



# Broadband Affordability in New Zealand

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## Introduction

The ITU/UNESCO<sup>1</sup> Broadband Commission for Digital Development<sup>2</sup> in 2011 found that in 49 economies across the world, broadband access cost less than 2% of average income. In many parts of the developing world they found broadband can cost much more than that, and so set a "global broadband affordability target<sup>3</sup>" to encourage members to bring the cost of broadband to under 5% of average income by 2015.

This report evaluates how New Zealand meets the ITU's broadband affordability target. It considers median household income data from Statistics New Zealand's 2013 Census<sup>4</sup> at the finest granularity available, locates household addresses based on Land Information New Zealand Electoral Address<sup>5</sup> information, and determines broadband availability per address running geo-spatial queries against telecommunications carrier coverage data.

Each address considered in this study is assumed to have the median household income (HHI) for its meshblock, area unit, or territorial authority. The discussion and appendix explain the methodology, the data, and some drawbacks of this type of analysis.

## Cost and Availability of Broadband in New Zealand

Terrestrial broadband products are available to the majority of addresses and include fibre, ADSL, and Rural Broadband Initiative (RBI) wireless solutions. While ADSL pricing is subject to regulatory oversight, fibre and Rural Broadband Initiative pricing was set via a commercial negotiation between the government and wholesale service providers. Satellite covers addresses where terrestrial services are not available; its pricing is unregulated.

All low-cost broadband options in New Zealand factor traffic utilisation into their total monthly cost. This study considers the cost of using broadband services as an average family would, at the Commerce Commission's 2012-2013 median household data consumption figure<sup>6</sup> of 26 gigabytes. Cisco's Visual Networking Index<sup>7</sup> cites Internet traffic growth at 21% per annum, so it is reasonable to expect that for the current year the median household is using 31.5 gigabytes.

The table below summarises connectivity options, availability to the population, and costs. For the rest of this affordability study, the lowest cost connectivity available at an address will be assumed.

	Addresses Covered	Lowest Cost for	Percent	Lowest Cost	Per Month w/ 26 GB
<b>Fibre</b>	1,164,704	3,739	0.21%	\$69	\$69
<b>ADSL</b>	1,646,183	1,646,183	92.74%	\$55	\$55
<b>RBI Wireless</b>	356,256	88,221	4.97%	\$95	\$95
<b>Satellite</b>	1,775,018	36,875	2.08%	\$56	\$435

## Broadband Affordability on a National Scale

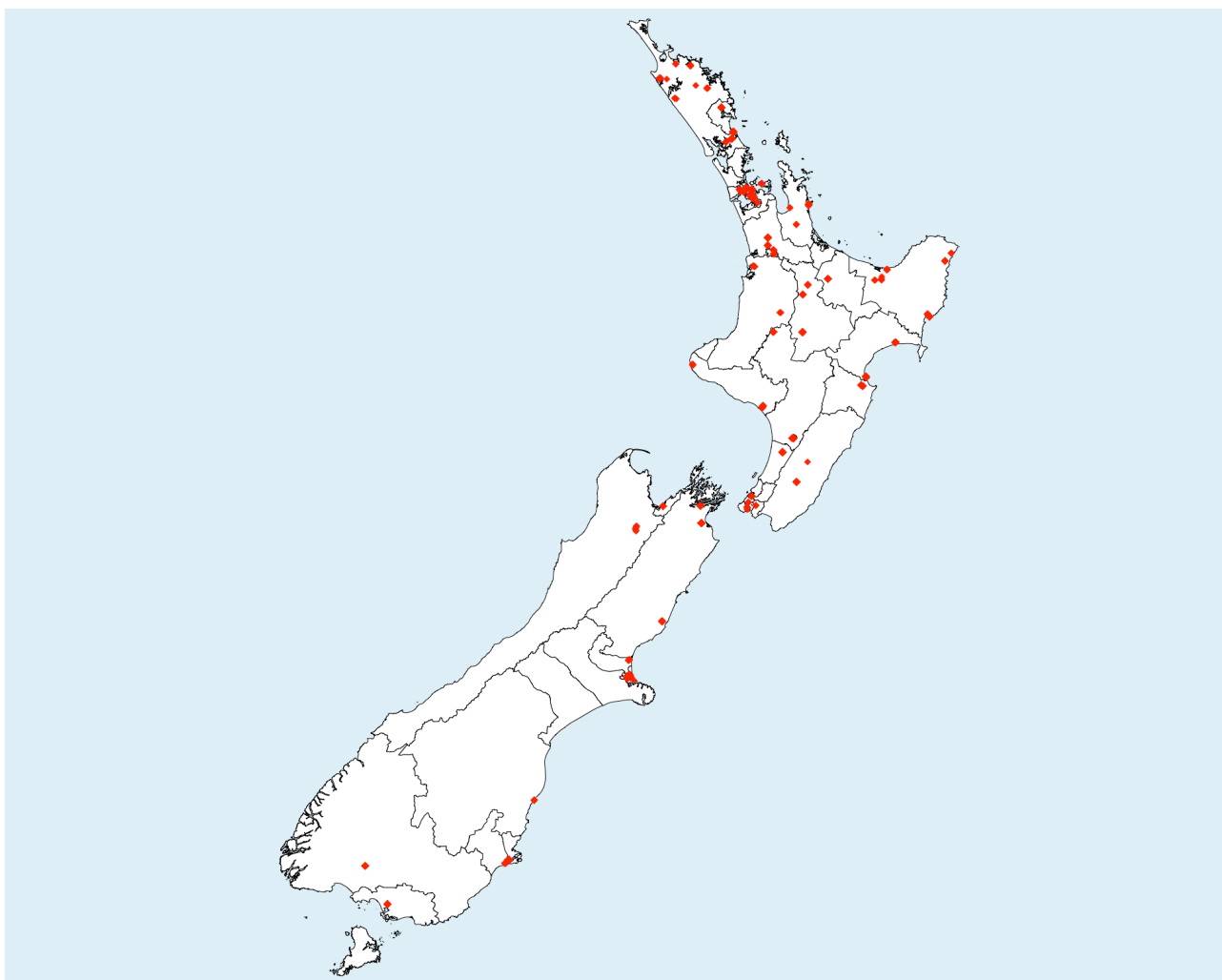
Median household income (HHI) for New Zealand as determined by the 2013 census is \$63,800.

On a national basis however, median incomes vary from urban to suburban, and from rural to remote. The table below summarises median HHI for addresses by availability of the various types of broadband, and how much of a median HHI is required for access.

	Addresses	Median HHI	% National Median	% HHI for Broadband
<b>Fibre</b>	3,739	\$85,000	133%	0.97%
<b>ADSL</b>	1,646,183	\$65,000	102%	1.01%
<b>RBI Wireless</b>	88,221	\$68,300	107%	1.67%
<b>Satellite</b>	36,875	\$57,500	90%	9.08%

## Localised ADSL Affordability

ADSL pricing in New Zealand is such that only 2,482 addresses fall into meshblocks<sup>8</sup> where median HHI families would have to pay more than 5% of their income for broadband, indicated below.



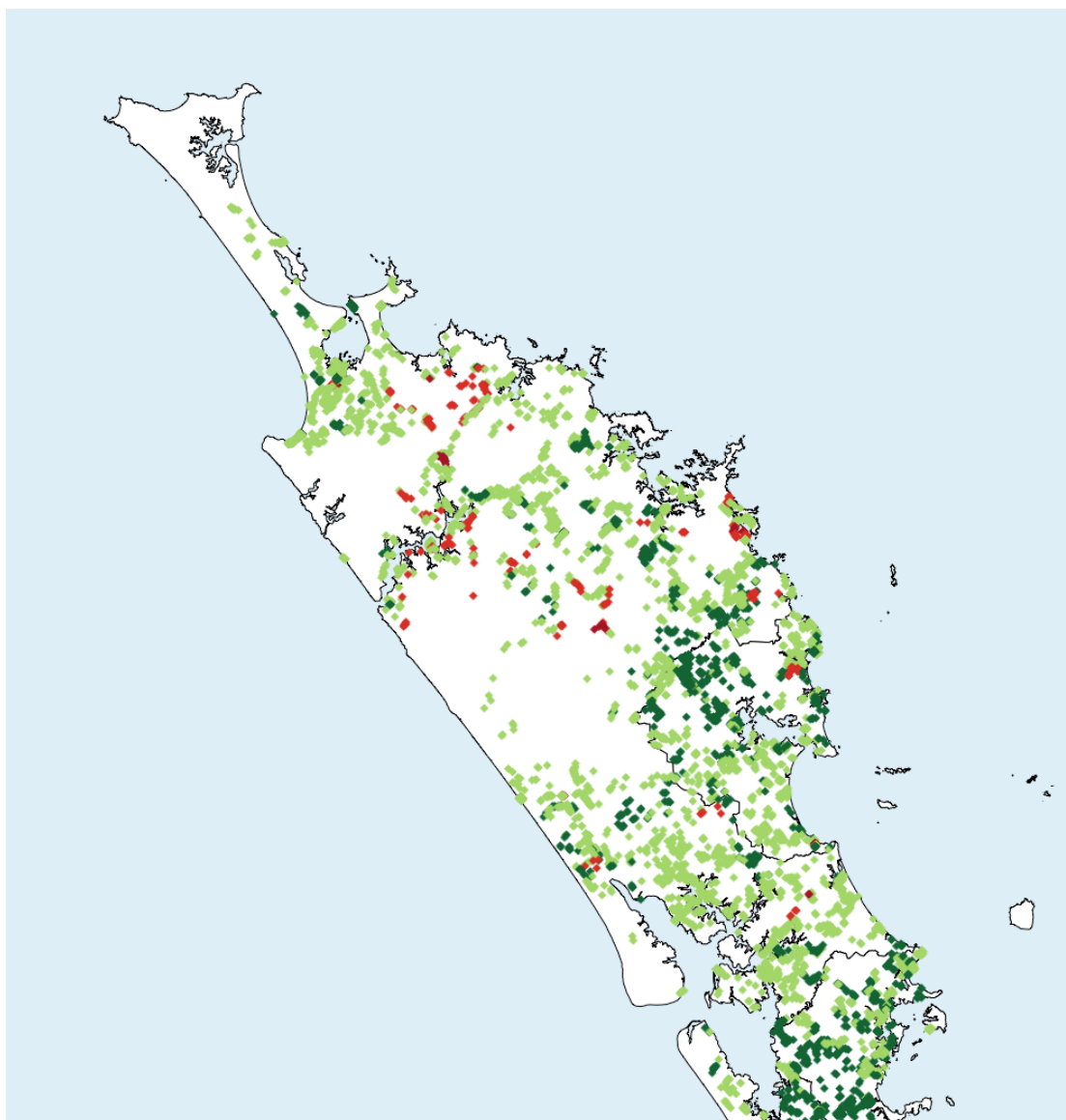
## Localised RBI Wireless Affordability

Median HHI for addresses in RBI Wireless areas is higher than for ADSL or Satellite areas.

Broadband for a median income family is widely affordable - more so since Vodafone doubled the data included in their base rate plan in September 2014. The table below shows affordability bands for a median HHI family where RBI Wireless is the lowest-cost technology available.

	up to 5% HHI	5-10% HHI	10% HHI or greater
<b>Addresses</b>	87,428	738	55
<b>Percent</b>	99.10%	0.84%	0.06%

The following map shows all addresses covered by RBI in Northland, with red markers indicating pockets where RBI exceeds 5% of HHI.



Similar areas appear elsewhere in the country, with 44 clusters of ten or more addresses where RBI wireless broadband would cost more than 5% of HHI.

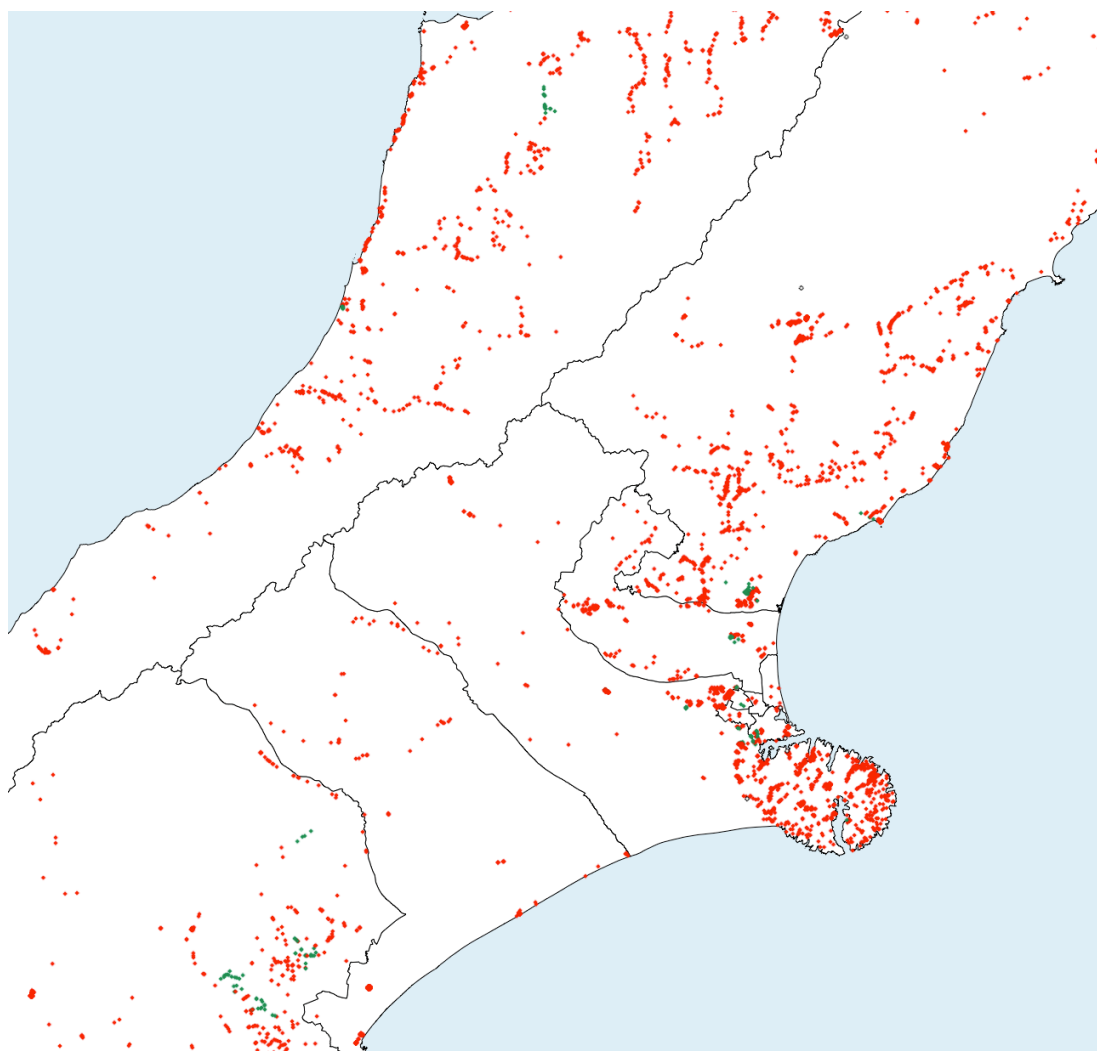
## Localised Satellite Affordability

Across the country, using Satellite broadband is expensive; nearly six times as expensive as NBN satellite in Australia<sup>9</sup>, and four times as expensive as market rate connectivity in the US<sup>10</sup>.

With HHI in remote areas lower than national median and service cost at eight times ADSL, satellite pricing is particularly regressive.

	to 5% HHI	5-10% HHI	10-20% HHI	20% HHI or greater
<b>Addresses</b>	2,593	19,688	13,147	1,431
<b>Percent</b>	7.03%	53.39%	35.65%	3.88%

Canterbury and the West Coast are shown below as representative of the country. Addresses in red are those where satellite service would exceed 5% of the meshblock or area unit median HHI.



## **Discussion**

Evaluating broadband affordability with the assumption that addresses will have a median HHI is useful in creating a broad brush assumption about affordability. For the 93% of households with low-cost ADSL coverage, the low granularity of HHI statistics means it's difficult to determine how many might find it unaffordable. For the 7% of households in RBI Wireless and satellite coverage areas, future study of household income bands on a localised basis could produce an estimate of households with unaffordable access.

## **Conclusion**

By the ITU's measure, 98% of New Zealanders enjoy access to affordable broadband. Households covered by the Rural Broadband Initiative have affordable broadband, but must spend twice as much of their household income on it as households on ADSL or Fibre.

93% of households restricted to satellite broadband access are paying far more than is affordable. Many pay an order of magnitude more of their monthly incomes than households in urban areas. If New Zealand is satisfied with providing 98% of its households access to low cost broadband, then there's no cause for action. If the nation's targets are for Universal Access, a solution to usurious satellite pricing must be found.

## Appendix

### Notes on Addresses

The 1.78 million addresses sourced from Land Information New Zealand's (LINZ) Electoral Address set sometimes represent multi-tenanted buildings as a single address. All measurements in this study are address-based, and so the issue of multi-tenanted buildings has no impact on the analysis. The data set LINZ releases includes only street addresses supplied by councils around New Zealand. The data set is known to exclude some addresses on Great Barrier Island in the Hauraki Gulf and Arapawa Island in the Marlborough Sounds. It may exclude other addresses as well.

### Telecommunications Carrier Coverage Data

Chorus coverage was sourced from their customer portal, via Telco2's authorised account. Files used were "2013-06-28\_tnz\_cabinet\_coverage<sup>11</sup>" and included shapes for all ADSL products. Chorus also directly provided fibre coverage, however this data included future coverage so was not used.

UFB coverage, including Chorus areas, was provided directly by Crown Fibre Holdings.

Vodafone RBI coverage was sourced from the National Broadband Map<sup>12</sup>, and assumes final coverage as of their latest published data. As Great Barrier Island was not covered by this data, shapes from Great Barrier were sourced from Vodafone's website<sup>13</sup> and manually imported into Telco2's GIS data set.

New Zealand Registry Services has access to up-to-date broadband coverage data, but declined to make that data available for this study citing a confidentiality agreement with the government's Ministry of Business, Innovation, and Employment (MBIE).

### Notes on Median Income

Statistics New Zealand has assigned Median Household Income figures for 40,292 of 46,629 meshblocks, for 1,876 of 2,012 area units, and all territorial authorities. A meshblock is the smallest geographical unit employed by Statistics New Zealand. Area units and territorial authorities are larger, respectively. There are 45,989 meshblocks with occupied households in the 2013 data set used for this study. In the case of 70,436 addresses in meshblocks where median household income has not been calculated, addresses have been assigned the median for the area unit. In the case of 338 addresses in 18 area units where median household income has not been calculated, addresses have been assigned the median for the territorial authority. Household income data is considered to be of poor quality by Statistics New Zealand due to a non-response rate of 15%.

### Broadband Utilisation

Broadband utilisation on a household basis is a contested figure. Varying figures are reported by retail providers, wholesale providers, equipment manufacturers, and market analysts.

## Broadband pricing

Pricing used in the study was acquired on 29 August, 2014, from:

- ADSL and UFB: <https://www.slingshot.co.nz/>
- RBI Wireless: <http://www.vodafone.co.nz/broadband/rural/wireless/>
- Satellite: <http://www.farmside.co.nz/Broadband/Satellite.aspx>

Pricing for Vodafone RBI Wireless was updated after their change on the 4th of September.<sup>14</sup>

<sup>1</sup> <https://en.unesco.org/>

<sup>2</sup> <http://www.broadbandcommission.org/Pages/default.aspx>

<sup>3</sup> [http://www.broadbandcommission.org/Documents/publications/Broadband\\_Targets.pdf](http://www.broadbandcommission.org/Documents/publications/Broadband_Targets.pdf)

<sup>4</sup> <http://www.stats.govt.nz/Census/2013-census/data-tables/meshblock-dataset.aspx>

<sup>5</sup> <https://data.linz.govt.nz/layer/779-nz-street-address-electoral/>

<sup>6</sup> <http://comcom.govt.nz/dmsdocument/11910>

<sup>7</sup> [http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white\\_paper\\_c11-481360.html](http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html)

<sup>8</sup> <http://www.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/meshblock/definition.aspx>

<sup>9</sup> <http://www.iinet.net.au/internet/broadband/nbn/plans/>

<sup>10</sup> <http://www.exede.com/internet-packages-pricing/service-availability?zip=06419>

<sup>11</sup> <http://customer.chorus.co.nz/file/46139/2013-06-28-Copper-Shape-files.zip>

<sup>12</sup> <https://koordinates.com/layer/4083-rural-broadband-initiative-vodafone-wireless-final-coverage/>

<sup>13</sup> <http://www.vodafone.co.nz/network/rural/>

<sup>14</sup> <http://www.scoop.co.nz/stories/BU1409/S00167/no-data-drought-vodafone-doubles-data-for-rural-customers.htm>