 2018 by Census Statistic Area 1 (SA1, which ideally ranges between 100 and 200 residents and a maximum of about 500)<sup>16</sup> in the Upper Lakes and Dunstan Rohe. The map only shows Census SA1 for agriculture and urban land developed land; conservation land and plantation forestry are shaded green because no communities are living in these areas.

Figure 7 along with figure 7.1-7.4 show that while the rural areas of the Upper Lakes and Dunstan Rohe generally have a deprivation score of 3 and below, the larger towns have more diverse outlook. For Queenstown (Figure 7.1), the central areas have deprivation scores between 6 and 8; Queenstown east areas have deprivation scores between 2 and 6; and most of the Warren park areas have deprivation scores of 6 or 7. For Wanaka (Figure 7.2), most areas have a deprivation score of 4 and under. For Cromwell (Figure 7.3), the deprivation scores vary between 1 and 6. The deprivation scores for most areas in Arrowtown (Figure 7.4) are 3 and below.

<sup>15</sup> <https://www.otago.ac.nz/wellington/departments/publichealth/otago830998.html>

<sup>16</sup> SA1s were introduced as part of the Statistical Standard for Geographic Areas 2018 (SSGA18); <https://www.stats.govt.nz/assets/Uploads/Retirement-of-archive-website-project-files/Methods/Statistical-standard-for-geographic-areas-2018/statistical-standard-for-geographic-areas-2018.pdf>

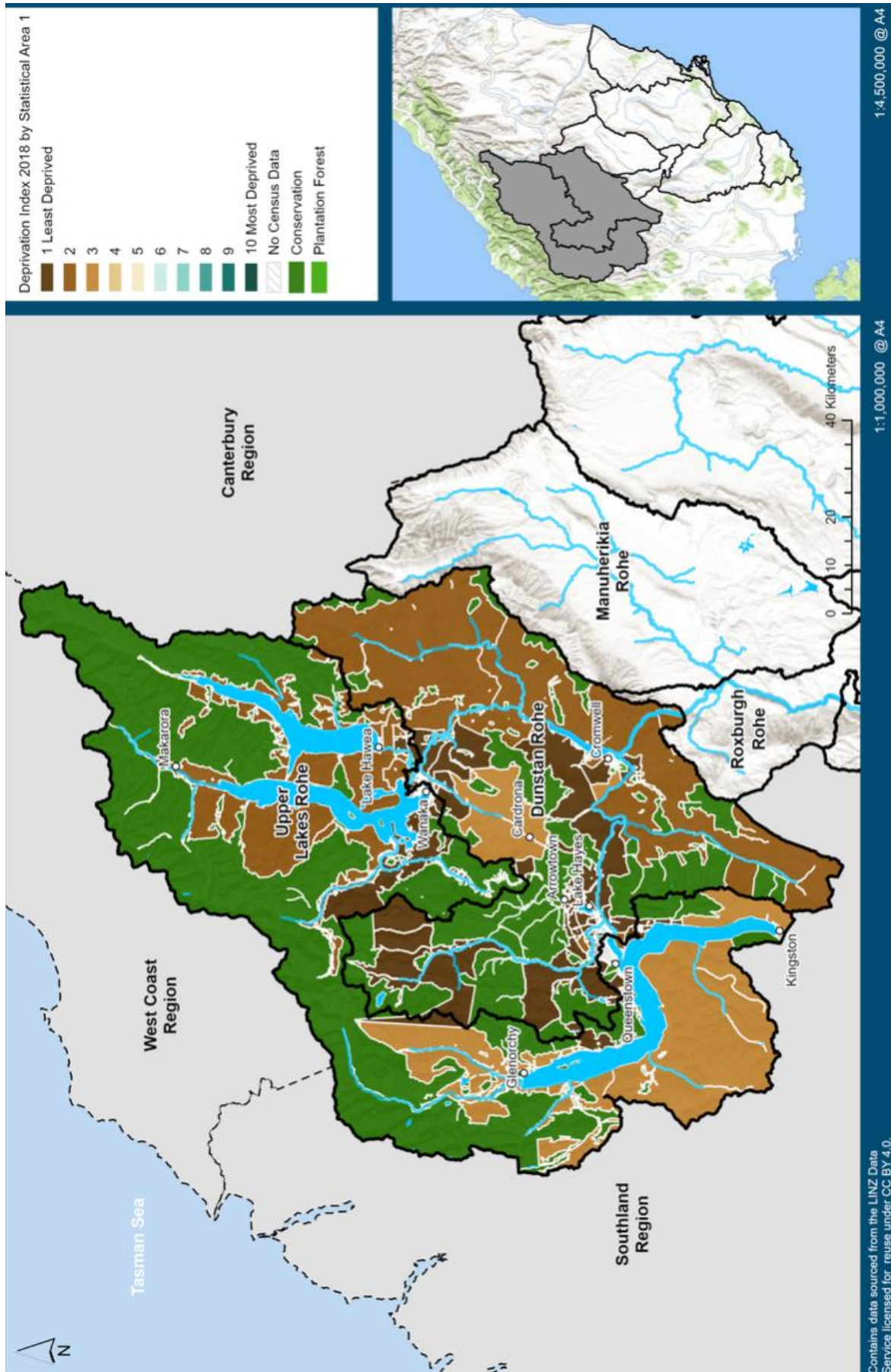


Figure 7. Deprivation Index (by SA1) for the Upper Lakes and Dunstan Rohe

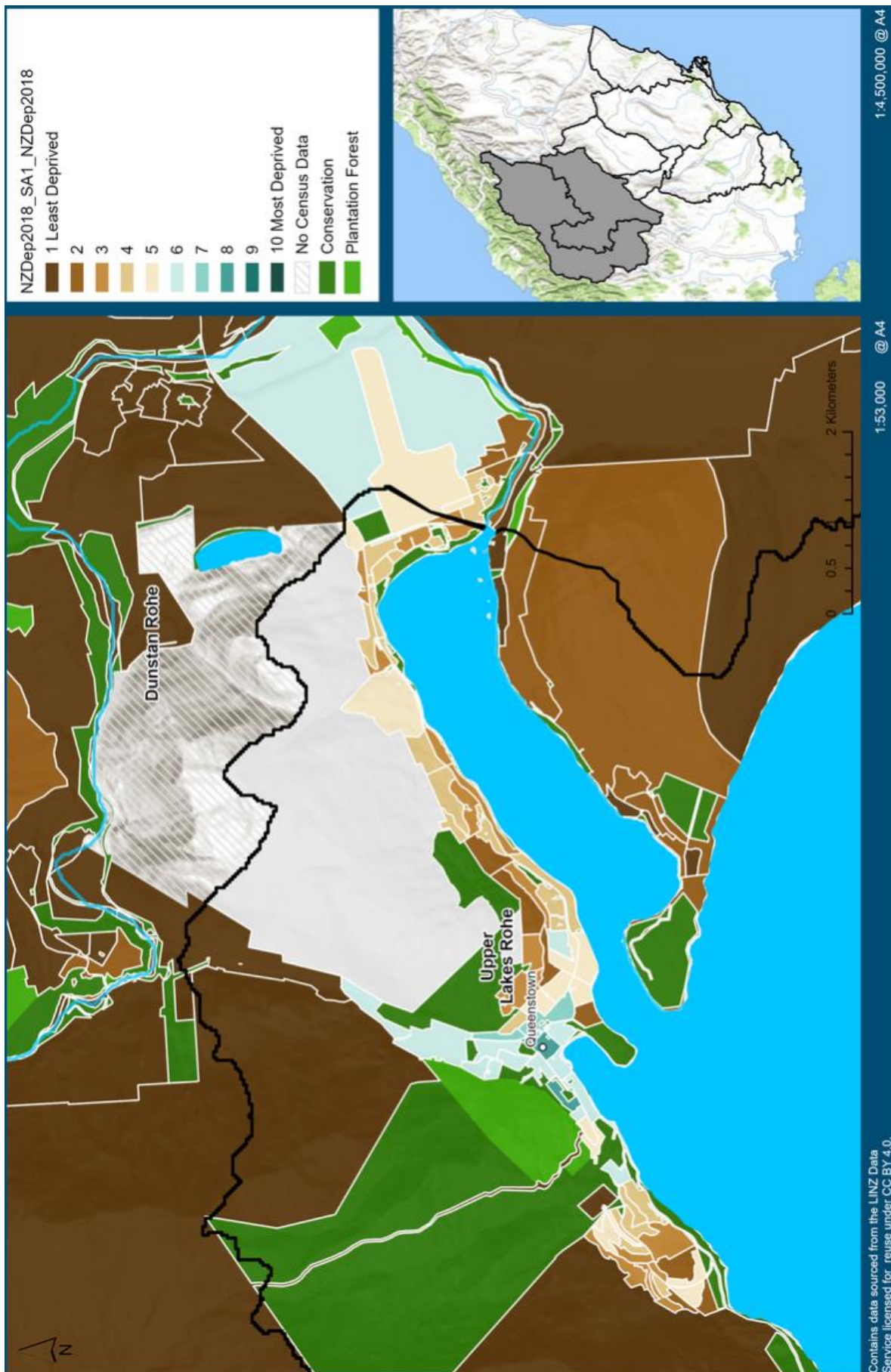


Figure 8.1. Deprivation Index (by SA1), Wanaka

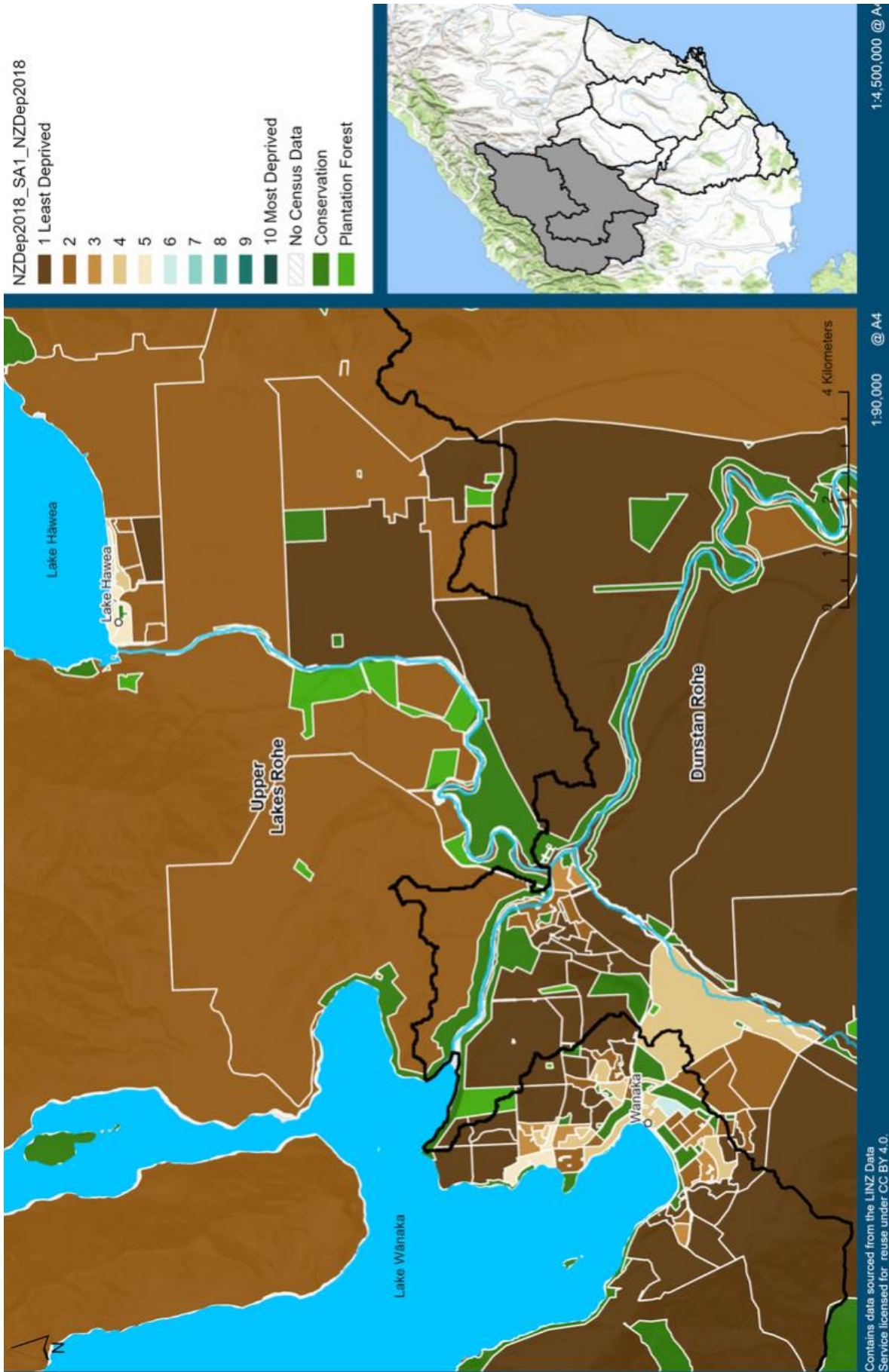


Figure 9.2. Deprivation Index (by SA1), Wanaka

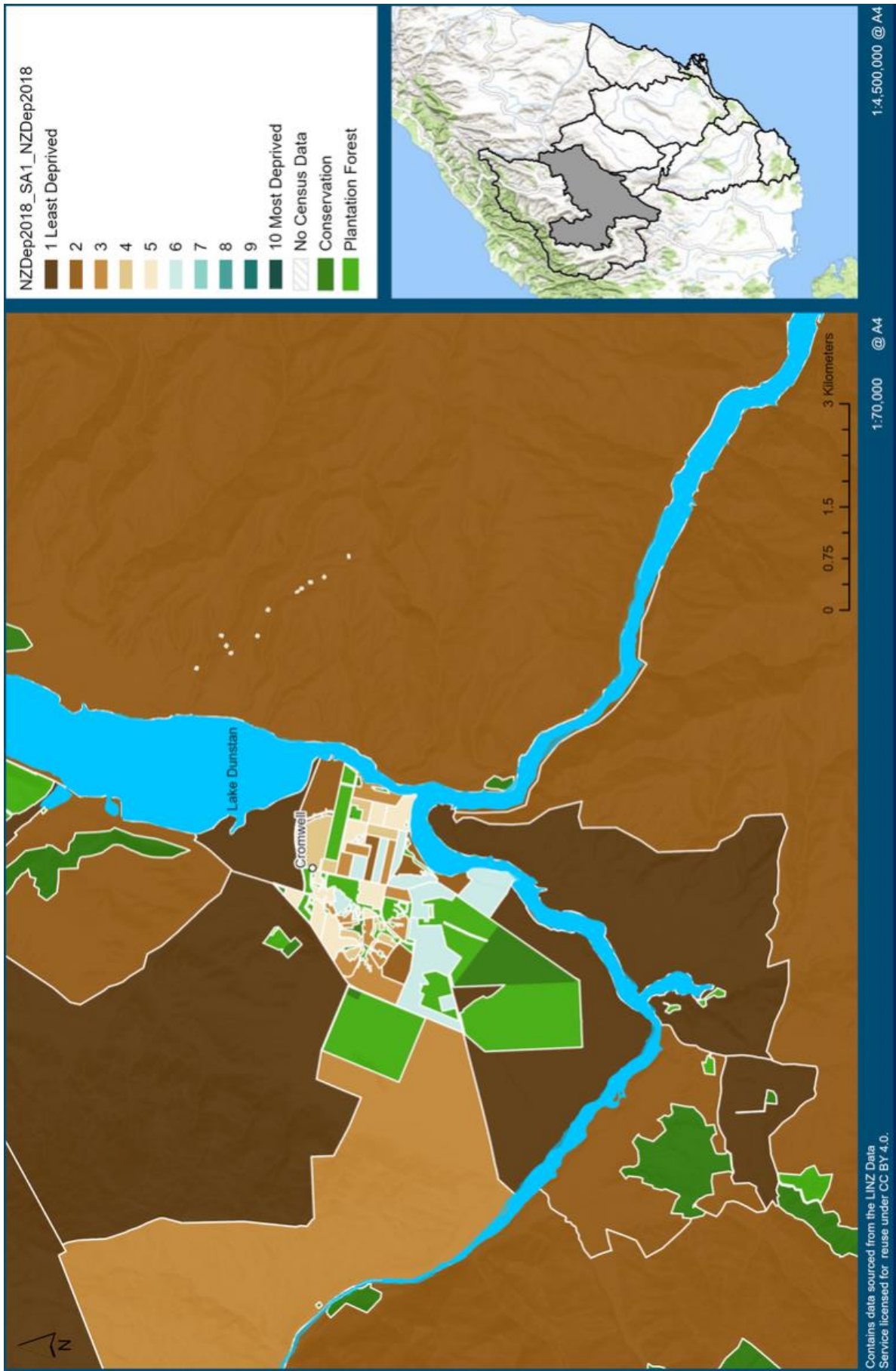


Figure 10.3. Deprivation Index (by SA1), Cromwell



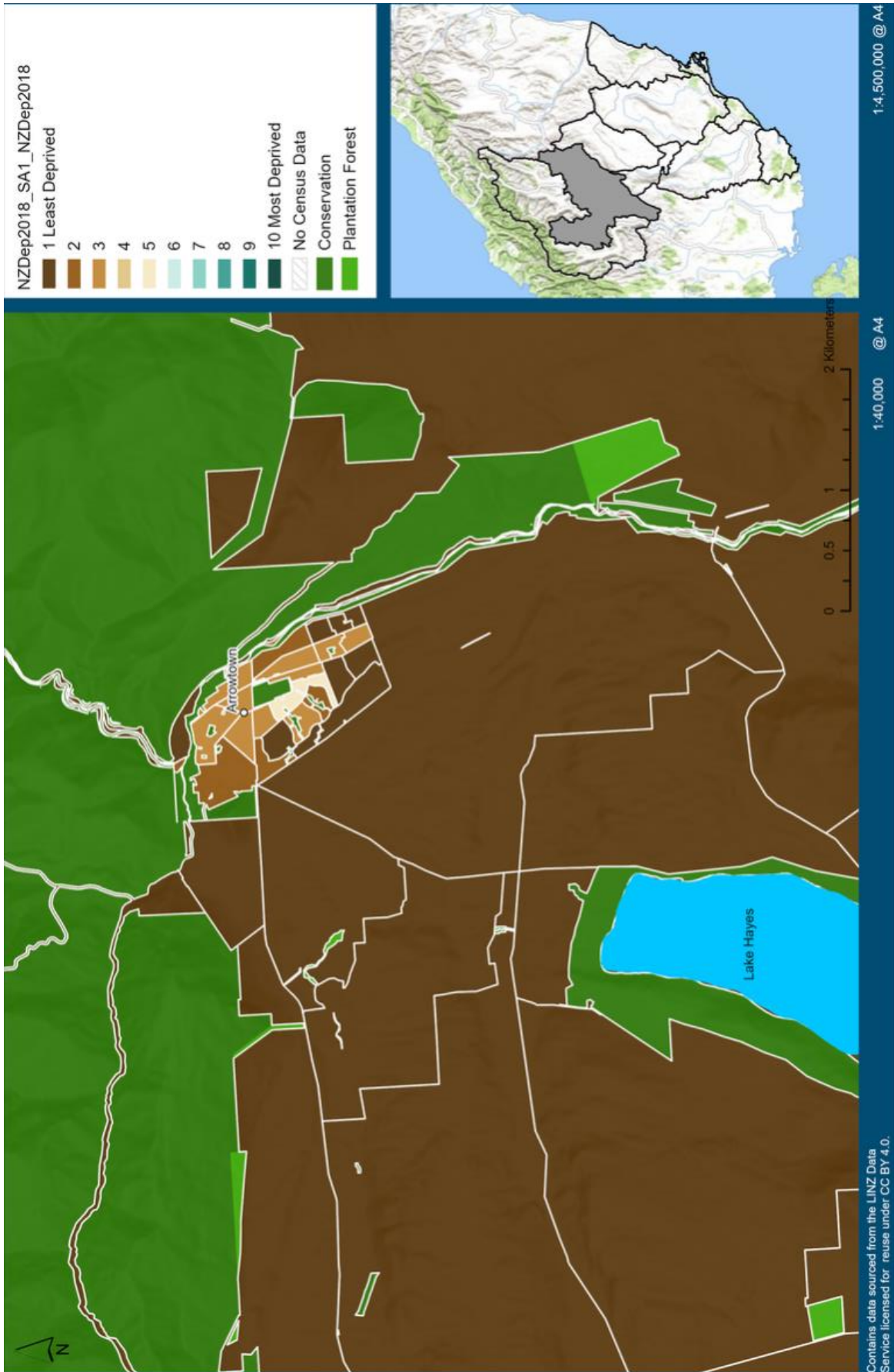


Figure 11.4. Deprivation Index (by SA1), Arrowtown