

**Building A Competitive Ubiquitous
Broadband Network: The New Zealand Experience**

**Achieving Ubiquitous Broadband Networks
Bahrain 22 – 23 February 2010**

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Telecommunications Commissioner**

Building A Competitive Ubiquitous Broadband Network: The New Zealand Experience

- The Telecommunications Act 2001 (2006 Amendments)
- Functional Separation of Telecom (2008)
- Telecom's Fibre to the Node (Cabinet) Undertakings (2008)
- Ultra Fast Broadband (UFB) Initiative (2010)
- Rural Broadband Initiative (2010)
- Looking ahead: Challenges/Opportunities

Telecommunications Act 2001 (2006 Amendments)

- Introduced industry wide process called Standard Terms Determinations which sets price and non-price access terms for supplying regulated telecommunication services between operators.
- Introduced new regulated services
 - local loop and sub-loop unbundling
 - naked DSL
 - unrestricted bitstream
 - co-location in cabinets and exchanges
- Introduced functional separation of Telecom and information disclosure

Functional Separation of Telecom (2008)

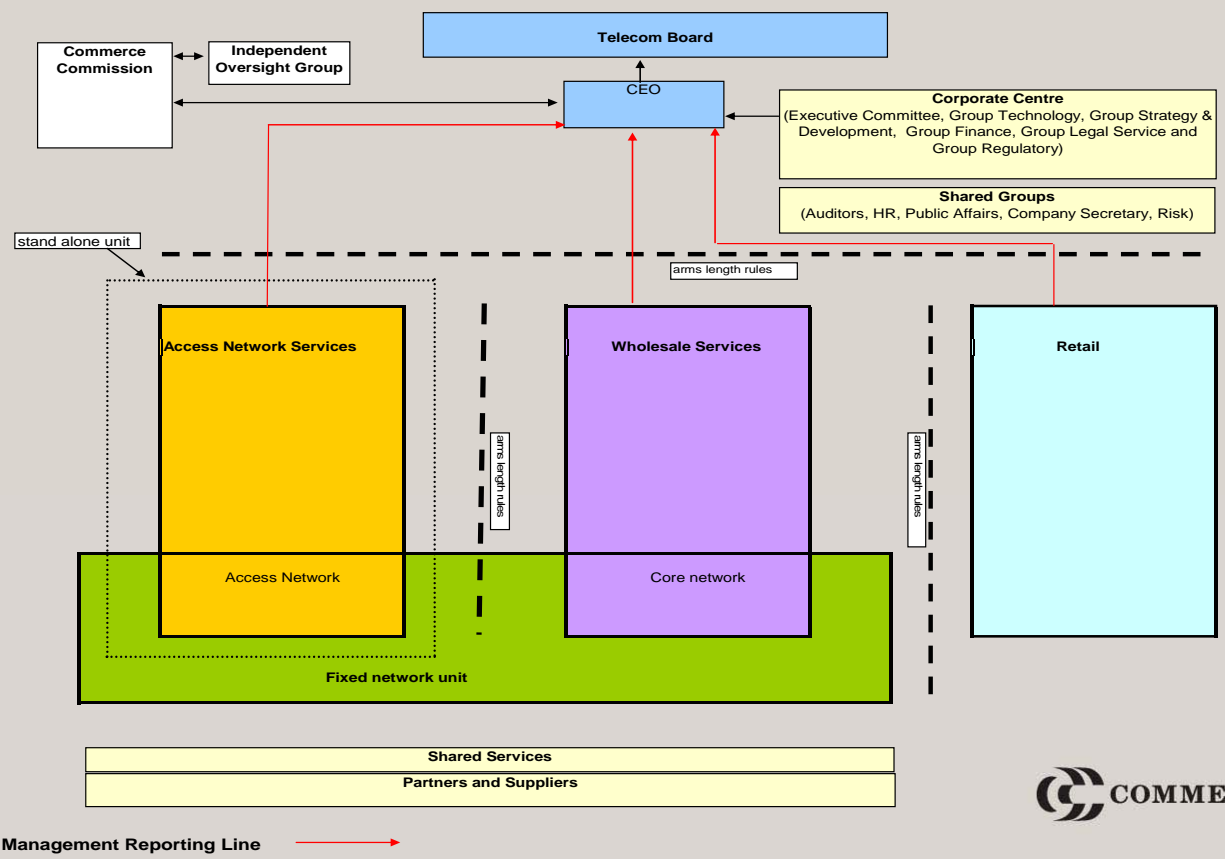
- Separation Model:
 - a stand-alone arms length network access services business
 - wholesale business unit(s) operated at arms length from retail business
 - retail business operated at arms length from any fixed network business
- Purpose of separation in s69A of the Act:
 - Promote competition in telecommunication markets for long-term benefit of end-users
 - Require transparency, non-discrimination and equivalence of supply
 - Facilitate efficient investment in telecommunications infrastructure and services
- Details of structure, services, assets and equivalence standards were set out in Ministerial Determination and contained in an Undertaking by Telecom accepted by the Minister in March 2008

Functional Separation of Telecom (2008)

- Non-Discrimination by Telecom
 - in general terms prohibits differences in treatment of access seekers which are likely to harm competition or undermine efficient investment in infrastructure or services
- Equivalence of access - EOI (Equivalence of Input)
 - Same product, price, using systems and information, product development etc.
 - Telecom must consume the identical product to its customers
- Monitoring of compliance by Independent Oversight Group who reports to the Commission.
- Enforcement by Commission

Functional Separation of Telecom (2008)

Fixed Network 3 Box Separation Model



Functional Separation of Telecom (2008)



Red Network



Telecom's Fibre to the Node (Cabinet) Undertakings (2008)

- Ministerial Determination provided that existing legacy PSTN services either:
 - be migrated to EoI, or
 - alternately that the those services be moved to EOI Compliant infrastructure.
- Telecom chose the latter, (however if it fails to meet the related migration plans the option becomes void and migration to full EOI by Dec 2011 is still required).
- Telecom undertook a network upgrade to providing a minimum 10 Mbp/s by end of 2011.

Telecom's Fibre to the Node (Cabinet) Undertakings (2008)

Tracking Milestones as of 30 June 2010:

- more than 1500 distribution cabinets have been installed in towns of 500+. Cabinets must be equipped with ADSL2+ or VDSL capability with DSLAMS installed and operational. At least 99% of lines serviced off these cabinets will be engineered to have a maximum line loss of 60db measured at 1024 kbps at the external termination point.
- Enforceable Milestones include:
 - 2200+ Cabinets Dec 2010
 - 2800+ Cabinets June 2011
 - 3500+ Cabinets Dec 2011

Telecom's Fibre to the Node (Cabinet) Undertakings (2008)



Telecom's commitment:
Build a world-class access network enabling the delivery of broadband connections between 10Mbps and 20Mbps to 80 per cent of New Zealanders by the end of 2011

What does this mean for NZ?

A 10Mbps commitment to all NZ towns with 500 lines or more
i.e. 84% of all Chorus' access lines by end 2011

Note: BT intends to extend ADSL2+ broadband service to just 75% of UK homes and businesses by Spring 2011

How?

Combination of exchange equipment upgrades and fibre to the node (FTTN) cabinet deployments

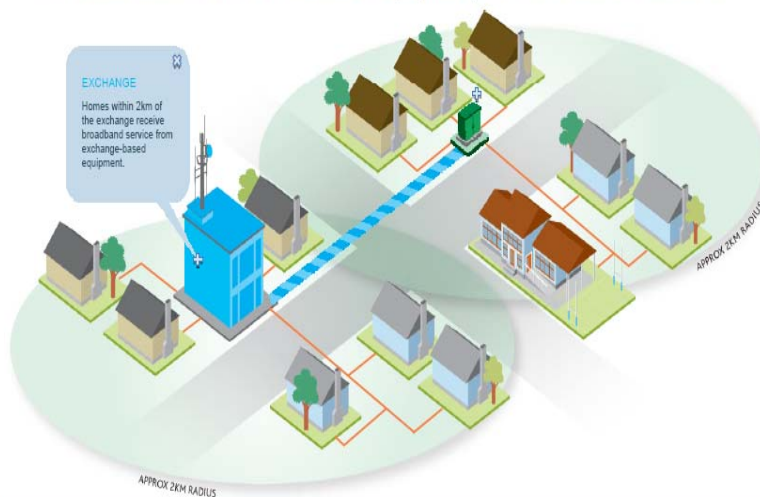
- 3,600 upgraded cabinets required by the end of 2011 to connect 750,000 customers
- 2,500km of new fibre – greater than distance the length of New Zealand (Cape Reinga to Bluff)



Telecom's Fibre to the Node (Cabinet) Undertakings (2008)

Extending fibre to the node (FTTN)

The closer customers are to broadband equipment, the faster their broadband is

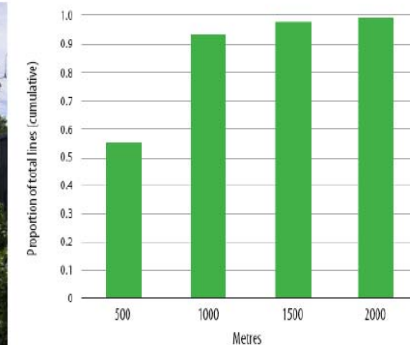


- ADSL2+ equipment provides up to 20Mbps download
- VDSL2 equipment provides up to 50Mbps download and up to 20Mbps upload

FTTN is bringing fibre ever closer to homes

90% of homes using FTTN cabinets are within 1km of the fibre feeder network

This will provide a springboard for even better broadband in the future: ADSL2+ ➔ VDSL2 ➔ FTTH



Telecom's Fibre to the Node (Cabinet) Undertakings (2008)

Results so far (2008-2010)

- Almost 1 million homes and businesses - 56% of Chorus' 1.8m access lines - now within reach of high-speed broadband
- 1,426 cabinets connecting more than 268,000 customers
- Chorus deploys 25 cabinets a week. Telecom used to deploy 90 a year
- Average broadband speed in upgraded areas 13Mbps
- Independent broadband measurement company *Epitiro* already rates NZ broadband as 20% faster than the UK



Ultra-Fast Broadband (UFB) Initiative (2010)

Key aspects of 2009 Government UFB Initiative:

- Open access fibre infrastructure
- \$1.5 billion of Government funding alongside private sector co-investors
- Creation of private Local Fibre Companies (LFC)
- Roll out of FTTH in 33 urban areas, totalling 75% of New Zealanders over 10 years
- Rolling out FTTH in the first six years (priority) to schools, hospitals, businesses and tranches of residential areas

Ultra-Fast Broadband (UFB) Initiative (2010)

Principles behind the government investment:

- making a significant contribution to economic growth;
- neither discouraging, nor substituting for, private sector investment;
- avoiding entrenching the position, or ‘lining the pockets’, of existing broadband network providers;
- avoiding excessive infrastructure duplication;
- focussing on building new infrastructure, and not unduly preserving the ‘legacy assets’ of the past; and
- ensuring affordable broadband services

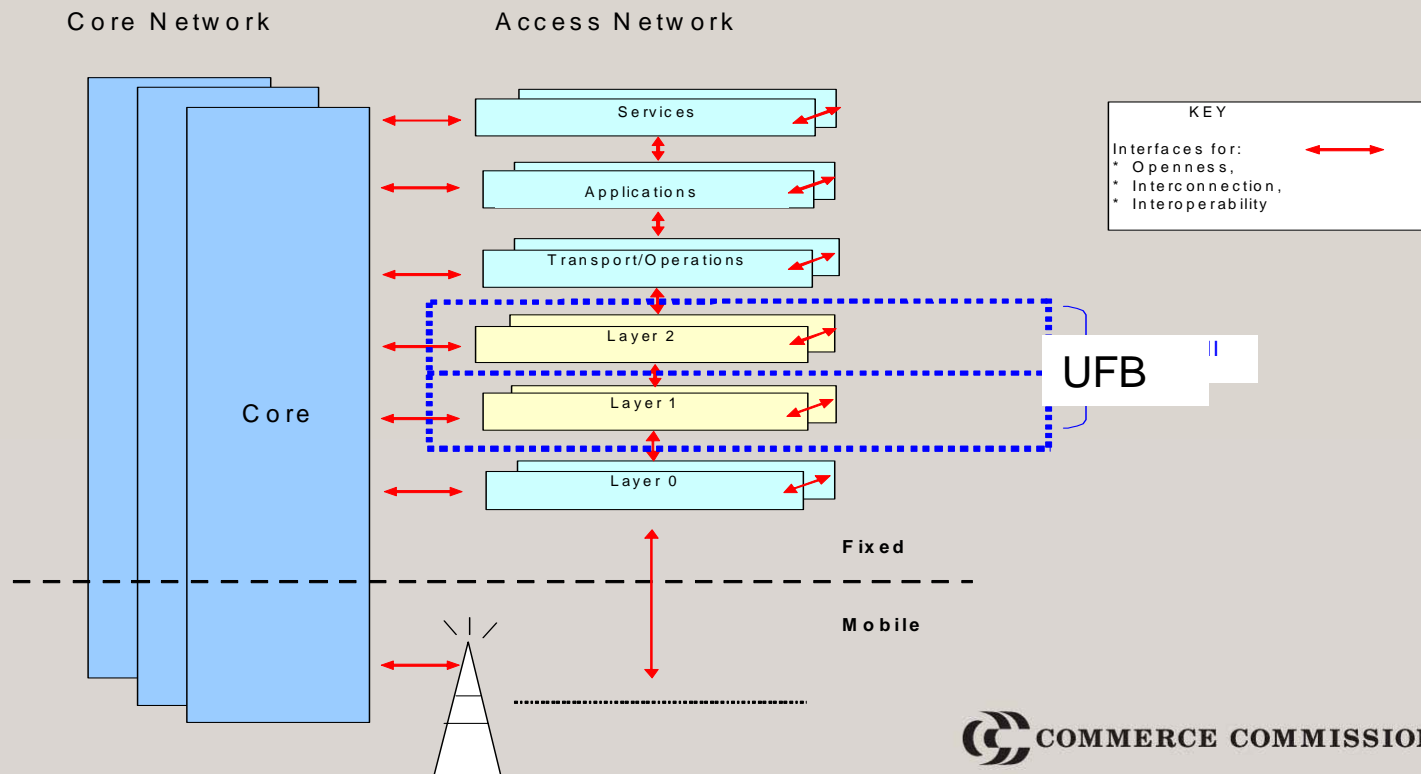
Ultra-Fast Broadband (UFB) Initiative (2010)

Structure

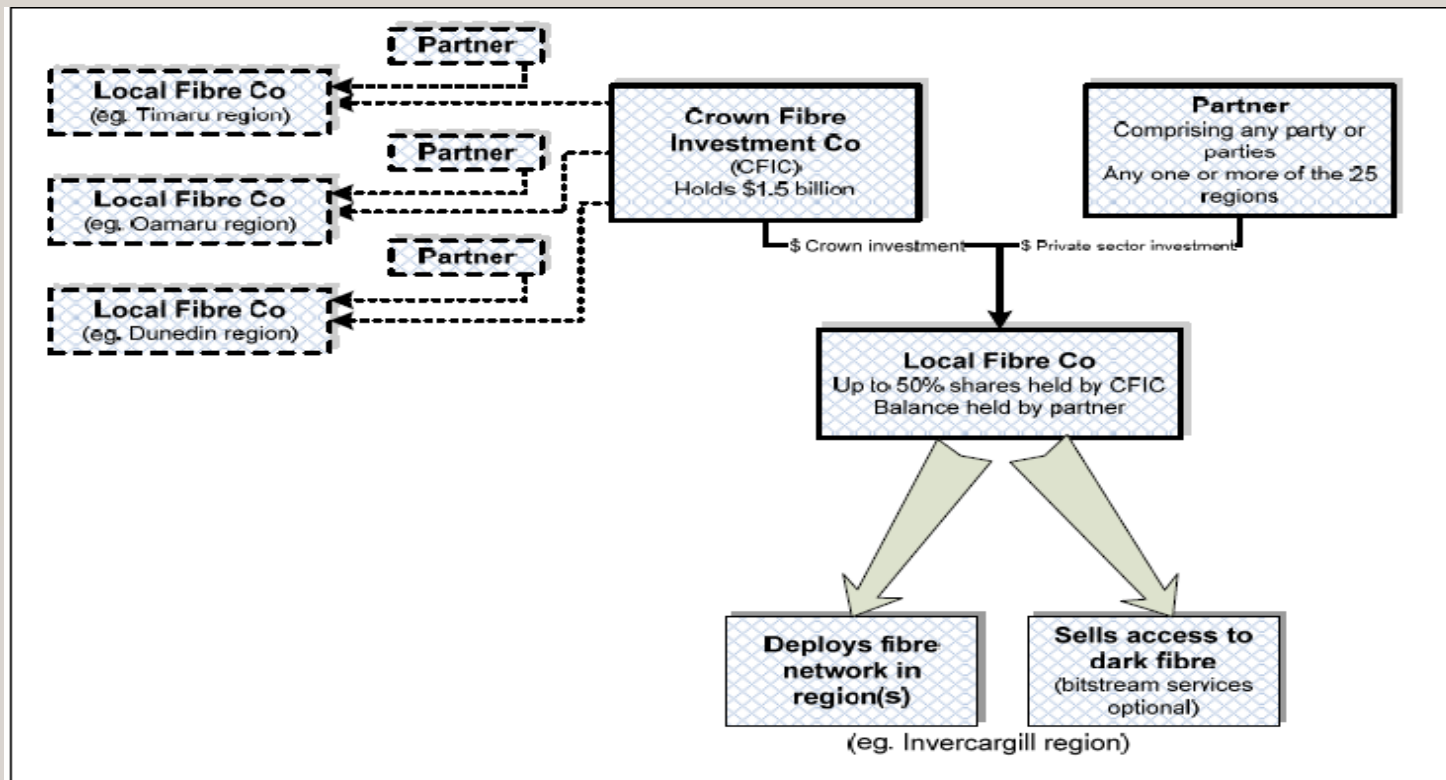
- Govt. establishes a Crown Fibre Holding (CFH) that offers equity to Local Fibre Company (LFC) Partners who have won contestable regional bids to roll out fibre optic networks
- LFC would operate as infrastructure carrier, providing wholesale access to dark fibre, and optionally providing Layer 2 wholesale services
- LFC cannot provide retail services

Ultra-Fast Broadband (UFB) Initiative (2010)

OSI Layer Model of all IP network



Ultra-Fast Broadband (UFB) Initiative (2010)



Ultra-Fast Broadband (UFB) Initiative (2010)

Funding, Ownership and Control

- The commercial model reflects a risk sharing arrangement to ensure the optimal delivery of the UFB objective
- The LFC has 4 types of shares
 - “A” shares, voting shares but no rights to dividends, initially held by CFH
 - “B” shares, issued to the Partner over time having no voting rights but with the right to receive ordinary declared dividends
 - The “Government Share” with no voting rights or rights to dividends but with the power of veto on specified matters
 - Ordinary shares, carrying equal rights to voting and dividends, these are only issued at the end of the concession period by converting all remaining A and B shares, the Government Share remains unchanged

Ultra-Fast Broadband (UFB) Initiative (2010)

Funding, Ownership and Control

- Initially CFH has effective control over the LFC reflecting the large equity injection into the company
- The equity is provided to fund the Communal Infrastructure
- Control is shifted, over time through the purchase of A shares by the Partner, as end users are connected
- The LFC enters into a Network Procurement Agreement with the Partner
- The LFC acquires the Communal Infrastructure from the Partner as each segment is completed and accepted

Ultra-Fast Broadband (UFB) Initiative (2010)

Funding, Ownership and Control

- CFH funds 100% of LFC Communal Infrastructure
- CFH does not fund LFC end user specific infrastructure
 - LFC procures this from the Partner as each end user is connected
 - The purchase price is in dollars or by the issue of B shares to the Partner
 - The price is based on cost per premises past (CPPP) as set out in the Partner's forecast with cost overruns met by the Partner
- The Partner funds the establishment costs of the LFC (and capital injections as required)
 - In return the LFC issues B shares to the Partner

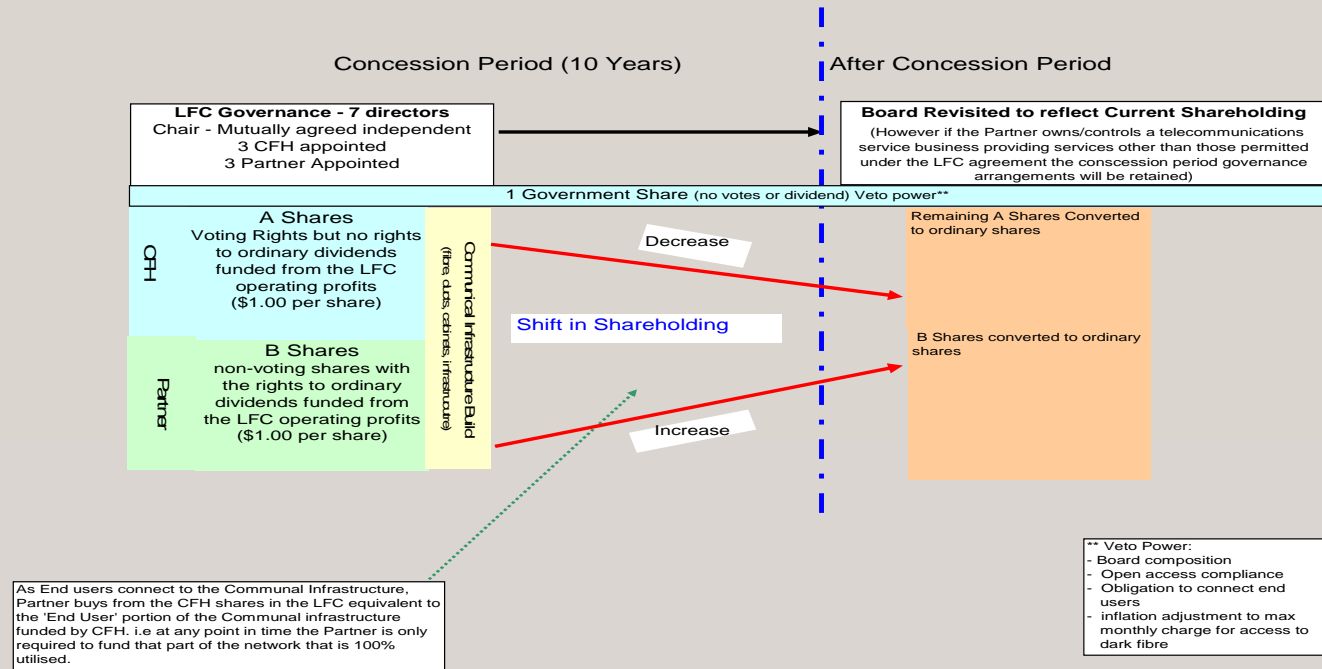
Ultra-Fast Broadband (UFB) Initiative (2010)

Funding, Ownership and Control

- As end users are connected to Communal Infrastructure the control and ownership of the LFC shifts from CFH to the Partner
- LFC procures the end user specific infrastructure
- The Partner then purchases from CFH the proportionate number of A shares
- Commercial model establishes strong incentives on the Partner
 - To establish and manage very robust network build contracts
 - To drive end user take up rapidly to gain effective control and maximize returns during the concession period before all the A and B shares covert to ordinary shares

Ultra-Fast Broadband (UFB) Initiative (2010)

Compliant commercial model



Ultra-Fast Broadband (UFB) Initiative (2010)

Regulatory Regime for LFC Open Access:

- Proposed to be established by way of behavioural undertakings between the LFC and government by means of a Deed of Undertaking [ITP, Appendix 4, 2]
- LFC must operate consistently with the open access guiding principles; [ITP 13.1(e)]
- LFC must abide by the equivalence and non-discrimination requirements. [ITP 13.1(a), 13.3]
- LFC must enable co-location at specified parts of the network [ITP 13.1(b)]
- Protected by Government's Share which entrenches open access obligations [ITP 9.6(a)]

Ultra-Fast Broadband (UFB) Initiative (2010)

LFC Open Access Guiding Principles:

- Any to any connectivity
- Any network technology
- Low cost to change providers
- Equality of access

[ITP 13.2]

Ultra-Fast Broadband (UFB) Initiative (2010)

Principles Explained

Any to any connectivity

Allowing different networks to interoperate and interconnect over each service layer and between the service layers.

[ITP 13.2(a)]

Any network technology

Technology choices are market driven. Open access framework should be designed to outlive technology choices.

[ITP 13.2(b)]

Ultra-Fast Broadband (UFB) Initiative (2010)

Principles Explained

Low cost to change providers:

There should be competition at all layers in the IP network allowing a variety of networks to interact in an open architecture.

Easily able switch between providers

[ITP 13.2(c)]

Equality of Access:

Services provided by an LFC should be offered to all access seekers on the same terms and conditions using the same processes, even if the Access Seeker is a competitor or a downstream arm of a network competitor

[ITP 13.2(d)]

Ultra-Fast Broadband (UFB) Initiative (2010)

Non-discrimination

- All access seekers treated in a like manner
Any differences must be objectively justified by differences in costs, access seekers needs or characteristics, and must not harm competition).
[ITP Appendix 4,Para 8]
- Applies where LFC provides Layer 1 Service only, or provides both layer 1 and layer 2 services.
[ITP 13.3, Appendix 4, Para 7 and 9(a) & (b)]

Ultra-Fast Broadband (UFB) Initiative (2010)

Equivalence of Input (EOI)

- LFC must offer the same service, at the same price using the same operational processes to all access seekers including its partner and itself
- Applies only where the LFC provides Layer 1 services and Layer 2 services, and applies only to the provision of Layer 1 services.

[ITP Appendix 4, Para 9(a)]

Ultra-Fast Broadband (UFB) Initiative (2010)

Arms Length Rule

- The relationships between the parties do not include elements that the parties would usually omit, and do not omit elements that the parties would usually include, if the parties were acting independently
- Applies between the LFC and its Partner, and between the LFC and its Layer 2 Business Unit

[ITP Appendix 4, Para 14(b)]

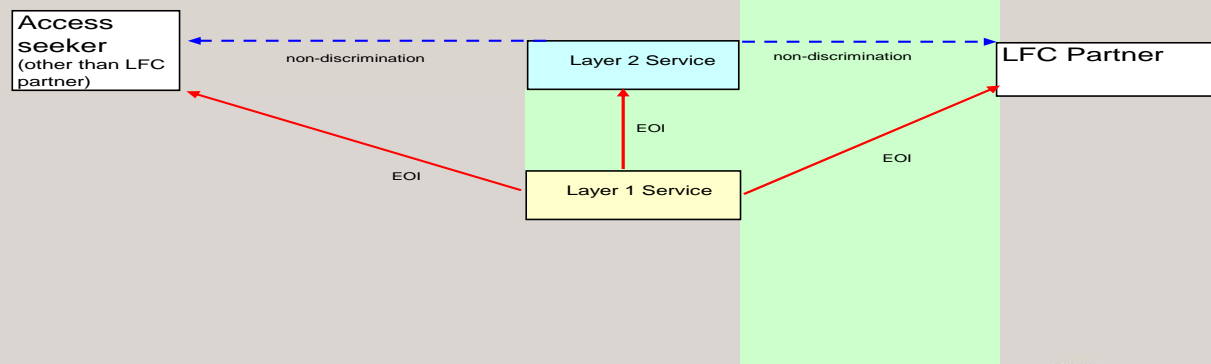
Ultra-Fast Broadband (UFB) Initiative (2010)

Equivalence, Non-Discrimination and Arms Length Rule

(Layer 1 Service Only)



(Layer 1 and 2 Services)



Ultra-Fast Broadband (UFB) Initiative (2010)

Transparency

- The LFC and Layer 2 Business unit will disclose to the Commission and the CFIC all financial and non-financial information reasonably necessary to demonstrate compliance with the non discrimination and equivalence requirements

[ITP, Appendix 4, Para 14(h)]

Ultra-Fast Broadband (UFB) Initiative (2010)

- The final shape of the undertakings, or any other approach for meeting the equivalence and non discrimination requirements that may be agreed with a Respondent, including the monitoring and compliance regime, will be negotiated with short-listed respondents.

[ITP Appendix 4, Para 4]

- Pricing is also being negotiated

Each proposal will be assessed as to the proposed Customer Charge Per Month (CCPM) which will be the maximum monthly price the LFC will be entitled to charge Access Seekers for each End User to whom the LFC's Specified Layer 1 Service is provided.'

[ITP Appendix 6, Para 11]

- Enforcement procedures will be put in place.

[ITP, Appendix 4, Para 3]

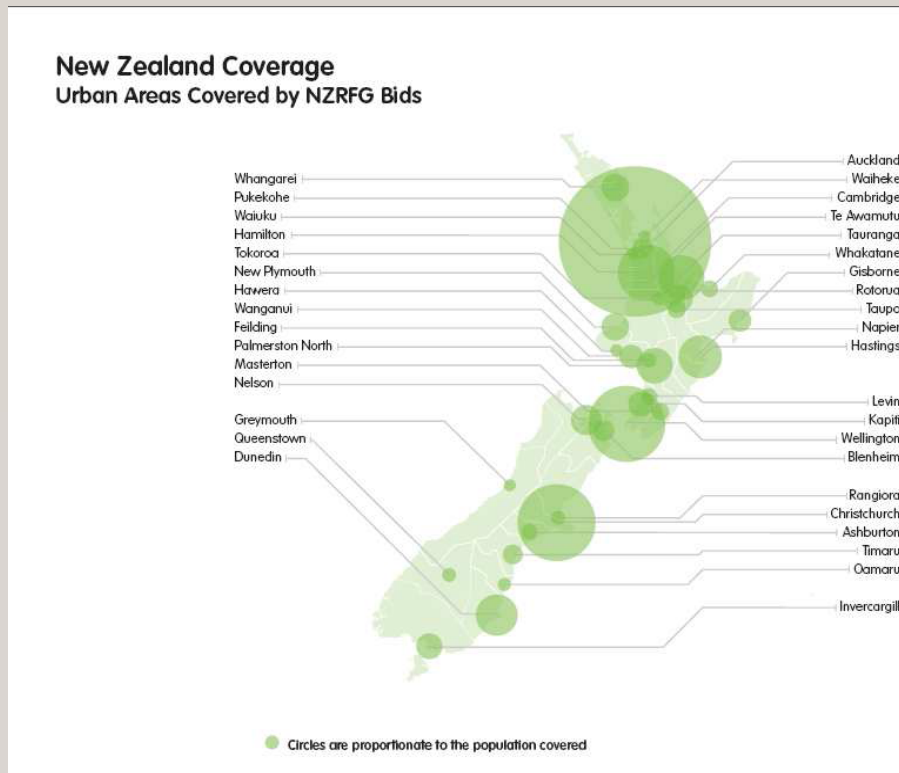
Ultra-Fast Broadband (UFB) Initiative (2010)

Process (Invitation to Participate)

- Formal invitation to participate closed on 29 January 2010.
- 33 proposals were received from 18 respondents
- 2 national responses;
- 1 from an international fibre operator

Ultra-Fast Broadband (UFB) Initiative (2010)

Proposal from New Zealand Regional Fibre Group, a consortium of 18 community-owned fibre companies' coverage area



Government Rural Package (2010)

- For remaining 25% of country
- Focus on connecting rural schools to ultra-fast broadband (UFB), while maximising the resulting spill-over benefits of those connections for rural communities.
- Key Objectives
 - UFB to 97% of NZ Schools
 - Improving coverage so that 97% of households and enterprises are able to access broadband services of 5 Mbps or better.
- \$NZ300 million improvement. Govt direct contribution of \$48 million with an additional \$52 million from the UFB (which will be paid back over time)
- Balance of \$252 million via proposed levy from reform of TSO

Looking Ahead: Challenges/Opportunities