



Fact Sheet: Agreement with Chorus

1. Introduction

The Government's objective for the Ultra-Fast Broadband (UFB) initiative is to accelerate the roll-out of ultra-fast broadband, deploying optic fibre infrastructure to 75 percent of New Zealanders by the end of 2019. The rollout is concentrating until December 2015 on priority broadband users such as businesses, schools and health services, plus greenfield developments and certain tranches of residential areas.

For the purposes of the UFB initiative, having access to Ultra Fast Broadband is taken to mean the availability of broadband services at a speed of 100 Megabits per second (Mbps) Downstream (from the internet to the user) and 50 Mbps Upstream (from the user to the internet). This product will be available for use in the home, while priority users will be able to access even faster speeds.

By way of comparison, the current average internet speed in New Zealand is 3.4 Mbps, ranking New Zealand 27th in the world in terms of Internet speeds¹. Similarly, New Zealand is ranked 24th in a worldwide study of overall broadband quality (measuring speed and technical measures such as latency)². Broadband speeds accessed by many schools are generally 2Mbps or less. Most business and health premises use broadband over copper, not optic fibre, with a maximum symmetric speed of 10Mbps. Such speeds can pose a real restriction on the ability to be highly responsive and work at scale in business, provide modern patient care and deliver e-learning.

This document covers the delivery of UFB in partnership with Chorus, a unit of Telecom Corporation of New Zealand Limited (**Chorus**). If you're in Whangarei, see the fact sheet for Northpower Limited (<http://is.gd/xBGb9I>). If you want to find out about UFB in Hamilton (including Te Awamutu and Cambridge), Tauranga, New Plymouth, Wanganui, Hawera and Tokoroa, see the fact sheet for Ultrafast Fibre Limited (<http://is.gd/mP5tIp>). If you live in Christchurch, Rolleston or Rangiora, you should see the fact sheet for Enable Networks Limited (www.crownfibre.govt.nz – see Publications & Tenders / Resources).

2. About The Relationship Between CFH and Chorus

¹ Source: Akamai State of the Internet, Q4 2010

² Source: Said Business School, Oxford University, Broadband Quality Score, Sept 2010

Crown Fibre Holdings (**CFH**) and Chorus have agreed to be partners in building UFB for New Zealanders in 24 Candidate Areas.

The UFB model requires that CFH's partners comply with the requirement for "open access" as specified in the Invitation To Participate³. This means that to partner with CFH Telecom must:

- Arrange to divest itself of any retail telecommunications business;
- Meet and maintain standards of equivalence and non-discrimination between Retail Service Providers (**RSPs**); and
- Provide the specified Layer 1 and Layer 2 services to any and all potential RSPs who meet basic commercial and technical criteria on equal terms.

For this requirement to be realised, Telecom intends to structurally separate into two parts via a "de-merger". The first part, known as Chorus, would hold the contract for UFB deployment with CFH. The second would be a retail division holding the remainder of Telecom's business, including its existing customer relationships with end users such as households and businesses.

Chorus has also agreed to provide a Deed of Undertaking in favour of the Crown to meet the open access requirements. Section 6 contains more detail on the Deed of Undertaking.

The Government has tabled legislation enabling structural separation⁴, and the agreement announced on 24 May 2011 will be contingent on the passage of this legislation as well as a vote by Telecom shareholders to approve Telecom's de-merger proposal.

CFH's contract with Chorus uses an Alternative Commercial Model, as contemplated by the UFB Invitation To Participate (ITP). The agreement between CFH and Chorus involves a 50/50 debt/equity instrument as the mechanism of the Crown's funding support for UFB deployment. As with other UFB contracts, CFH funds the cost of fibre "passing" (the connection running down the street) as it is completed and signed off to specifications, and then it becomes operational. Chorus funds each "drop", the connection from the premise to the fibre in the street, as it hooks customers up. This arrangement retains an overall pro rata per premise funding allocation.

Chorus will contract with RSPs who can then provide services to end users. As per the open access requirements, Chorus will operate only at the wholesale level - it will not sell services directly to end users. In turn, RSPs may use wholesale products from Chorus and the Local Fibre Companies to create retail UFB-based services which are sold to residents, businesses, schools and health premises.

The relationship between Chorus and CFH will be contractually based. CFH will have contractual rights to oversee network build and operation, and also intends to collaborate closely with Chorus on their UFB business plan. CFH will participate in a Steering Committee with Chorus to manage the

³ See http://www.med.govt.nz/templates/MultipageDocumentTOC_42154.aspx section 13.

⁴ See <http://www.parliament.nz/en-NZ/PB/Legislation/Bills/BillsDigests/0/1/b/49PLLawBD18281-Telecommunications-TSO-Broadband-and-Other-Matters.htm>

UFB rollout and business. CFH and Telecom have also agreed in good faith that CFH will propose an independent Director for the Board of Chorus.

The National Maori Rural Broadband Initiative (RBI) Working Group (Nga Pu Waea) has been established with the purpose of providing advice about Maori development opportunities associated with the RBI. CFH and its partners have agreed that the Working Group's scope be extended to cover the UFB Initiative. CFH and its partners will work together and with the Working Group in order to facilitate Maori development opportunities associated with the UFB.

Christchurch City Holdings and Chorus have also agreed to work towards developing a partnership to bring their combined existing fibre networks and expertise to focus on the reconstruction and development of Christchurch.

3. Approximate Coverage Areas and Deployment Plans

The agreement with Chorus covers 69.4% of the UFB initiative and twenty-four towns and cities.

The population figures are derived from Statistics NZ sub national population estimates for 2010, with updated statistics following the creation of the Auckland Supercity. The premise counts are based on CFH premise definitions and estimates for 2020, as well as Ministry of Education data. Actual premises may vary once detailed deployment planning gets underway.

The build timeframes are indicative only and will be refined once detailed deployment plans are available. Unless noted as areas where the deployment proper will get underway, the common start time of July 2011 reflects the beginning of the build planning process, not when the first sod will be turned in any given area. It's important to note that deployment timeframes are subject to a number of dependencies, not least being approvals and consents from local and regional authorities. Coverage areas include:

Auckland Region:

- Auckland
- Waiheke Island
- Pukekohe
- Waiuku

Eastern North Island:

- Whakatane
- Taupo
- Rotorua
- Napier-Hastings
- Gisborne

Lower North Island:

- Feilding

- Palmerston North
- Levin
- Masterton
- Kapiti (Paekakariki, Raumati, Paraparaumu and Waikanae)
- Wellington (including Porirua, Lower Hutt, Upper Hutt)

Upper South Island:

- Nelson
- Blenheim
- Ashburton
- Greymouth
- Timaru

Lower South Island:

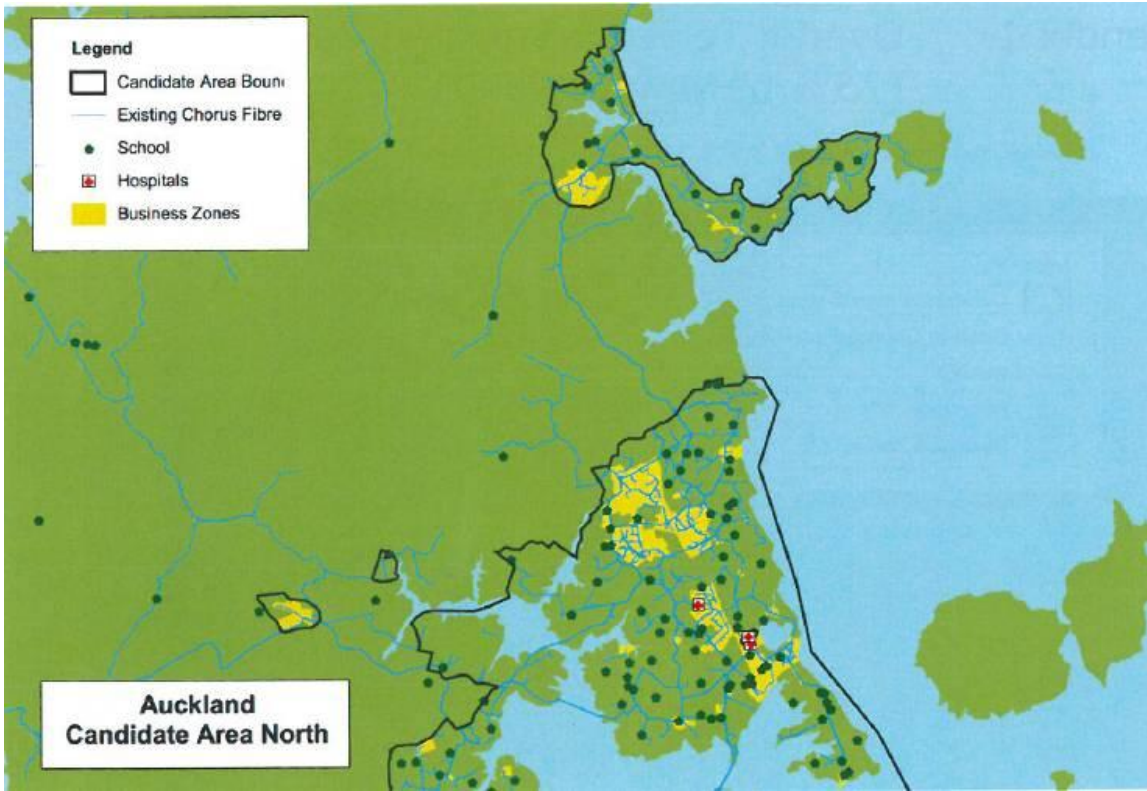
- Oamaru
- Queenstown
- Dunedin
- Invercargill

Auckland Region:

Auckland

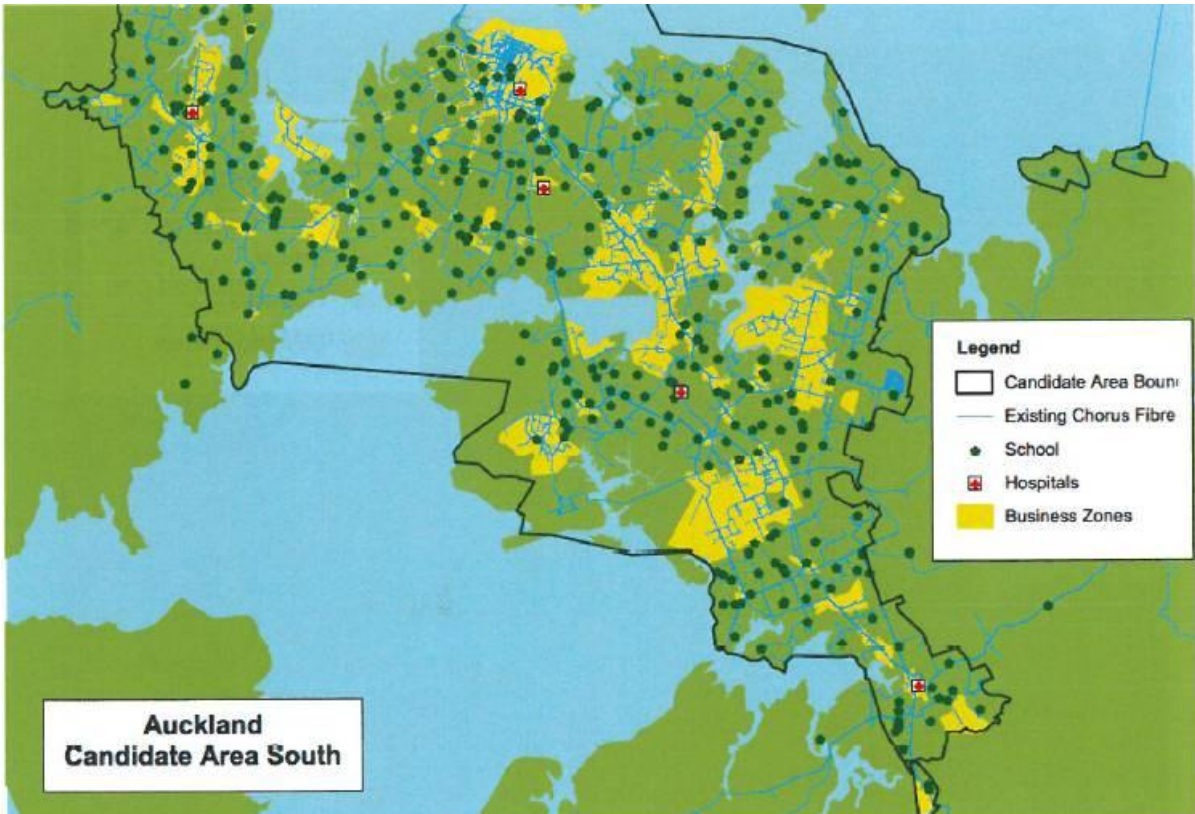
Approximate Coverage Area Auckland North

The north-western boundary is just beyond Whenuapai, out to Paremoremo, to the west of Albany town centre and on to Long Bay. There are additional pockets of fibre delivered to Kumeu and Riverhead. Separately the Whangaparoa Peninsula is covered as far as Army Bay. Silverdale, Red Beach, Orewa and Hatfields Beach will all receive UFB.



Approximate Coverage Area Auckland South

The south-western boundary is from Swanson, past Henderson Valley Park and Oratia School to the south Titirangi Peninsula then around the outskirts of Mangere past the airport and along the coastline, as far as the southern Motorway then south to include Papakura and Drury.



UFB Marketplace

The population of the new Auckland Super City is estimated at nearly 1,462,000 people. This includes more than 24,200 business premises, more than 400 schools and more than 2,500 medical and other healthcare services, as well as more than 1,300 other, mixed used premises.

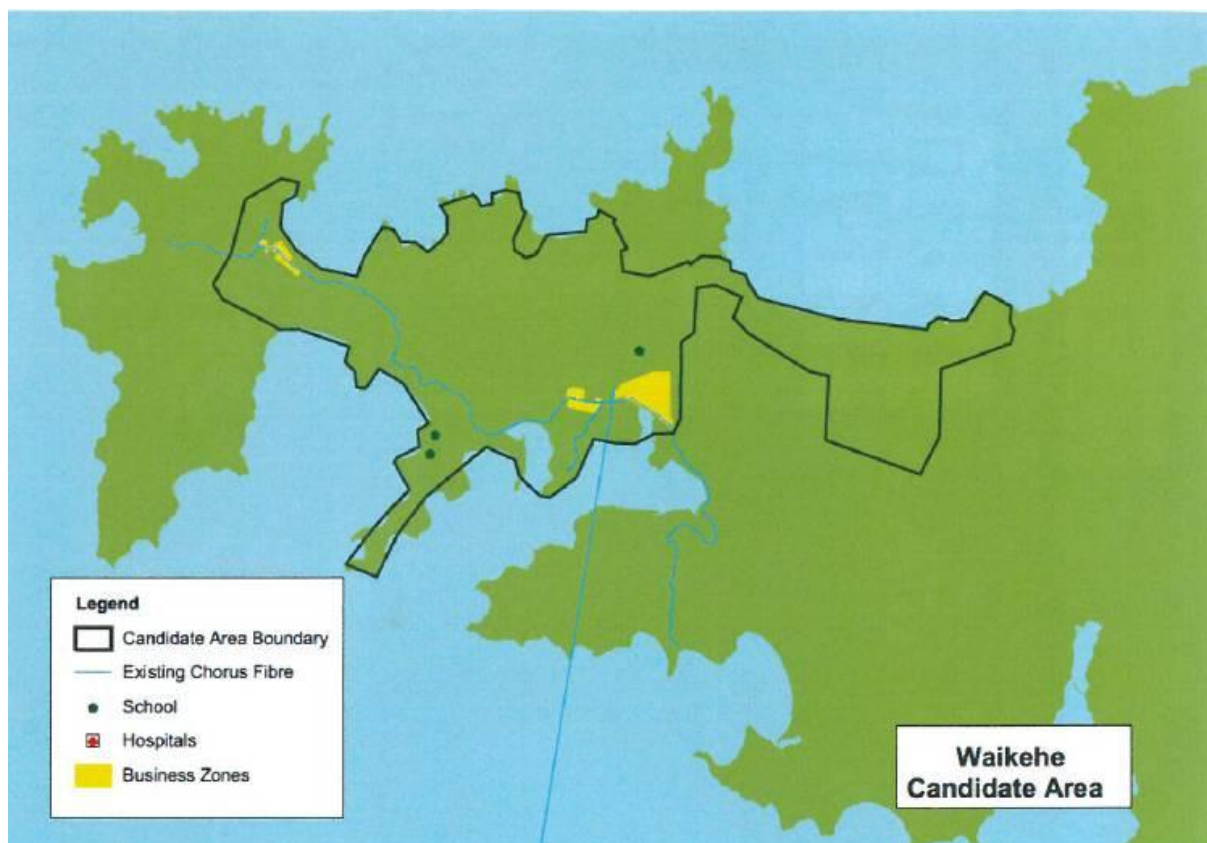
Indicative Build Timeframe

August 2011 marks the beginning of an eight and a half year build programme. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete then too.

Waiheke Island

Approximate Coverage Area

Fibre will be rolled out to the most populated part of the island, in the west. It will stretch from Oneroa to Onetangi, and from Palm Beach to Takirau Bay also taking in Anzac Bay.



UFB Marketplace

The island had an estimated population of 8,500 in 2010. Fibre will be delivered to the door of some 230 business premises, around 5 schools and around 20 medical and other healthcare services, as well as more than 60 other premises of mixed use.

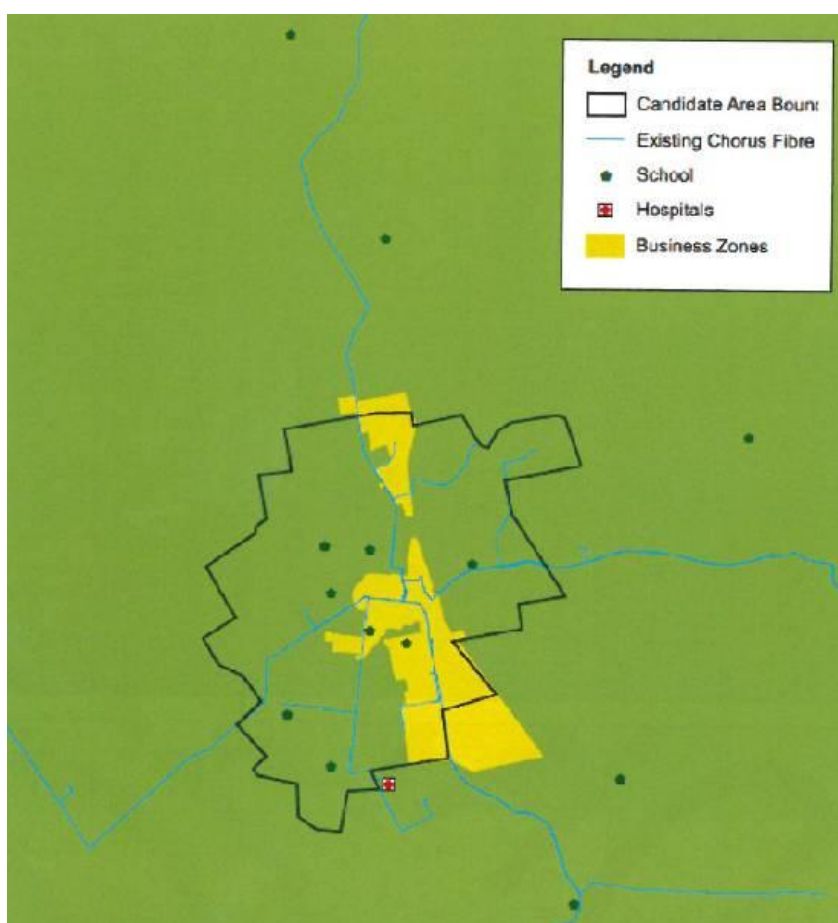
Indicative Build Timeframe

A five and a half year build programme starting in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete. Remaining premises will be passed by November 2019.

Pukekohe

Approximate Coverage Area

Fibre will largely be rolled out within the Pukekohe town boundaries.



UFB Marketplace

An estimated population of around 25,600. Fibre will be delivered to more than 550 businesses, over 10 schools, around 75 medical and other healthcare services and more than 40 other premises of mixed use.

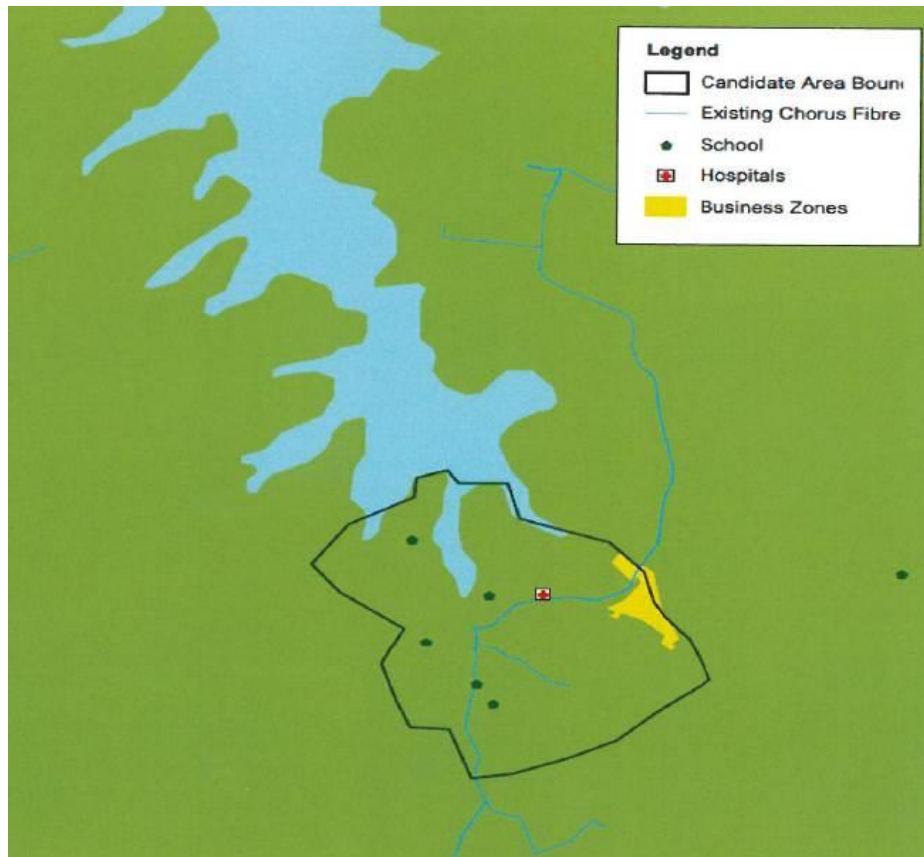
Indicative Build Timeframe

A build programme starting in August 2011 and lasting just over six years. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete by then.

Waiuku

Approximate Coverage Area

Fibre will be laid largely within the town boundaries.



UFB Marketplace

The population in 2010 was estimated at 8,260. The UFB deployment will cover nearly 180 business premises, some 5 schools and around 10 medical and other healthcare services, with about 15 other premises of mixed use.

Indicative Build Timeframe

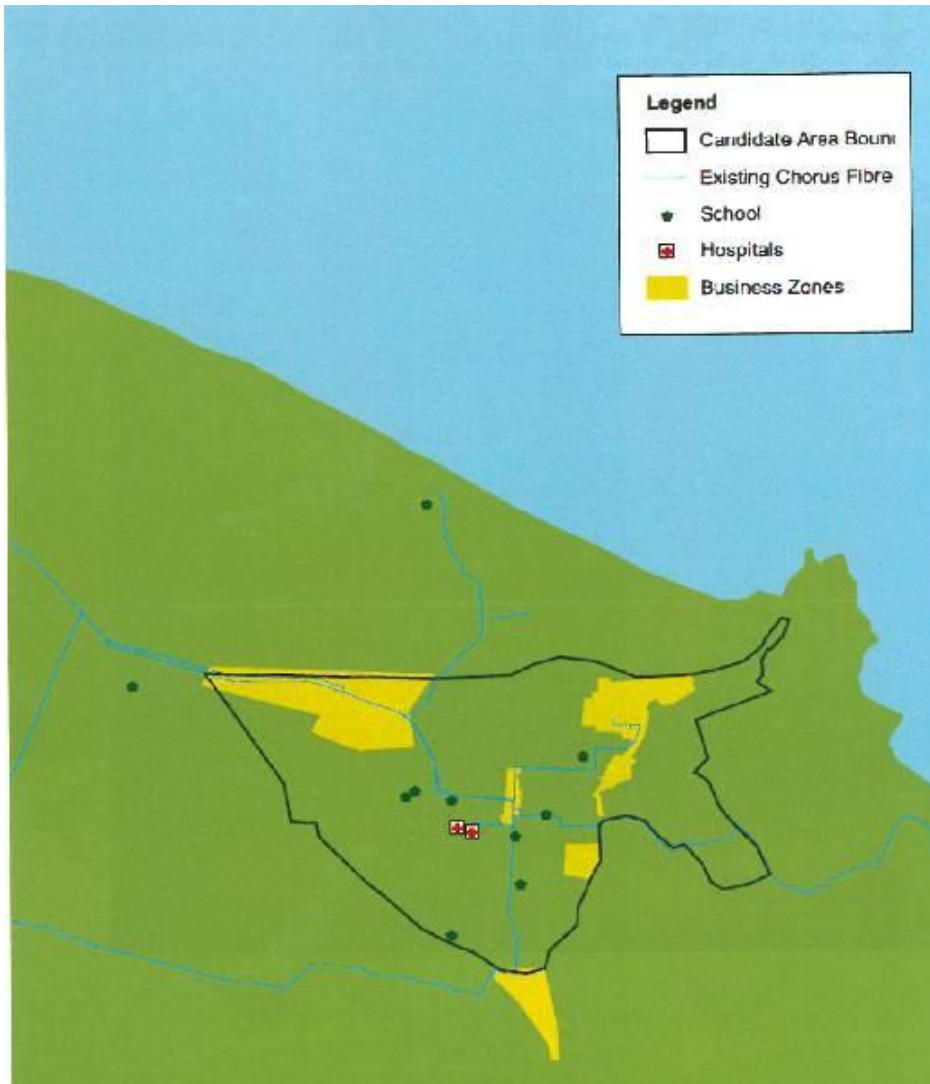
A five and a half year build programme starting in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete then too. Remaining premises will be passed by November 2018.

Eastern North Island:

Whakatane

Approximate Coverage Area

UFB coverage in Whakatane will be largely within the town boundaries, extending west along SH30 and east to the Ohope Rd. It will be rolled out as far as Arawa Road in the south.



UFB Marketplace

An estimated population of 18,750 in 2010. The rollout will cover nearly 500 business premises, more than 15 schools and some 60 medical and other healthcare services, as well as about 30 other premises of mixed use.

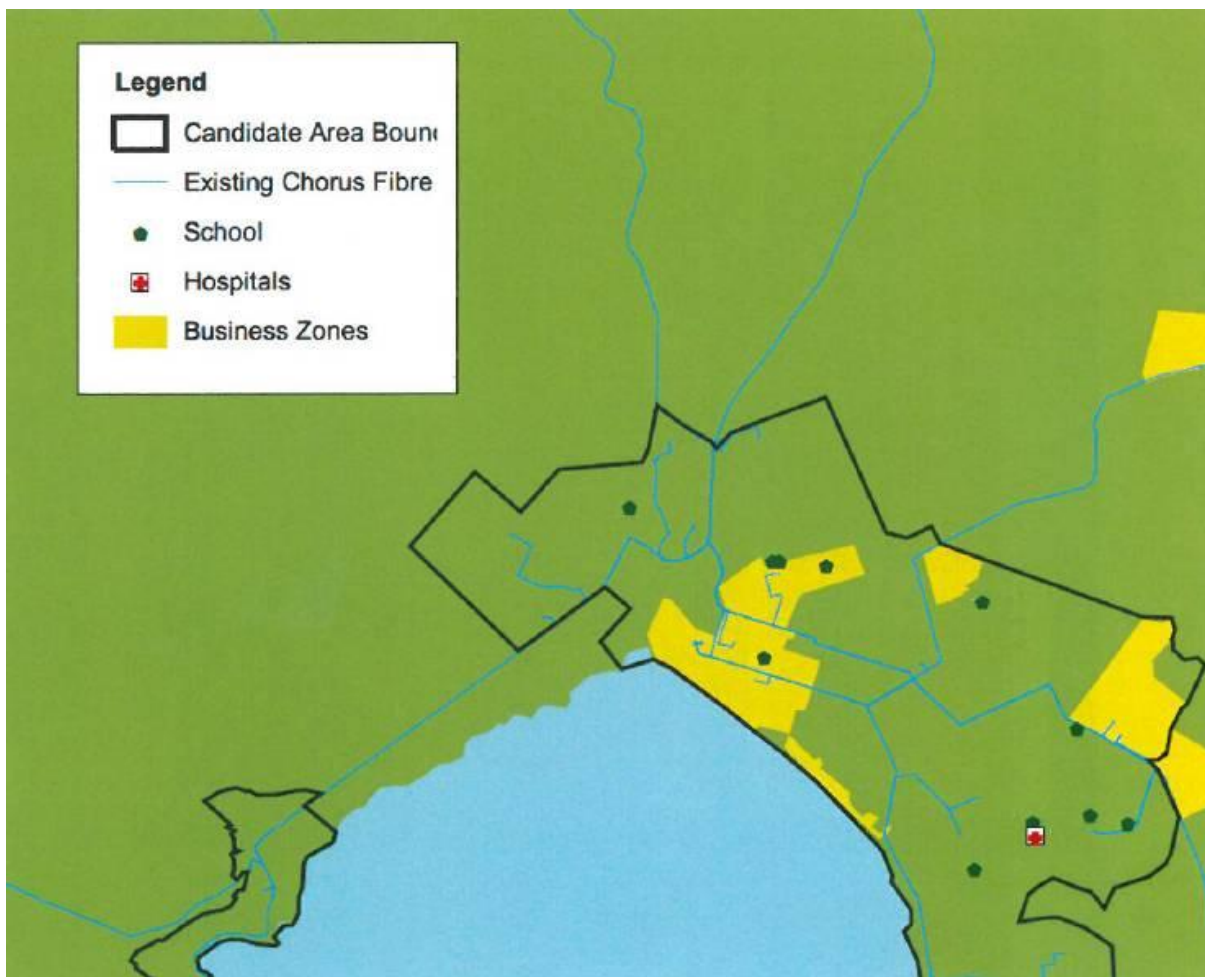
Indicative Build Timeframe

A total build programme of five and a half years, starting in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete by then too. Remaining premises will be passed by March 2017.

Taupo

Approximate Coverage Area

UFB will be deployed largely within the town boundaries and out to Acacia Bay.



UFB Marketplace

An estimated population of around 22,300 in 2010. Fibre will be rollout out to the door of more than 620 business premises, some 12 schools, over 70 medical and other healthcare services and up to 40 other premises of mixed use.

Indicative Build Timeframe

Deployment in Taupo is projected to take five and a half years. It will start in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete then too. Remaining homes and businesses will be passed by March 2019.

Rotorua

Approximate Coverage Area

Fibre will be laid largely within the town boundaries and out to Ngongotaha.



UFB Marketplace

An estimated population of nearly 56,000. The fibre deployment will cover around 1,465 business premises, some 30 schools, at least 200 medical and other healthcare services and about 80 other premises of mixed use.

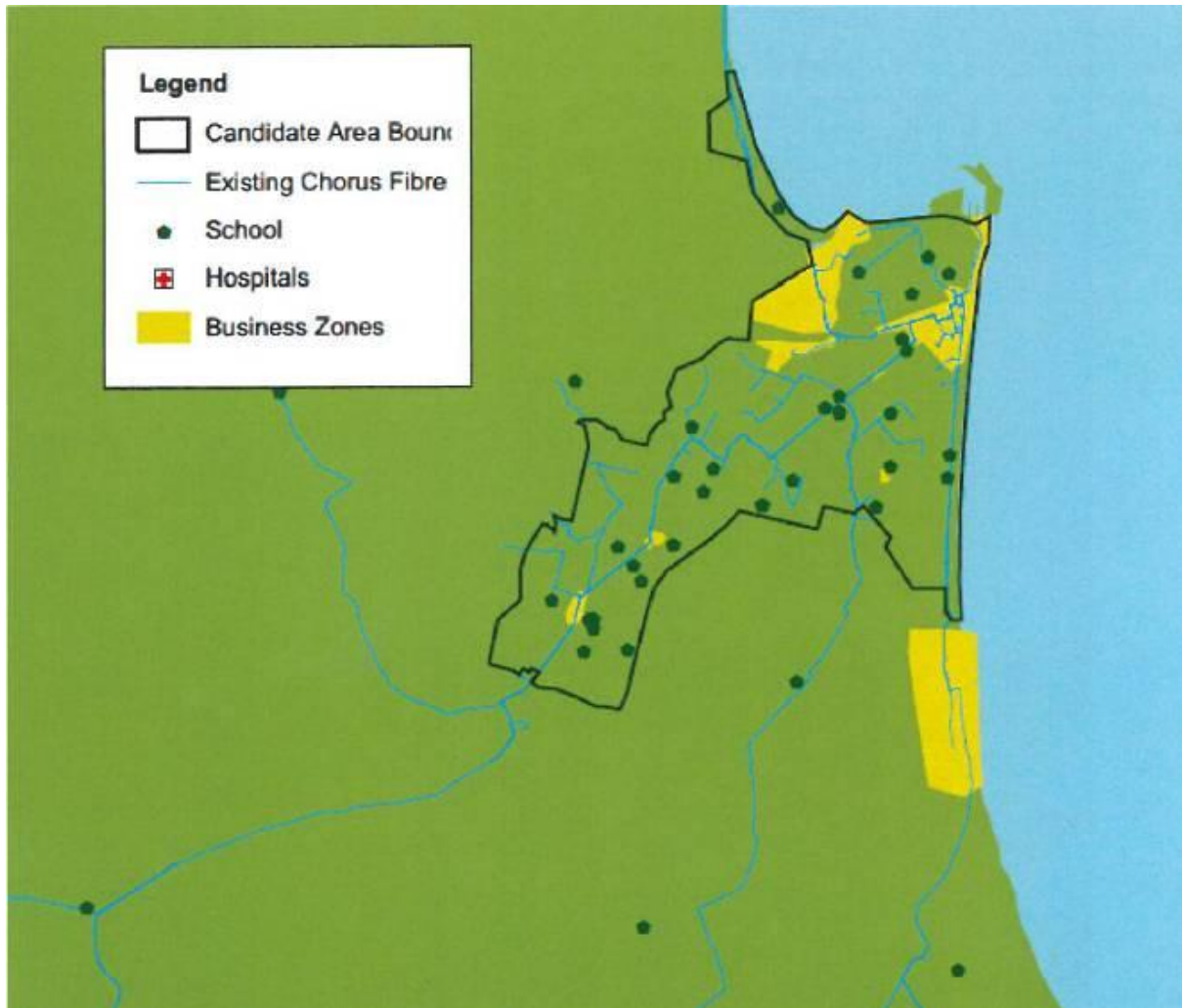
Indicative Build Timeframe

A six and a half year build which will start in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses complete. Remaining homes and businesses will be covered by the end of 2018.

Napier/Hastings

Approximate Coverage Area

The Napier coverage area runs from Taradale in the southwest to the airport in the north and Maraenui in the south, as shown below.



The Hastings rollout is largely within town boundaries; a coverage map of Hastings will be made available as soon as possible.

UFB Marketplace

An estimated combined population of 124,400. The UFB build will cover just under 2,500 business premises, around 70 schools and more than 700 medical and other healthcare services, as well as more than 110 other or mixed use premises.

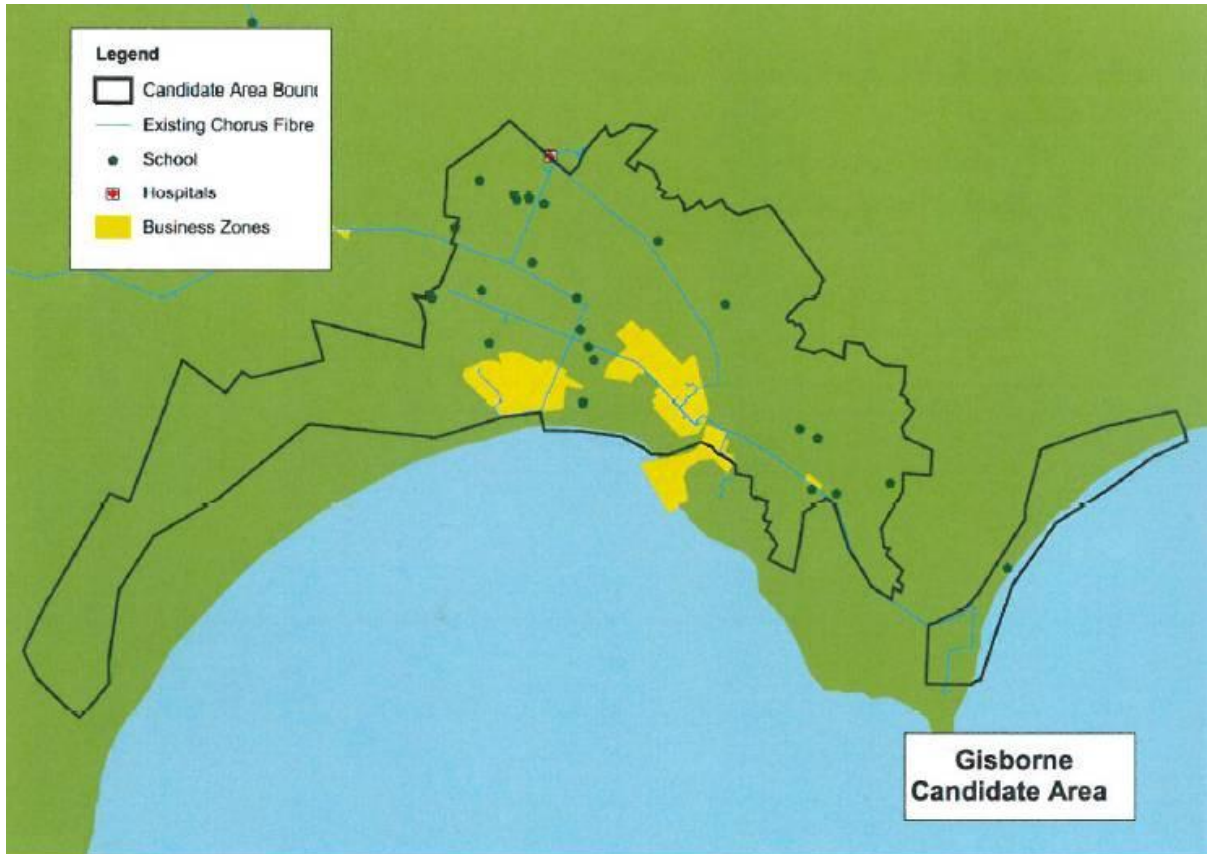
Indicative Build Timeframe

Build design and planning is expected to commence in August 2011 in Napier /Hastings, and deployment will continue until December 2019. All health premises and schools will be covered by December 2015, with ninety percent of businesses also complete.

Gisborne

Approximate Coverage Area

The rollout in Gisborne extends beyond the airport in the west to Outer Kaiti in the east with Wainui covered separately. It's largely within the town boundary to the coast and extends north as far as Riverdale and Mangapapa.



UFB Marketplace

The estimated population in 2010 was 34,200. The deployment will cover more than 860 business premises, more than 30 schools, over 100 medical and other healthcare services and nearly 120 other premises of mixed use.

Indicative Build Timeframe

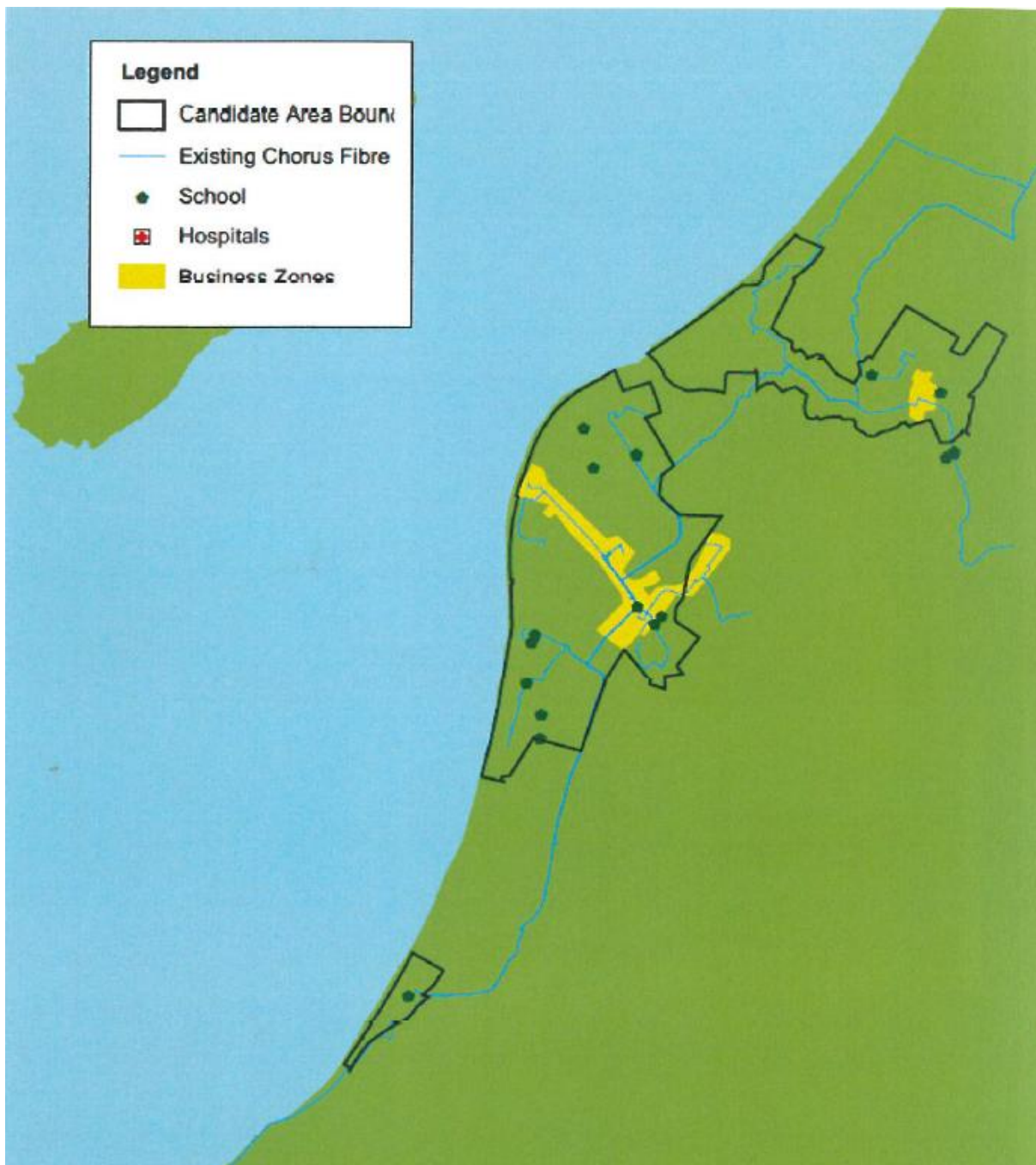
The build programme for Gisborne runs for five and a half years, from August 2011 until January 2017. All health premises and schools will be covered by December 2015, with ninety percent of businesses passed by then as well.

Lower North Island:

Kapiti (including Paekakariki, Raumati, Paraparaumu and Waikanae)

Approximate Coverage Area

Kapiti coastal towns including Paekakariki, Raumati, Paraparaumu and Waikanae will receive UFB, which will largely be deployed within town boundaries.



UFB Marketplace

An estimated combined population of nearly 38,500. This will include more than 600 business premises, around 15 schools, over 75 medical and other healthcare services and around 40 other premises of mixed use.

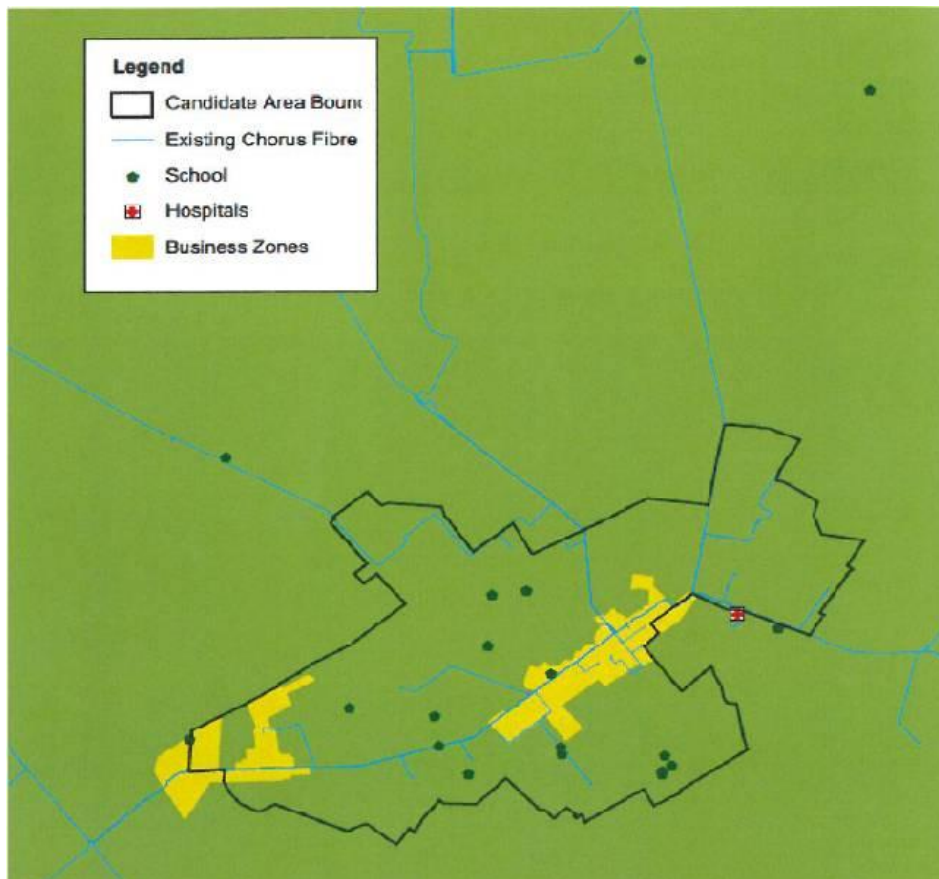
Indicative Build Timeframe

Deployment in Kapiti will take five and a half years. It will begin in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses also complete. The balance of premises will be passed by July 2017.

Masterton

Approximate Coverage Area

Coverage in Masterton will run from south-west of Solway out to SH2, to the residential area north-west of Panama Park, beyond Lansdowne in the north and will extend past Colombo Street in the east.



UFB Marketplace

A population of around 20,100 in 2010. This includes more than 580 business premises, over 20 schools and more than 70 medical and other healthcare services . There are almost 35 other premises of mixed use.

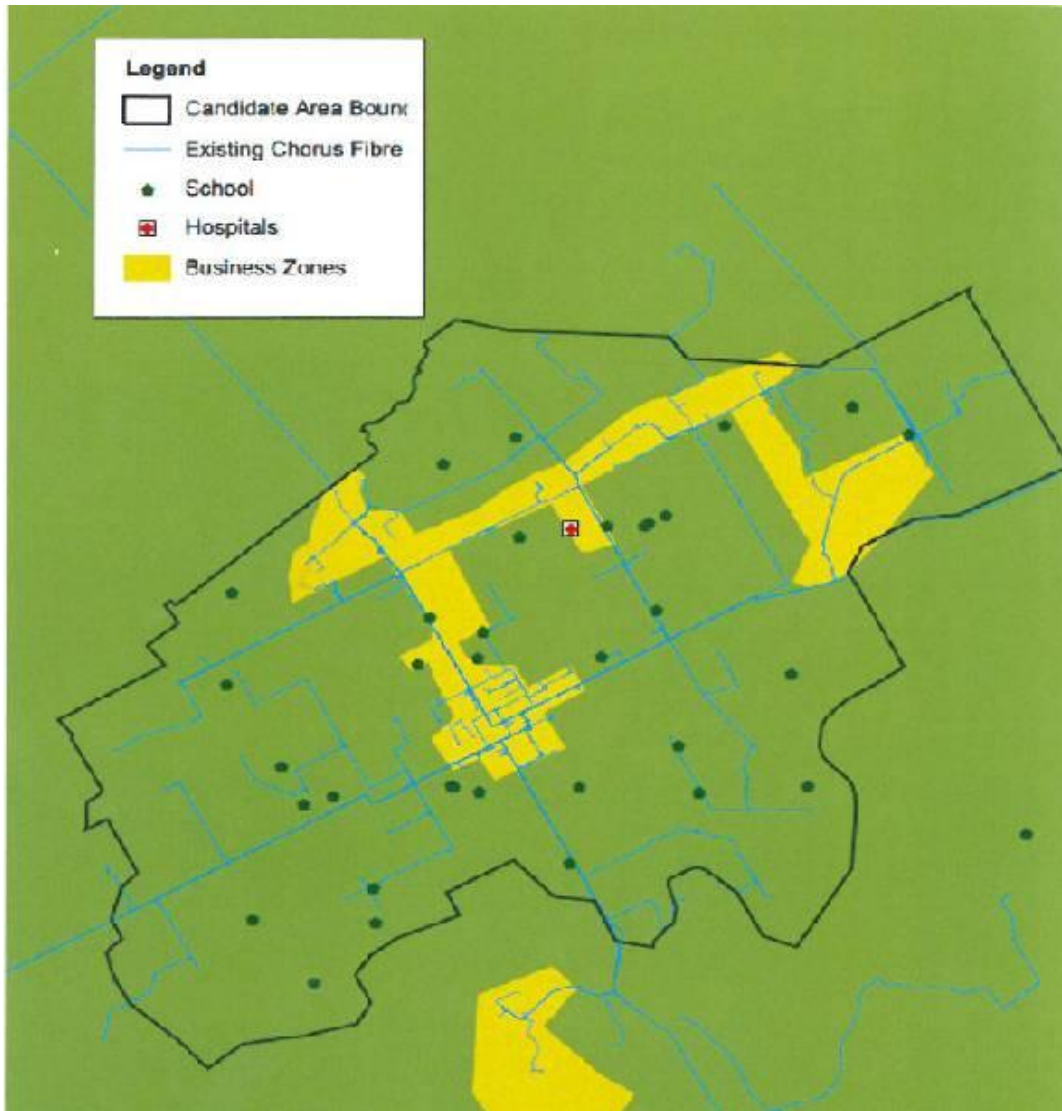
Indicative Build Timeframe

There's continuous UFB build planned for Masterton for around four and a half years from August 2011 until February 2016. As with other candidate areas, all health premises and schools will be covered by December 2015, with ninety percent of businesses complete then too.

Palmerston North

Approximate Coverage Area

The UFB coverage boundary stretches from the airport in the north to Hokowhitu in the south, Awapuni in the east and Kelvin Grove in the north-west.



UFB Marketplace

An estimated population of some 81,600. This will include nearly 1,950 business premises, almost 40 schools, more than 300 medical and other healthcare services and over 100 other premises of mixed use.

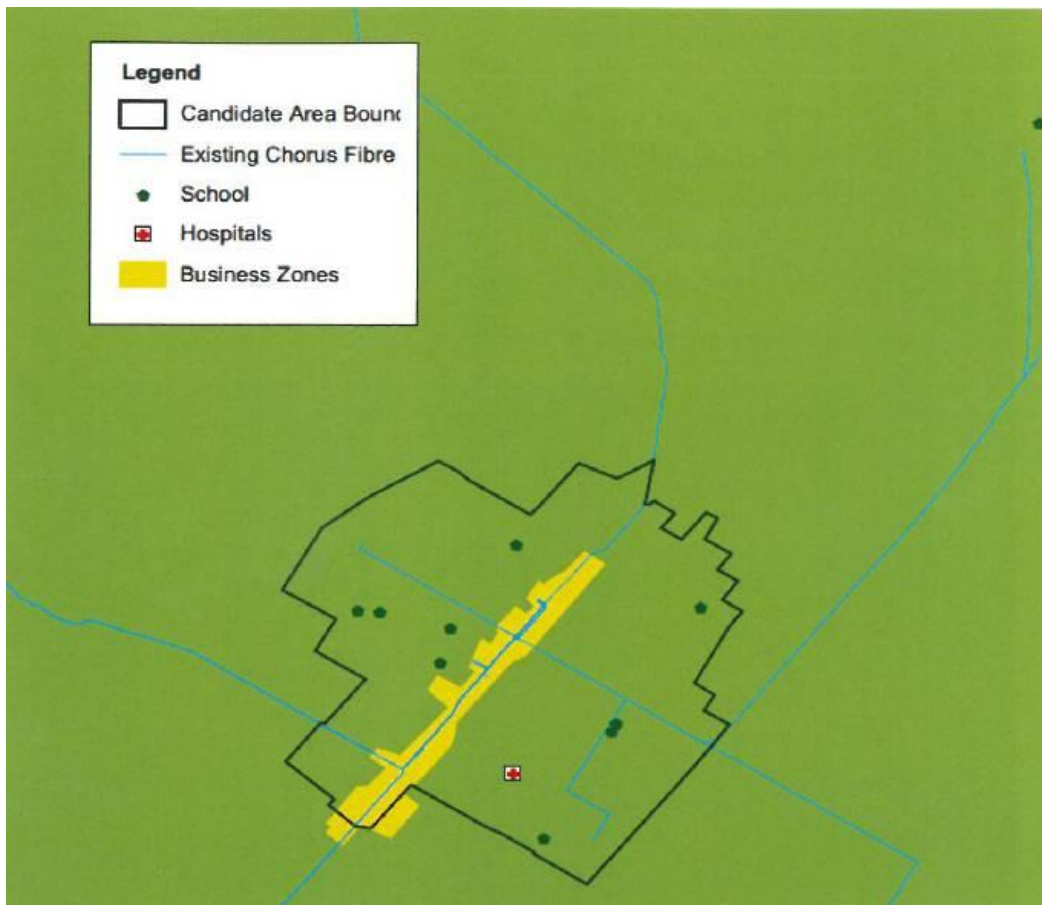
Indicative Build Timeframe

In Palmerston North the UFB deployment will take about six years, starting in August 2011. Priority users: health premises and schools will have been passed by December 2015, with ninety percent of businesses also covered by then. The remaining premises will all be completed by June 2018.

Levin

Approximate Coverage Area

Largely within the town boundaries. Extending east to Arapaepae Rd, west to Donnelly Park and north along The Avenue to the edge of the residential area.



UFB Marketplace

In 2010 the population was estimated to be more than 19,500. The coverage will include more than 460 business premises, some 10 schools, more than 70 medical and other healthcare services and around 35 other premises for mixed use.

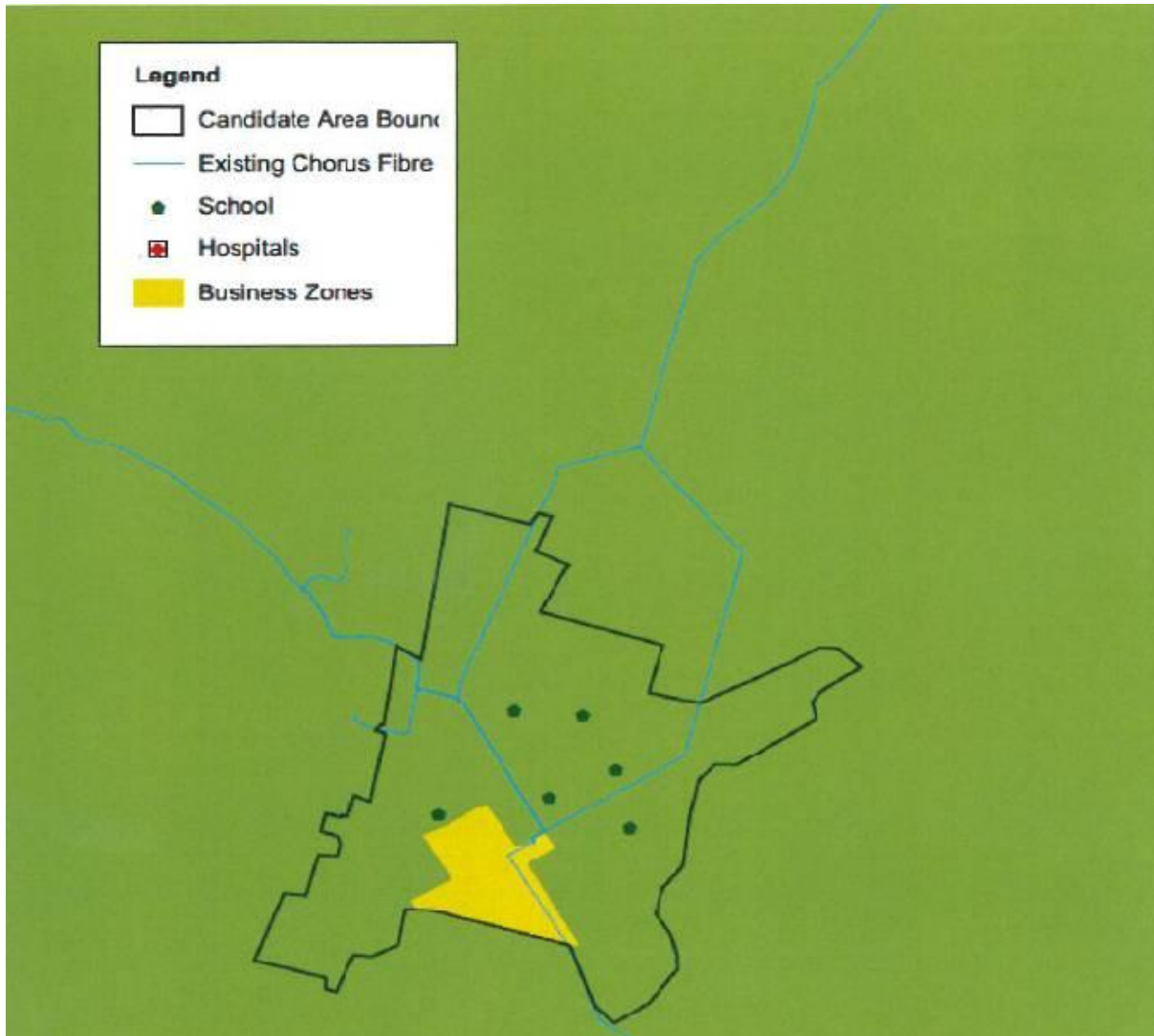
Indicative Build Timeframe

The deployment in Levin will take a little over five and a half years. It will begin in August 2011. All health premises and schools will be covered in the first build, with ninety percent of businesses also complete by then. The balance will be completed by May 2019.

Feilding

Approximate Coverage Area

Largely within the town boundaries, but extending some way east along SH54, and south down Aorangi Rd.



UFB Marketplace

An estimated population of some 14,500. The deployment includes nearly 300 business premises, nearly 10 schools, and more than 30 medical and other healthcare services, with some 20 other premises of mixed use.

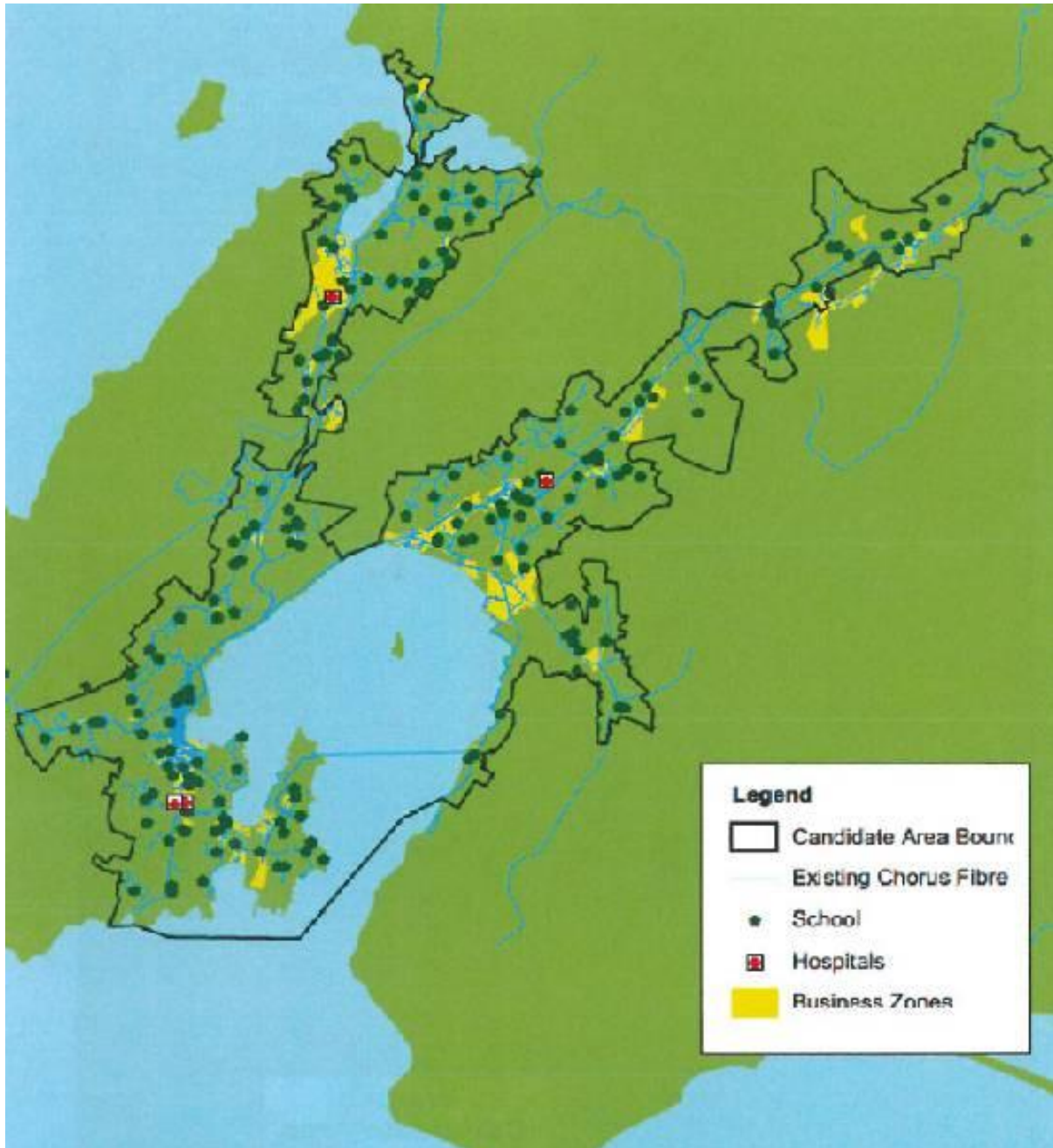
Indicative Build Timeframe

The build in Feilding will take about five years, starting in July 2011 and ending in August 2016. All health premises and schools will be covered by December 2015, with ninety percent of businesses passed by then as well.

Wellington (including Porirua, Lower Hutt and Upper Hutt)

Approximate Coverage Area

The UFB rollout will extend from Plimmerton and in the north-west and Birchville in the north-east through to Island Bay and Eastbourne in the south. Karori is included to the west and Wainuiomata to the east. These boundaries are largely in line with areas of high density and the local topography.



UFB Marketplace

Wellington, including Porirua and Upper and Lower Hutt, had a combined population of 389,700 in 2010. Nearly 7,900 business premises will be covered, as well as more than 80 schools and over 1,500 medical and other healthcare services, with more than 700 other premises of mixed use.

Indicative Build Timeframe

There will be an eight and a half year UFB build programme covering the Wellington area. Priority users: health premises and schools will have been passed by December 2015, with ninety percent of businesses also covered by then.

Upper South Island:

Nelson

Approximate Coverage Area

Fibre will be rolled out from Richmond in the south-west as far as Marybank in the north-east. The western boundary is essentially the sea, with the infrastructure build extending east to The Brook.



UFB Marketplace

Nelson had an estimated population of 59,800 in 2010. The UFB deployment will include nearly 1,450 business premises, around 20 schools, and over 100 medical and other healthcare services, as well as at least 80 other premises .

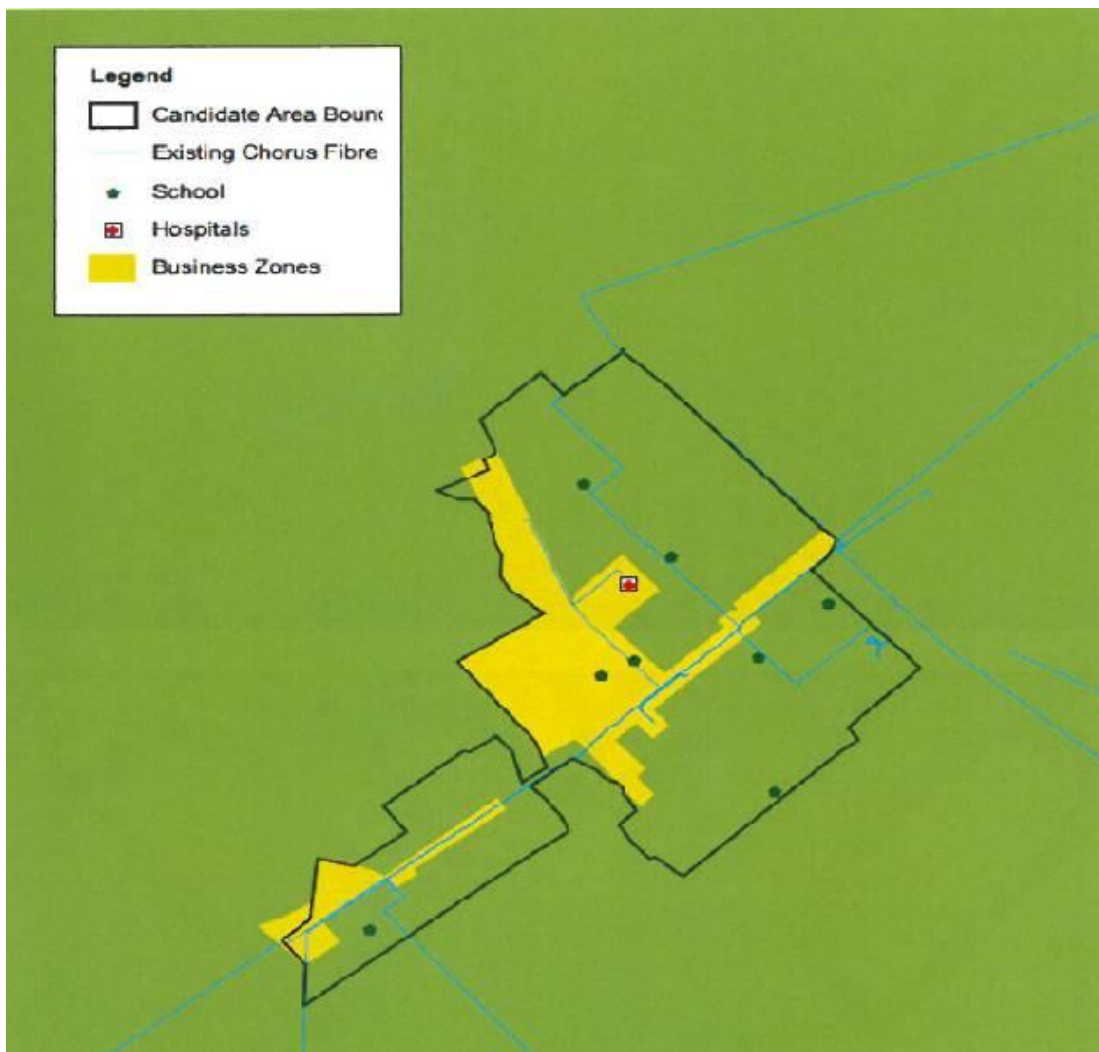
Indicative Build Timeframe

The build in Nelson will take around six years .It starts in August 2011. By December 2015 all health premises , schools and ninety percent of businesses will have been passed. Remaining premises will have been completed by February 2018.

Ashburton

Approximate Coverage Area

The area stretches from Tinwald in the south to Racecourse Rd in the north. To the west it's bounded by Farm Rd and the main residential area and it extends to Ashburton Christian School in the east.



UFB Marketplace

An estimated population of 17,800 including more than 520 business premises, nearly 10 schools, around five medical and other healthcare services and nearly 50 other premises which have mixed use.

Indicative Build Timeframe

The build will take a little under five and a half years. The priority phase will run from August 2011 until December 2015, incorporating all health premises and schools and covering ninety percent of businesses. All remaining premises will be passed by December 2019.

Greymouth

Coverage Area

Largely within the town boundaries. Extending down Main South Rd to Paroa, west out to Marsden Rd and north across the Grey River to the edge of the residential area.



UFB Marketplace

Greymouth's population is estimated at 10,000, including nearly 400 business premises, around 6 schools, at least 20 medical and other healthcare services and around 30 other premises which have a mixed use.

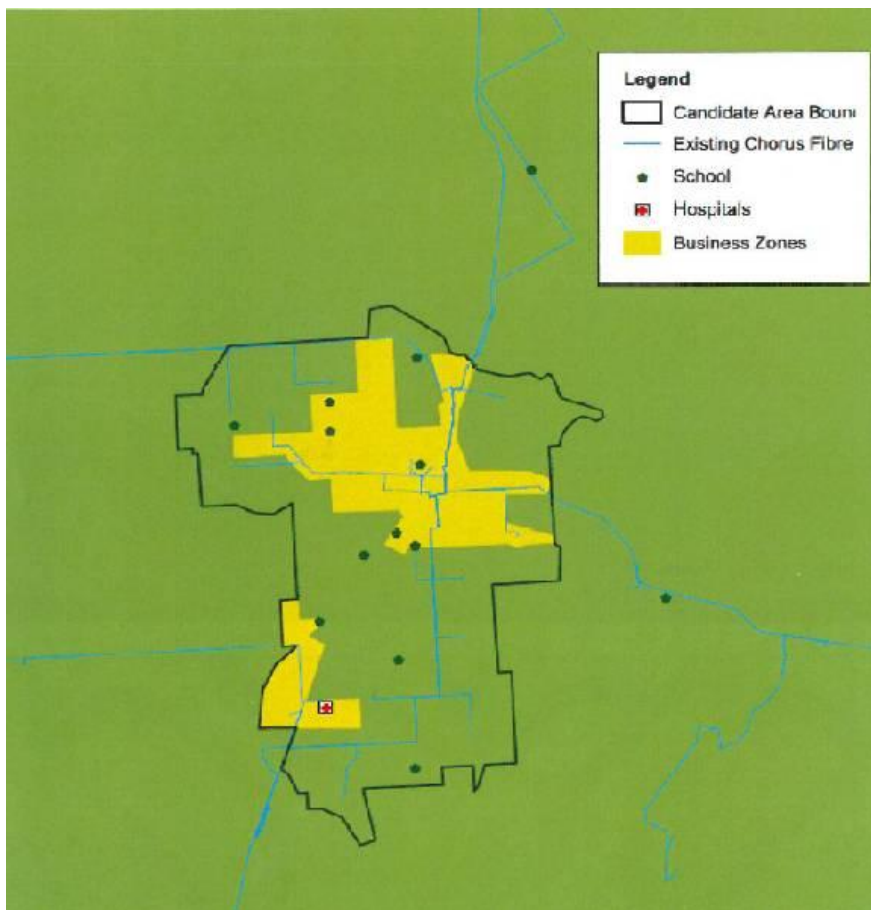
Indicative Build Timeframe

The build in Greymouth runs for four and a half years, from August 2011 until December 2015. It will incorporate all priority users.

Blenheim

Approximate Coverage Area

The UFB deployment flows north to Lansdowne Park and includes Waterlea Racecourse. It runs west to Murphy's road, where it cuts in south to run west of the hospital. It extends to Witherlea in the south and Riversdale in the east.



UFB Marketplace

A population estimated at 30,200. Fibre will run past more than 700 business premises, nearly 10 schools, around 100 medical and other healthcare services and cover some 50 other premises of mixed use.

Indicative Build Timeframe

The town has a deployment timeframe of a little over five years, running continuously from August 2011 until June 2016. All health premises and schools will be covered by December 2015, with ninety percent of businesses passed by then as well.

Timaru

Approximate Coverage Area

Information on the coverage area for Timaru is pending and will be provided as soon as possible.

UFB Marketplace

Timaru's population was estimated at 27,600 in 2010. The UFB build will include more than 870 business premises, some 15 schools, around 75 medical and other healthcare services and at least 65 other premises of mixed use.

Indicative Build Timeframe

The build in Timaru will take nearly six years. It will start in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses passed by then as well. Remaining homes and businesses will be passed by September 2018.

Lower South Island:

Oamaru

Approximate Coverage Area

Largely within the town boundaries. Extending west to Waiareka Junction, north to the racecourse, bounded by the coast to the east and south as far as South Hill.



UFB Marketplace

In 2010, Oamaru had a population estimated at nearly 13,000. Fibre will reach the door of more than 450 business premises, at least 6 schools and more than 30 medical and other healthcare services, as well as more than 40 other premises of mixed use.

Indicative Build Timeframe

The build in Oamaru will take five years and will start in August 2011. All health premises and schools will be covered by December 2015, with ninety percent of businesses passed by then as well. The balance of premises will be passed by December 2019.

Queenstown

Coverage Area

Coverage will stretch west from Fernhill to Frankton in the east. It will extend from Warren Park in the north out to Kelvin Heights in the south.



UFB Marketplace

Queenstown's population was estimated to be approaching 6,000 in 2010. When UFB rolls out it will cover more than 570 business premises, some 7 schools, and around 30 medical and other healthcare services. Some 30 other premises of mixed use will also be reached.

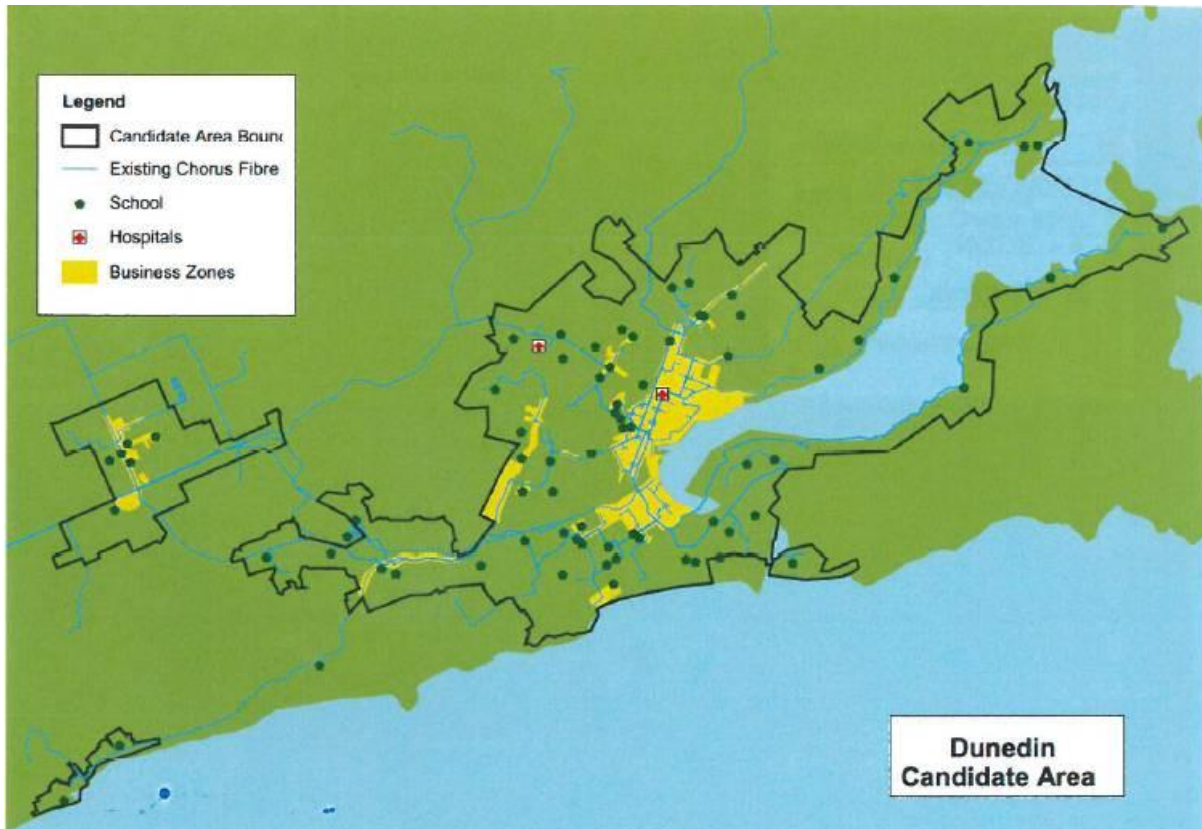
Indicative Build Timeframe

The deployment in Queenstown will take a little over five years . It will start in August 2011, incorporating all priority users by December 2015. Remaining premises will be passed by May 2019.

Dunedin

Indicative Coverage Area

Fibre will be rolled out as far as Abbotsford and Fairfield in the west, and down the Otago Peninsula to Portobello and Port Chalmers . The south coast marks the southern boundary, with the build extending to Pinehill and Glenleith in the north. Brighton and Mosgiel are also covered as stand alone areas.



UFB Marketplace

Dunedin had a population estimated at 116,600 in 2010. Fibre will be delivered to the door of more than 2000 business premises, over 60 schools, around 500 medical and other healthcare services, as well as over 200 other premises of mixed use.

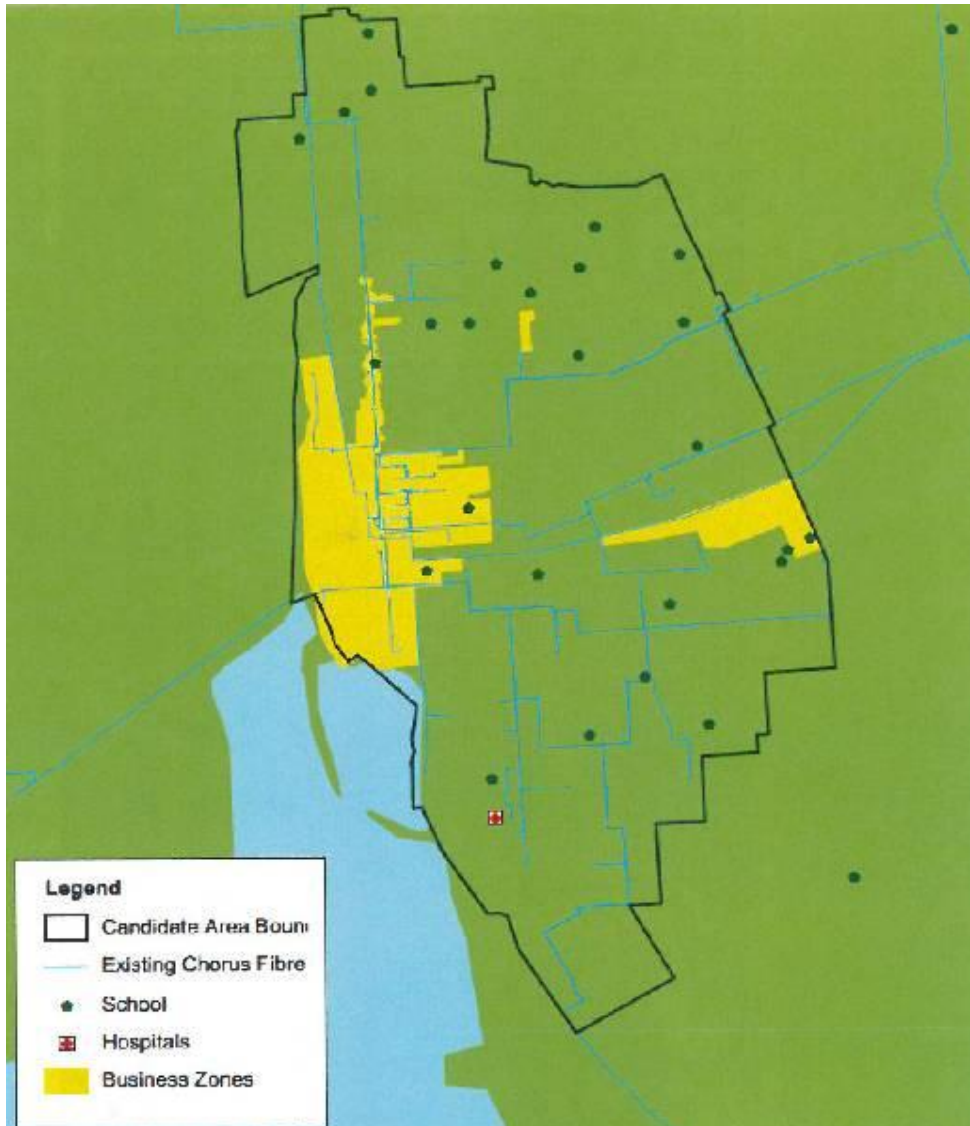
Indicative Build Timeframe

In Dunedin the deployment will take around seven and a half years from August 2011 until November 2018. Priority users: health premises and schools will have been passed by December 2015, with ninety percent of businesses also covered by then.

Invercargill

Coverage Area

Extending to the Donovan Park area in the north, south to Clifton, west to the airport and Grasmere and as far east as Rockdale.



UFB Marketplace

Invercargill's population was estimated at 48,700 for 2010, including around 1,050 business premises, at least 16 schools, more than 100 medical and other healthcare services and more than 50 other premises of mixed use.

Indicative Build Timeframe

There's a continuous build in Invercargill running for a little under 6 years from August 2011 until April 2017. All health premises and schools will be covered by December 2015, with ninety percent of businesses passed by then as well.

4. Products and Pricing

Ultra-Fast Broadband (**UFB**) products are based on a “building block” approach. CFH’s agreement Chorus ensures that Chorus will sell ultra-fast broadband components such as downstream bandwidth, upstream bandwidth and Committed Information Rate (**CIR**) to the requirements of Retail Service Providers (**RSPs**). CIR is a guaranteed minimum rate of data transfer for priority traffic. **EIR**, or Excess Information Rate, is the accepted rate of data transfer for low priority traffic.

UFB pricing is at the **wholesale** level. End-users should bear in mind that prices of retail UFB-based services will reflect non-wholesale costs, such as national backhaul, international bandwidth, provisioning, billing and so forth. **The prices shown below are the price caps agreed between CFH and Chorus.** Chorus may sell their services at prices below or equal to the price caps, not above.

Prices are per month excluding GST.

The products described below are “templates” at a wholesale level. Retail Service Providers will take these product components, add elements under their own control such as national and international bandwidth (which drives data caps) to offer products to end-users.

Products for Home / Retail end users (GPON Technology)

The following products are designed for mass market usage by homes and small businesses.

Product	Upstream and Downstream Speeds	Committed Information Rate	How UFB Products Can Be Used	Wholesale Price Cap (2011)
<i>Entry level Consumer</i>	30 Mbps Downstream / 10Mbps Upstream	Minimum 2.5Mbps Symmetric	Upload a 30MB folder of photos in 24 seconds	\$37.50
<i>Entry level Consumer + HD Video</i>	10 Mbps Downstream only	10 Mbps Downstream only	Watch HD video stream	\$5.00 (2 nd channel \$2.50)
<i>Household 100Mbps</i>	100Mbps Downstream / 50Mbps Upstream	Minimum 7.5 Mbps Downstream, 2.5Mbps Upstream	Download a High Definition movie in <8.5 minutes	\$55.00
<i>Entry level Business</i>	30 Megabits per second (Mbps) Downstream / 10Mbps Upstream	Minimum 5Mbps Symmetric	Run simultaneous HD videoconferences & cloud computing	\$49.95

Additional Bandwidth:		Additional Ports:	
CIR 2.5Mbps	\$1.25 Down / \$2.50 Up	2nd Voice port	\$15
EIR 10Mbps	\$1.35 Down / \$2.70 Up	2nd and subsequent Ethernet port	\$10
		Wi-Fi port	\$2.50

Except in exceptional circumstances there will be **no one off Wholesale connection charge** for residential consumers to connect to UFB at a wholesale level.

Chorus will offer an **entry level product**, price capped at \$37.50 per month. This product offers downstream bandwidth at 30 Megabits per second (Mbps) and upstream bandwidth at 10 Mbps. This is lower than the current price of 'Naked DSL', a wholesale copper product which supports ADSL2+ broadband services without a phone line, known in the industry as EUBA 40. This product has a Committed Information Rate (CIR) of 2.5Mbps - this offers approximately 60 times greater dedicated bandwidth than 'Naked DSL'. This product comes bundled with an Ethernet port and an ATA (POTS) port, and will support delivery of high quality telephony as well as broadband.

Chorus will also offer a **High Definition Video product** with Downstream bandwidth of 10 Mbps and downstream CIR of 10Mbps, price capped at \$5.00. This product is designed to carry high definition video content such as premium TV. Retail Service Providers may choose to bundle this with the 30/10 entry level product to offer a "triple play" (broadband, telephony and video) product with a wholesale price of \$42.50.

Chorus will also offer a **Household 100Mbps product**, price capped at \$55, providing 100Mbps download speed and 50Mbps upload. This product this will have a CIR of 7.5 Mbps Downstream and 2.5Mbps Upstream.

With much higher Upstream and CIR components than current copper-based residential broadband products, the UFB products offer a vastly superior service at comparable prices to copper services.

Products for Corporate / Enterprise end users (Point to Point Technology)

Businesses (including health premises) will have access to 100Mbps Symmetric services, scalable to 1 Gigabit per second and above. Symmetric services feature equal allocations of Downstream and Upstream bandwidth. The following products are designed to be used by larger businesses, government agencies and so forth.

Product	Upstream and Downstream Speeds	Committed Information Rate	How UFB Products Can Be Used	Wholesale Price Cap (2011)
<i>100M Symmetric Business</i>	100 Mbps Downstream / 100 Mbps Upstream	CIR not bundled. Minimum 10 Mbps Symmetric CIR, then purchase in increments of 10 Mbps	Upload 100MB file in 8 seconds	\$380
<i>1G Symmetric Business</i>	1 Gbps Symmetric	As above	Send a radiology image (say 1GB) in 8 seconds	\$455
<i>10G Symmetric Business</i>	10 Gbps Symmetric	As above	Run massive data requirements across locations	\$1,355
<i>Dark Fibre</i>	Unlit	n/a	Depends on service provided	\$355

Additional Bandwidth:	
CIR 10Mbps	\$10 (Symmetric)
EIR 100Mbps	\$10 (Symmetric)

Chorus will offer a suite of competitively priced business products, including dark fibre and premium Layer 2 services like 100Mbps and 1 Gigabit per second symmetrical services. For example, a 1 Gigabit symmetrical service will be priced capped at \$455, less than half the current minimum wholesale market price for such a service. Chorus will also offer 'dark fibre' services where the customer is provided with access to the raw fibre infrastructure.

Price caps ensure there will be no increase in prices for P2P services to 2019. In particular there will be no indexing of UFB price caps to CPI.

Products for Schools:

Schools are a priority segment for the UFB initiative, and will be able to access a range of services ranging in speed from 30 Mbps symmetric to 1 Gbps symmetric. Broadly speaking, UFB products for schools will be provided in a similar manner to business products. However, prices are lower than for businesses because of the Government's 2010 decision to cover 100% of the cost of the fibre "drop" from a school's boundary to its server room.

The following products have been designed in consultation with the Ministry of Education to be suitable for schools.

Product	Technology	Upstream and Downstream Speeds	Committed Information Rate	Wholesale Price Cap (2011)
<i>Schools 30Mbps</i>	PON	30 Mbps Symmetric	10Mbps minimum	\$50
<i>Schools 50Mbps</i>	PON	50 Mbps Symmetric	10Mbps minimum	\$60

<i>Schools 100Mbps (PON)</i>	PON	100 Mbps Symmetric	10Mbps minimum	\$150
<i>Schools 100Mbps (P2P)</i>	P2P	100 Mbps Symmetric	10Mbps minimum	\$275
<i>Schools 1Gbps</i>	P2P	1 Gbps down Symmetric	10Mbps minimum	\$330

For more information on the Government’s UFB in Schools program, visit <http://www.minedu.govt.nz/theMinistry/EducationInitiatives/UFBInSchools.aspx>

5. Potential Benefits of UFB

In Business

Extending the reach of broadband services tends to be well-correlated with increasing business productivity and economic growth. World Bank analysis published in 2009 suggests that investment in broadband infrastructure has a higher flow-through to nationwide productivity than other areas of telecommunications such as mobile telephony. Across a range of countries, this analysis showed a 10 percentage-point increase in telecommunications penetration via broadband would be expected to increase economic growth by between 1.2 and 1.4 percent.

In Schools

Schools that are already accessing fibre report a range of benefits such as greater engagement by students and improved learning outcomes, especially in literacy; more opportunity to create, collaborate and connect online; a greater range of subject choices for students via distance learning; more effective assessment practices and administrative efficiencies.

In Health

Potential uses of UFB include tele-health technologies which allow patients to self-monitor their health in the home with appropriate medical oversight; electronic patient health records which are securely stored and universally accessible to authorised medical practitioners; and electronic transfer of advanced medical images (teleradiology, telepathology etc).

6. Deed of Undertaking

Each of CFH’s partners has signed a **Deed of Undertaking** with the Crown. The Deed of Undertaking is an agreement between the partner and the Crown, in which the new fibre provider provides binding “open access” undertakings regarding the application of non-discrimination and equivalence rules in the provision of wholesale telecommunications services offered over infrastructure funded by Crown co-investment. This is able to be enforced by the Commerce Commission.

The Deed of Undertaking relating to Chorus is being updated to comply with the revised Telecommunications Amendment Bill and will be published shortly on the CFH website at www.crownfibre.govt.nz.

7. Technology

Both GPON and Point-to-Point technology are being used for UFB.

GPON means Gigabit Passive Optical Network (ITU-T G.984 standard) comprising an optical signal capable of delivering ~2.5Gbps downstream and ~1.2Gbps upstream over a single fibre that is then capable of being split into separate signals to deliver service to multiple customers. For UFB, GPON is split 1:24 enabling up to 24 customers to receive 100Mbps downstream and 50Mbps upstream.

As part of UFB deployment, Chorus will have an obligation to maintain currency with international PON technical standards.

Point-to-point fibre optic connections provide a dedicated signal to a single premise and will be used for premium business and some priority users. This is capable of supporting speeds of up to 10 Gbps and is a high end connection.

8. About Chorus

Chorus is New Zealand's largest telecommunications utility provider. Chorus maintains and builds the copper local access network, made up of local telephone exchanges, cabinets and copper and fibre cables. It connects around 1.8 million New Zealand homes and businesses throughout the country. Chorus operates:

- 130,000 km of copper cable
- A fast growing network of fibre optic cables
- 632 telephone exchanges
- 11,000 existing cabinets.

Phone and internet companies use the Chorus network to deliver services to end users. Customers of Chorus include Actrix, Airnet, CallPlus, Compass, Orcon, TelstraClear, Telecom, Telecom Wholesale, Gen-i, Vodafone and other providers.

Chorus is currently a Telecom New Zealand business, operating independently from all other Telecom business units and treats all service provider customers, including Telecom's retail and wholesale businesses on equal terms.

As part of the ultra-fast broadband initiative Telecom will de-merge into separate companies. This structural separation will mean that Chorus has a separate staff and Board, and is listed separately.

9. For more information:

For more information, visit www.crownfibre.govt.nz