



Notice to supply information and documents to the Commerce Commission Sections 98(a) and (b) Commerce Act 1986

To:

Northpower Fibre Limited
28 Mt Pleasant Road
Raumanga
Whangarei 0110

Attention: Darren Mason, Chief Executive

Purpose of the Notice

1. We (the Commerce Commission) are reviewing the price to be paid for the Unbundled Copper Local Loop (UCLL) and Unbundled Bitstream Access (UBA) services provided by Chorus Limited, as defined in subpart 1 of Part 2 of Schedule 1 of the Telecommunications Act 2001 (Telecommunications Act). We are required to make a price review determination as soon as practicable in respect of the UCLL services (refer sections 47 and 51 of the Telecommunications Act 2001) and we are required to make reasonable efforts to make a price review determination in respect of the UBA service before the expiry of three years from separation day, which is 30 November 2014 (refer section 78(3) of the Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011).
2. The purpose of this Notice is to obtain information and documents relevant to our price review determinations for the UCLL and UBA services.
3. The Notice is issued under sections 98(a) and (b) of the Commerce Act, and section 15(f) of the Telecommunications Act.
4. We consider it is necessary and desirable for Northpower Fibre Limited to provide us with the information and documents specified in **Attachment A** to this Notice to assist us in making the price review determinations.

Date and place of response

5. The information and documents in response to this Notice must be delivered to the Commission's Wellington office at Level 6, 44 The Terrace for the attention of Keston Ruxton, or by email to telco@comcom.govt.nz with the subject "Response to section 98 Notice – UCLL and UBA", by 5pm on 6 June 2014.

6. Northpower Fibre Limited must provide all information and documents in Attachment A in electronic .csv, .shp, or pdf format, as appropriate, via email or on a flash drive.
7. As described in paragraph 3 of Attachment A, Northpower Fibre Limited must label and identify all information and documentation, and explain which information relates to which paragraph of this Notice.
8. Northpower Fibre Limited must supply the requested information and documents under cover of a letter on Northpower Fibre Limited's letterhead, signed by a person with the appropriate authority.

Dated at Wellington 5 May 2014

Signed by:

A handwritten signature in black ink, appearing to read 'Elisabeth Welson', written in a cursive style.

Elisabeth Welson
Commissioner

Attachment A

1. For the purposes of this Notice, the following terms have the following meanings:
 - 1.1 **Northpower Fibre** means Northpower Fibre Limited, its interconnected bodies corporate (as defined in section 2(7) of the Commerce Act), business units or joint ventures, and any current or former agents, employees, officers and directors thereof.
 - 1.2 **ATM** means Automatic Teller Machine.
 - 1.3 **Core Network** means the active part of a network starting on the service provider's side of the ODF. This includes the links between Central Offices.
 - 1.4 **Central Office** means the termination point for the LFC's Network. The Central Office is where the optical line terminals and/or multiplexors (as applicable) are installed. Central Offices are expected to connect to at least several thousand end-user premises and are analogous to exchanges in a traditional copper local access network.
 - 1.5 **Customer Premises Equipment** means network and service providers' equipment, such as routers, optical network termination points, and residential gateways, installed at end-users' premises to effect the delivery of a telecommunications service.
 - 1.6 **ETP** means external termination point, the point at which a service lead-in physically enters an end-user's premises. Also known as a building entrance facility.
 - 1.7 **FAT** means fibre access terminal, being the point at which service lead-ins from end-users' residential or commercial premises connect to the LFC's local access distribution network. It marks the termination of the distribution cable and the commencement of the service lead-in.
 - 1.8 **FFP** means a fibre flexibility point, a fibre management point analogous to a copper cabinet, or similar such cable administration facility.
 - 1.9 **Leased Line** means any point to point link with a dedicated capacity regardless of the type of link (e.g. copper and fibre). This includes leased copper lines, fibre circuits, managed services etc.
 - 1.10 **LFC** means a local fibre company, being an entity in which CFH, the Government and a partner hold shares, and through which the investment of CFH and the partner in relation to UFB will be effected.
 - 1.11 **Local access distribution network** means that part of local access fibre networks between a FAT and the active or passive cabinet/ FFP or Central Office the FAT is immediately connected to.

- 1.12 **Local access feeder networks** means that part of local access fibre networks between a Central Office MDF/ODF handoff point and the last cable administration point (i.e. active / passive cabinet or fibre flexibility point (FFP) before a FAT.
- 1.13 **MUC** means a multi-unit complex, as defined in section 155B of the Telecommunications Act 2001.
- 1.14 **NBAP** (non-building access point) means a location, other than end user premises, service provider premise or reseller premises, which may not have a physical address and where either Northpower Fibre or access seeker Customer Premises Equipment is installed in order to deliver a service. NBAP examples include but are not limited to: cell tower and base station, public Wi-Fi hotspot, surveillance equipment, ticketing systems, ATM machines, and SCADA (supervisory control and data acquisition) systems.
- 1.15 **ODF** means Optical Distribution Frame.
- 1.16 **PON** means Passive Optical network and variants, e.g. Gigabit-PON (G-PON).
- 1.17 **UFB** means the New Zealand Government's ultra-fast broadband initiative.
2. For the purposes of this Notice, we ask for the GIS information to be presented, in New Zealand Transverse Mercator (NZTM) projection, in one of the following formats:
- 2.1 ESRI Shape File Format;
- 2.2 ESRI File Geodatabase;
- 2.3 MapInfo TAB Format; or
- 2.4 MapInfo MIF/MID.
3. Regarding all information requested please provide a file (in .csv format) listing the name of each file provided, the information contained within the file, the date the information was queried from Northpower Fibre's information systems, the date the file was prepared, and the paragraph(s) in this notice the information relates to. Where different dates apply to pieces of information within the same file, these should be recorded in separate rows.
4. Please provide a glossary of terms used in Northpower Fibre's response.
5. The Commission requires the following information.

Information and documents requested

6. Please provide in respect of Northpower Fibre's local access fibre network:

- 6.1 For all of Northpower Fibre's in-use non-building access points (NBAPs) connections:
 - 6.1.1 Each unique NBAP site connection identifier;
 - 6.1.2 The Northpower Fibre fibre services delivered to each NBAP site e.g. 30/10, 100/50 Mbit/sec etc.;
 - 6.1.3 The geographic location (X, Y coordinates) of each unique NBAP connection.
- 6.2 Northpower Fibre's UFB candidate areas, in the form of GIS .shp files and, to the extent they are available, yearly master UFB deployment plans through to the end of the project.
- 6.3 Northpower Fibre's business and network contingency plans, including information on provisions made in respect of insurance and network redundancy to mitigate local and regional catastrophic events.
- 6.4 For all Central Office nodes:
 - 6.4.1 A unique Central Office node identifier, the name of the Central Office, the geographic location (X, Y co-ordinates) where each Central Office is located and whether the Central Office premises are Northpower Fibre owned or rented from a third party, including from subsidiaries or other related parties to Northpower Fibre;
 - 6.4.2 A table listing and classifying Northpower Fibre's Central Office nodes according to network hierarchy (i.e. tier);
 - 6.4.3 A schematic illustrating the logical and physical network hierarchy, including the location of network handover (interconnection) points ;
 - 6.4.4 Central Office node identifier and its geographic coverage area in the form of a GIS .shp file;
 - 6.4.5 Central Office floor plans and associated local area network roll out plans (GIS route maps) of representative Central Offices from each tier of Northpower Fibre's local access network, as outlined in Northpower Fibre's response to paragraph 6.4.2.
 - 6.4.6 In respect of Northpower Fibre's UFB deployment, please provide:
 - (a) The design and actual PON split (factor) ratios;
 - (b) The location of PON splitters by Central Office and cabinet node identifier;
 - (c) The unit cost of PON splitters (where possible, this should be split into labour and material costs).
- 6.5 For all cabinet and FFP nodes:
 - 6.5.1 A unique cabinet or FFP node identifier;
 - 6.5.2 Whether a cabinet or FFP is connected to a protected local access ring;
 - 6.5.3 Information that identifies whether the cabinet is exclusively:
 - (a) a fibre active or passive FFP; or

- (b) a shared, copper and fibre, active or passive cabinet.
- 6.5.4 The technologies deployed (e.g. point to point or PON) should be specified;
- 6.5.5 Cabinet or FFP node identifier and geographic location (X, Y) coordinates of where the cabinet or FFP is located, its geographic coverage area in the form of a GIS .shp file, and the node identifier and (X, Y) coordinates of the Central Office(s) it is parented off.
- 6.5.6 The dimensions and design layout of representative active and passive FFPs and cabinets as used throughout Northpower Fibre's local access fibre network.
- 6.6 For all manholes, chambers and pits, the number by function and size, by Central Office coverage area.
- 6.7 The number of FATs per Central Office coverage area and type - aerial, underground/pillar.
- 6.8 A GIS route map of any business rings (i.e. all the dedicated links in the access network for business and major account customers). If this is not available, the length, in metres, of any such business rings. In either case the percentage of each ring's length that is located in the same route (underground or aerial) as other copper or fibre, access, transmission (junction) or core network assets.
- 6.9 Service lead-ins
The Commission seeks business, technical and cost information related to the provision of fibre lead-in services, being the connection from an ETP or building frame to the nearest point on Northpower Fibre's local access fibre network (i.e. FAT). For all residential and commercial buildings:
 - 6.9.1 All marketing collateral available to wholesalers and consumers (end users), informing of Northpower Fibre's policies and practices in relation to the installation of fibre service lead-in services in brown-field and green-field scenarios;
 - 6.9.2 Northpower Fibre's policies (business rules) detailing how it has chosen to capitalise costs from the installation of fibre service lead-ins in brown-field and green-field scenarios. This must identify the costs Northpower Fibre elects to capitalise and those it seeks to recover by on charging to external parties, for:
 - (a) Standard installations; and
 - (b) Non-standard installations.
 - 6.9.3 Northpower Fibre's engineering design, planning and installation practice guidelines (.pdf) for the installation of fibre lead-ins, aerial and underground, in rural and urban areas, as used to inform and instruct service companies and service personnel, including:

- (a) The number of fibres allocated per customer for: residential (including lifestyle) properties, residential apartments (MUCs), commercial offices, retail and small health facilities (e.g. doctors' clinics), and the UFB priority sites of education, health, local and central government, and maraes; for
 - (b) Standard and non-standard installation scenarios.
- 6.9.4 The use of poles for aerial lead-ins for single and multi-unit dwellings:
- (a) Information on the current commercial and technical terms under which Northpower Fibre uses the poles of third parties, including subsidiaries or other related parties to Northpower Fibre, e.g. local power companies, for provision of fibre lead-in services;
 - (b) Information, to the extent that Northpower Fibre has such information, on any special conditions limiting the use of existing or new poles for the purpose of providing fibre service lead-in connections, issued in accordance with the New Zealand Utilities Advisory Group (NZUAG) National Code of practice or other relevant legislation or code of practice, by a territorial local authority area;
 - (c) For each Central Office the percentage split between aerial and underground service lead-ins.
- 6.9.5 The Commission seeks cost information relating to all services provided by third parties, e.g. service companies, in relation to the provision of fibre lead-in services to single and multi-unit dwellings, including:
- (a) Service company charges, charge codes if any, and associated statements of work;
 - (b) Fixed and variable unit costs, exclusive of GST and any profit or other operational margins; and
 - (c) Transaction volumes by UFB candidate area.
- 6.9.6 Description and unit cost for materials used in the provision of fibre service lead-ins for single and multi-unit complexes, including;
- (a) Fibre ETP and customer premises ODFs ;
 - (b) Ducts (per metre);
 - (c) Underground lead-in cables, noting fibre counts;
 - (d) Aerial lead-in cables noting fibre counts;
 - (e) Installation labour costs, by UFB candidate area;
- 6.9.7 To the extent Northpower Fibre has the information, the:

- (a) Geographic location (X, Y coordinates) of multi-unit complexes within Northpower Fibre's UFB candidate areas;
- (b) Number of fibres to the site; and
- (c) Size of the building frame (ODF) expressed in terms of the number of fibres that could be terminated.

6.10 Line Fault Index

The Commission seeks the number of faults per 1000 active lines (connections) per year over the past 3 years, split by UFB candidate area.

For avoidance of any doubt, faults for which no Northpower Fibre fault was found (i.e. NFF), faults attributed to the core network or to an access seeker, and faults on the consumers' side of an ETP are to be excluded.

6.11 Local access fibre distribution and feeder networks:

6.11.1 Aerial and underground distribution and feeder networks:

- (a) Please explain the key factors considered by Northpower Fibre in deciding whether to use aerial or underground reticulation in a particular area. The explanation should outline the logical sequence in which the factors are considered and the relative importance (weighting) Northpower Fibre assigns to each in order to arrive at a final business decision to deploy feeder or distribution local area networks, via aerial or underground means. Please provide an explanation supported by a decision tree diagram;
- (b) Information on the current commercial and technical terms under which Northpower Fibre uses ducts and poles of third parties, including subsidiaries or other related parties to Northpower Fibre, e.g. local power companies, for the purpose of local access fibre distribution and feeder networks;
- (c) The percentage share of total trench and pole kilometres in Northpower Fibre's local access distribution and feeder networks that are shared with other utilities;
- (d) For each Central Office area, the percentage split between aerial and underground reticulation within Northpower Fibre's local access distribution and feeder networks;
- (e) Information, to the extent that Northpower Fibre has such information, on any special conditions limiting the use of existing or new ducts and poles for the purpose of local access fibre distribution or feeder networks. Also, any special conditions limiting the use of specific trenching or drilling techniques, such as shallow or micro-trenching, issued in accordance with the New Zealand Utilities Advisory Group

(NZUAG) National Code of Practice or other relevant legislation or code or practice, by a territorial local authority;

- (f) Engineering planning and design rules
Northpower Fibre's engineering design and planning guidelines (.pdf) for constructing aerial and underground local access distribution and feeder networks, in rural and urban environments, including current planning and design rules describing:
- (i) The number of fibres planned per customer/premises passed in local access distribution networks;
 - (ii) The number of FATs planned per premises passed;
 - (iii) The number of feeder fibres dimensioned in a local access fibre network, categorised by active and passive cabinets;
 - (iv) The maximum and average length (span), in metres, of aerial and underground cable between joints within the distribution and feeder sections of Northpower Fibre's local access fibre network;
 - (v) Where manholes/chambers and hand hole joints are designed to be placed within the distribution and feeder sections of a local access distribution network;
 - (vi) Where road crossings should occur and how to minimise the total number of road crossings. When designing and planning local access distribution and feeder networks.
 - (vii) The maximum and average design distance, in metres, between poles in the distribution and feeder section of a local access fibre cable network in urban and rural Central Office areas;
 - (viii) Maximum and average length (span), in metres, of aerial and underground cable between a cabinet or FFP and customers' premises in a local access fibre network in urban and rural areas;
 - (ix) Maximum and average cable length, in metres, between Central Offices and active and passive cabinets in urban and rural areas;
 - (x) The allowances made for terminations, cable joints and cable sag between poles per kilometre of aerial reticulation when calculating the amount of fibre cable required;
 - (xi) The allowances made for terminations and cable joints in chambers/manholes when calculating the amount of

- fibre cable required per kilometre of underground, ducted and direct buried, local access fibre network;
- (xii) In the case of aerial deployments the minimum ground and road clearance heights, in millimetres, in the distribution and feeder sections of a local access fibre network;
 - (xiii) In the case of underground deployments, the maximum duct fill factors in the distribution and feeder sections of Northpower Fibre's local access fibre network;
- (g) In respect of cabling, a technical description of aerial and underground cables, including air blown, as used in the distribution and feeder sections of local access fibre networks including:
- (i) Outside diameter, in millimetres, of the fibre cables;
 - (ii) Fibre counts per cable type;
 - (iii) Unit material cost per metre of fibre aerial and underground cables, including air blown;
 - (iv) Installation labour costs per metre, by UFB candidate area;
 - (v) Average planning and design costs per metre, by UFB candidate area;
 - (vi) Available cable drum length, in metres, for aerial and underground fibre cables;
 - (vii) Average cable jointing cost (labour and materials) for aerial and underground fibre cables.
- (h) In respect of aerial poles:
- (i) Technical description of poles (including height to the nearest centimetre);
 - (ii) Average material cost of poles, including cable supports, per kilometre of pole line;
 - (iii) Average installation labour cost, per kilometre of pole line, by UFB candidate area;
 - (iv) Average planning and design cost, per kilometre of pole line.
- (i) In respect of ducts, a technical description of ducts currently installed within the distribution and feeder sections of Northpower Fibre's fibre networks, including air blown micro-ducts, and also including:

- (i) Inside and outside diameters, in millimetres, of ducts used within Northpower Fibre's local access distribution and feeder networks;
 - (ii) Unit material cost per metre;
 - (iii) Installation labour costs per metre, by UFB candidate area;
 - (iv) Average planning and design costs per metre of ducting.
- (j) In respect of manholes, chambers, FATs and hand hole joints:
- (i) Technical description of items currently being installed within the distribution and feeder sections of Northpower Fibre's fibre networks, including those used with air blown micro-ducts;
 - (ii) Unit material costs according to type and size;
 - (iii) Installation labour costs according to type and size, by UFB candidate area;
 - (iv) Average planning and design costs according to type and size.
- (k) Regarding trenching, the cost per metre (inclusive of reinstatement), taking account of the following:
- (i) Environment: CBD, urban (arterial/major and other) roads, rural (arterial/major and other) roads, and motorways;
 - (ii) Trenching technology, e.g. open, drill, plough, shallow, and the extent ground types impact the choice of trenching technology and therefore trenching cost, by:

(aa) Igneous Rocks:

- (i) extremely weak to weak
- (ii) weak to extremely strong

(bb) Sedimentary Rocks:

- (i) very loose to compact (very soft to stiff)
- (ii) very compact (very stiff) to weak
- (iii) moderately strong to extremely strong

(cc) Metamorphic Rocks:

Where possible the ground type should be based on the 2nd Edition NZ Land Resource Inventory lithology classifications which define the lithology into the above broad categories. Information on the definitions and

rock types that make up these classifications can be found within the LRIS Data Dictionary which is available for download from <https://iris.scinfo.org.nz/document/162-lris-data-dictionary-v3/>

- (l) Total average costs per installed kilometre of fibre in the local access distribution and feeder networks, split by aerial, underground and by UFB candidate area, including:
 - (i) Average material costs per kilometre;
 - (ii) Average installation labour costs per kilometre; and
 - (iii) Average design and planning labour costs per kilometre;
- (m) Please provide representative quotes of recently completed green-field and brown-field projects. Projects need to be of a sizable nature e.g. a new subdivision or FFP area. Quotes should detail design, planning and construction costs of the local access fibre distribution networks.

6.12 Node configuration – Central Offices and active cabinets

For Northpower Fibre owned Central Offices and cabinets please provide the following information:

6.12.1 In respect of ODFs:

The most common ODF configurations occurring in Northpower Fibre's network, categorised by the number of incoming fibres that may be terminated (e.g. 100, 200, 500, and 1,000 etc.):

- (a) Total average annual maintenance costs taking account of reactive and proactive maintenance;
- (b) Design guidelines for planning an ODF's footprint, taking account of both sides of the ODF and a space allowance for personnel to safely access and work on the frame;
- (c) Average design and planning cost;
- (d) Average cost to install (material and labour) and commission the ODF;
- (e) Average costs, by UFB candidate area to: run, remove or re-terminate a fibre patch cable;
- (f) The technical specification (including its vendor and model), utilisation, latest cost per unit (please specify whether this is purchase or installed cost);
- (g) An itemised installation cost for the two most recent ODF installations undertaken for Northpower Fibre.

6.12.2 In respect of operational expenses

For each representative Central Office, (as provided in response to

paragraph 6.4.5), and each class of active cabinet/FFP within Northpower Fibre's local access fibre network please provide, calculated over 12 months of full operations, the:

- (a) Average monthly power consumption expressed in kw/hrs;
- (b) Average monthly cost ($\$/kW_{cooling}$) for air conditioning; and
- (c) Average monthly cost (per site) for security services.

6.12.3 In respect of capital expenses

For each class of representative Central Office, (as provided in response to paragraph 6.4.5), and for each class of active cabinet/FFP within Northpower Fibre's local access network please provide:

- (a) Average capital cost for the power supply unit;
- (b) Average capital cost for the back-up power unit;
- (c) Average capital cost for the active air conditioning (AC) unit;
- (d) The Coefficient of Performance ($COP_{cooling}$) of the active AC unit.
- (e) Average capital cost of any passive air conditioning equipment.

6.13 Connection and traffic demand profiles and forecasts.

To the extent Northpower Fibre has it, please provide the following information:

- (a) Internal and external (e.g. Cisco, Ovum, IDC, NSN etc.) reports of the expected average monthly usage, total GBytes and/or G/Bytes by service, for GPON connected residential and commercial customers. The services should include; voice (VOIP), broadband, multicast, unicast, and business leased line (IP VPNs) services;
- (b) The most up to date internal and external reports on the migration of residential and commercial subscribers (end-use customers) from copper to fibre based access services, such as to GPON and Ethernet fibre services, such as those promoted by the Metro Ethernet Forum.

6.14 Staffing, product management, commercial and financial operations:

6.14.1 The total number of staff, including independent contractors acting in the nature of employees, and the total expenditure on those staff for the financial year ending 30 June 2013.

These should be categorised by the following areas or roles:

- (a) management and professional services;
- (b) finance, payroll, human resources and administration;
- (c) sales and marketing;
- (d) general customer services, and customer services technical support;

- (e) network design and planning, and network operations including and network engineers required for;
 - (i) the access network;
 - (ii) core platforms;
- (f) access network technicians;
- (g) core network technicians; and
- (h) other.

6.14.2 For the financial year ending 30 June 2013, council rates and other local taxes incurred by Northpower Fibre. In each case the rated or taxed property's use(s) should be noted and should include those for:

- (a) Buildings primarily used in housing network equipment;
- (b) Cabinets, poles, ducts and property required for the local access fibre network infrastructure;
- (c) Office buildings and buildings not primarily used in housing network equipment.

6.14.3 An itemised list of annualised maintenance costs for the following assets split by proactive and reactive maintenance:

- (a) Active and passive cabinets / fibre flexibility points;
- (b) Ducts, poles and manholes;
- (c) Administration buildings;
- (d) Central Office buildings;
- (e) Local access fibre feeder and distribution networks;
- (f) IT systems including software.

6.14.4 Network and non-network operating expenses

- (a) For the financial year ending 30 June 2013, please provide details on the following operating expenses categorised into both network and non-network costs:
 - (i) Labour costs;
 - (ii) Information technology costs;
 - (iii) Consultants;
 - (iv) Provisioning;
 - (v) Network maintenance;
 - (vi) Property rent and rates;
 - (vii) Property maintenance;
 - (viii) Electricity;
 - (ix) Insurance;

(x) Other.

For each of the above expenses, please provide:

- (i) Total expenditure for the financial year;
- (ii) List of expenses included in each category with a meaningful description of the activity performed. This listing should be consistent with the categorisation used for Northpower Fibre's statutory accounts;
- (iii) Explanations and/or reconciliation of any variance between the values provided at a category level and those reported in Northpower Fibre's statutory accounts.

Internal classification <i>(as recorded in internal accounts)</i>	Description	Expense Category <i>(as per 5.13.4 (a))</i>	Expense type <i>(Network or non-network)</i>	Statutory Account <i>(as reported in LFC information disclosure)</i>	Total annual expenditure
Labour		Labour costs	Network operations	Layer 2 (engineering/support staff etc.)	\$xxx

Table 1: example of expense layout

6.14.5 Commercial arrangements applicable to the financial year ending 30 June 2013 limited to agreements relating to leases of buildings, land and equipment to and from third parties, including subsidiaries or other related parties to Northpower Fibre.

6.14.6 Any reports prepared by, or for, Northpower Fibre which benchmark Northpower Fibre's network and non-network costs against national and international peers.

6.14.7 Project related financial analysis already produced regarding green-field network builds.

6.14.8 The latest WACC calculations for Northpower Fibre's UFB projects.