



Northpower Fibre UFB Services Agreement
Service Description for
Fibre Interconnection Services

1. Interpretation

- 1.1 This Service Description covers the provision of the **Fibre Patching Service** described in clause 2, and the **Inter-CO Fibre Service** described in clause 3 (each a **Fibre Interconnection Service** and together the **Fibre Interconnection Services**).
- 1.2 The Fibre Interconnection Services will be available from the date they are launched by the LFC. The LFC will notify the Service Provider of the launch date for each Fibre Interconnection Service.
- 1.3 References to clauses or sections are references to clauses or sections in this Service Description unless expressly provided otherwise. The definitions set out in clause 1 of the General Terms apply to this Service Description unless expressly provided otherwise.
- 1.4 Unless the context indicates otherwise, reference to:
- Line IODF** means an intermediate Optical Distribution Frame located within a Central Office, to which the LFC's external cabling is connected;
- Operations Manual** means the Operations Manual for the Direct Fibre Access Service; and
- Service Level Terms** means the Service Level Terms for Fibre Interconnection Services.
- 1.5 This Service Description amends the Operations Manual, to the extent of any inconsistency. Reference in the Operations Manual to the Direct Fibre Access Service shall include the Fibre Interconnection Service.
- 1.6 This Service Description covers the provision of the Fibre Interconnection Service in the LFC's Candidate Area.

2. The Fibre Patching Service

- 2.1 The Fibre Patching Service is a fibre connectivity service suitable for the interconnection of:
- 2.1.1 one Direct Fibre Access Service to another Direct Fibre Access Service terminating in the same Central Office;
- 2.1.2 one Direct Fibre Access Service to an Inter-CO Fibre Service at the same Central Office; or
- 2.1.3 one Inter-CO Fibre Service to a Tie Cable Service at the same Central Office and where the Tie Cable is to a third party footprint.
- 2.2 A diagram of the configuration for the Fibre Patching Service is set out in Appendix A. The Fibre Patching Service consists of the provision of interconnection of two fibres that are the termination points of either a Direct Fibre Access Service, the Inter-CO Fibre Service on the MOFDF at the LFC Central Office, or an internal Tie Cable service to a third party footprint.
- 2.3 The Fibre Patching Service is an input service which the Service Provider can use as a building block to combine with other LFC services (or with the Service Provider's own network or wholesale services provided by other providers) to provide fibre based telecommunications services to End Users.
- 2.4 The Fibre Patching Service is not available within the Service Provider's Footprint.

3. The Inter-CO Fibre Service

- 3.1 The Inter-CO Fibre Service is a dark fibre service that provides access to a single optical fibre between two Central Offices located within the LFC's Candidate Area.
- 3.2 The Inter-CO Fibre Service will be connected to a Service Provider's Footprint in the LFC Central Office, or to a Fibre Patching Service where the Service Provider does not have Co-Location. If the Service Provider requires a dual dark fibre service it must take two single fibres (two instances of the Inter-CO Fibre Service).
- 3.3 A diagram of the configuration for the Inter-CO Fibre Service is set out in Appendix A.
- 3.4 The Inter-CO Fibre Service provides a dark fibre connecting to:
- 3.4.1 an LCA¹ or SC/APC² connector on the OFDF at the Service Provider's Footprint in the LFC Central Office;
 - 3.4.2 the Fibre Patching Service on the MOFDF at the LFC Central Office connected to the termination point of an associated Direct Fibre Access Service on the associated Line IODF; or
 - 3.4.3 the Fibre Patching Service on the MOFDF at the LFC Central Office connected to the termination point of an internal Tie Cable to a third party footprint at the same LFC Central Office.
- 3.5 The Inter-CO Fibre Service is an input service which the Service Provider can use as a building block to combine with other LFC services to provide fibre based telecommunications services to End Users.

4. Fibre Patching Service implementation activities

4.1 *Installation services*

The Fibre Patching Service includes a Standard Install comprising the interconnection of two fibres that are the termination points of:

- 4.1.1 an Inter-CO Fibre Service and a Direct Fibre Access Service terminating in the same Central Office;
- 4.1.2 a Direct Fibre Access Service and another Direct Fibre Access Service terminating in the same Central Office; or
- 4.1.3 an Inter-CO Fibre Service and a Tie Cable to a third party footprint terminating in the same Central Office.

4.2 *The LFC Central Office Termination Point*

At the LFC Central Office, the termination point for the purposes of the Connection, and the network demarcation point between the LFC Network or Tie Cable service and the Fibre Patching Service, is usually, a splice or LCA plug on the MOFDF or Line IODF.

¹ LCA – Little Angled Connector to IEC 61754-20

² SC/APC – Standard Connector / Angle Polished Connector to IEC 61754-4.

4.3 *Testing*

The LFC will test the Fibre Patching Service as part of the test of the resultant end to end access service to ensure it is within the technical specification for fibre set out in Appendix B.

4.4 *Interconnection Requirements*

To use the Fibre Patching Service the Service Provider must have the capability to access and interconnect with it, either by:

- 4.4.1 taking a Direct Fibre Access Service; or
- 4.4.2 by taking an Inter-CO Fibre Service from the relevant LFC Central Office MOFDF.

4.5 *Additional Service Characteristics*

The technical specification of the Fibre Patching Service is set out in Appendix B.

5. Inter-CO Fibre Service implementation activities

5.1 *Installation services*

The Inter-CO Fibre Service includes a Standard Install as set out below.

- 5.1.1 If the Service Provider elects to take delivery of the Inter-CO Fibre Service at the Service Provider's Footprint provided by the LFC under the Central Office and POI Co-location Service, a Standard Install includes connection of the Inter-CO Fibre Service to a LCA connector, or OFDF installed in the Service Provider's Footprint.
- 5.1.2 The Tie Cables connecting the Service Provider's Footprint to the MOFDF will be supplied pursuant to the terms of the Central Office and POI Co-location Service.
- 5.1.3 The Service Provider may establish a Footprint at the LFC Central Office by taking the Central Office and POI Co-location Service and connecting to the Inter-CO Fibre Service using a Tie Cable from the MOFDF. In these cases, at the LFC Central Office, the termination point for the purposes of the Connection and the service demarcation point is a splice or LCA or SC/APC connector on the OFDF within the Service Provider's Footprint.
- 5.1.4 The Service Provider may also take the Inter-CO Fibre Service from the MOFDF at the LFC Central Office to extend a Direct Fibre Access Service from premises within the originating LFC Central Office area to another LFC Central Office. In this case, the single fibre provided pursuant to the Inter-CO Fibre Service will connect to the Direct Fibre Access Service using the Fibre Patching Service on the MOFDF at the LFC Central Office, and this is the termination point for the purposes of the Connection and the service demarcation point.
- 5.1.5 The Service Provider may also take the Inter-CO Fibre Service from the MOFDF at the LFC Central Office to connect to a Tie Cable to a third party footprint within the originating LFC Central Office to another LFC Central Office. In this case, the single fibre provided pursuant to the Inter-CO Fibre Service will connect to the third party Tie Cable using the Fibre Patching Service on the MOFDF at the LFC Central Office, and this is the termination point for the purposes of the Connection and the service demarcation point.

5.1.6 The LFC and the Service Provider may agree on a different termination point as part of a Non-Standard Install.

5.2 *Testing*

The LFC will test the Inter-CO Fibre Service from end to end to ensure the Inter-CO Fibre Service is within the technical specification in Appendix B.

5.3 *Service Characteristics*

The technical specification of the Inter-CO Fibre Service is set out in Appendix B.

The LFC will provide the Service Provider with network optical budget design calculations, and fibre commissioning test results for the Inter-CO Fibre Service. This information will be provided in good faith and the Service Provider will be responsible for the optical budgets used for each of their specific applications.

Where applicable the LFC will provide the Service Provider with facilities to make fibre performance measurements from the MOFDF in the originating LFC Central Office to the nominated terminating LFC Central Office. The LFC will provide staff to access the MOFDF and connect the test equipment to the fibre(s) for such tests by the Service Provider. An additional charge will be made for these services.

The Inter-CO Fibre and Fibre Patch Services specifically exclude:

- 5.3.1 provision or maintenance of any cabling or connection or active device beyond the service demarcation points;
- 5.3.2 configuration, monitoring, operation, on-going support or maintenance of Service Providers' or End Users applications, equipment or networks; and
- 5.3.3 supply of AC Mains & UPS Power, accommodation space, heating, ventilating, air conditioning and facilities at the Central Office.

6. **LFC Service Demarcation Point**

The service demarcation point for the Inter-CO Fibre Service at the LFC Central Office is the termination and service demarcation point described in (as applicable) clauses 5.1.3, 5.1.4, 5.1.5 and 5.1.6 above.

7. **Tie Cable Connection**

Where required, the LFC will provide a Tie Cable between the MOFDF and the Service Provider's LCA connector on the Service Provider's OFDF in its Footprint at the LFC Central Office. More detail on the Tie Cable service is in the Central Office and POI Co-Location Service Description and Operations Manual. If the number of fibres requested in the Tie Cable is less than 48, the Tie Cable to the Footprint may consist of a connectorised pigtail to the Service Providers equipment rather than to an OFDF in the Footprint.

8. **Service Provider Responsibilities**

- 8.1 The Service Provider responsibilities are detailed in the General Terms and Operations Manual.
- 8.2 The Service Provider will be responsible for all of the design, specification and commissioning of their equipment and plant (both active and passive) connected to the

Fibre Interconnection Service. This includes additional fibre and connections at either end of the Inter-CO Fibre Service.

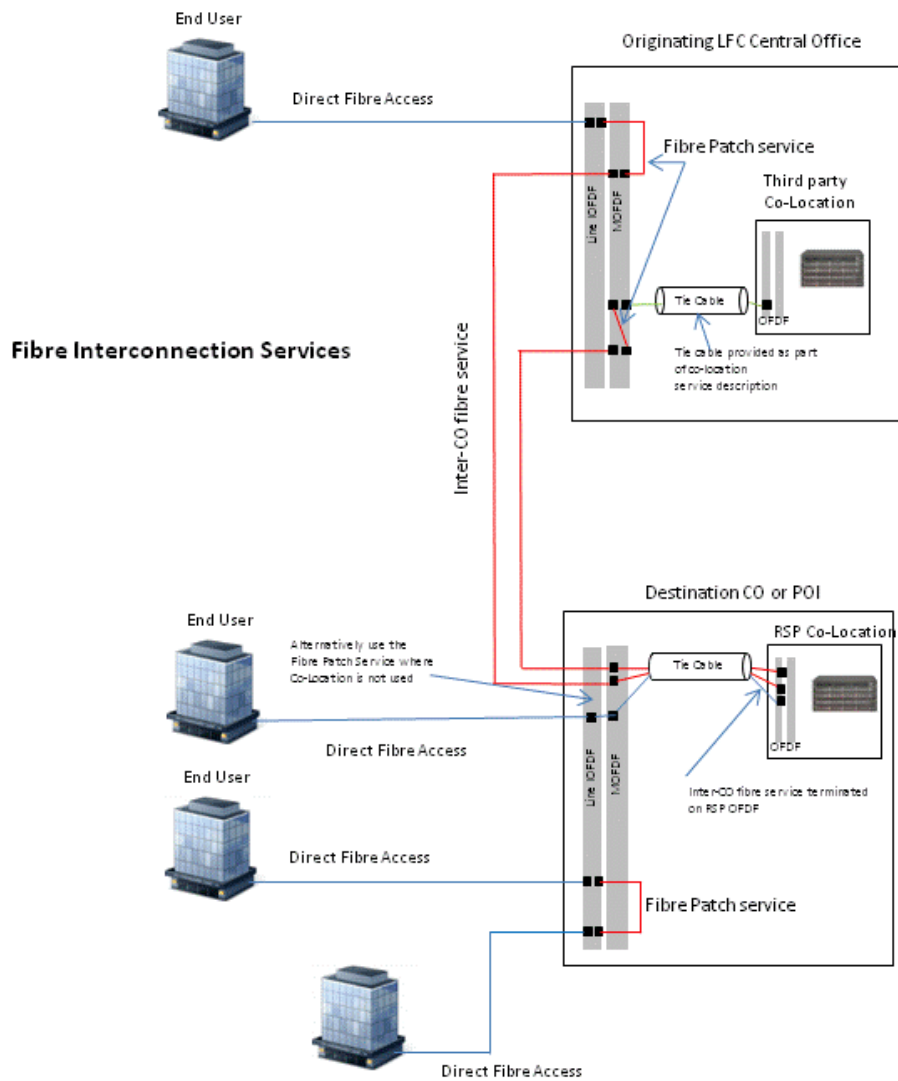
9. Fibre Diversity

- 9.1 The Inter-CO Fibre Service provides a single fibre between the originating and destination LFC Central Offices.
- 9.2 Diversity (a second or subsequent instance of the Inter-CO Fibre Service) will be available on request. The provision of a diverse fibre (a second instance of the Inter-CO Fibre Service) will have unique site specific engineering considerations and may result in optical loss budgets that will fall outside standard distance and power levels on one of the fibres. Standard installation Service Levels do not apply to the provision of diverse products and each instance will be treated as an individual line for the purpose of availability of Service Levels.
- 9.3 Diverse optical paths will be in separate fibre cable sheaths, and if requested in separate cable routes. The diverse cable routes will be a minimum of the width of a street apart, and should not share any manholes or access points. Separate entries into the Central Office will be used where requested.

10. Service Levels

The Service Level Terms for the Fibre Patching Service and the Inter-CO Fibre Service are described in the Service Level Terms for Fibre Interconnection Services. Enhanced service levels are available if required by the Service Provider, as described in the Service Level Terms.

Appendix A – Diagram



This is a generic diagram showing the standard configuration of the Fibre Patching Service, and the Inter-CO Fibre Service with and without an RSP Co Location footprint. It is not intended to represent every situation.

Appendix B – Technical Specification

Technical Specification

| | |
|-------------------|--|
| Single Mode Fibre | External fibre must comply with ITU-T specification G.652D. Internal building fibres may comply with ITU-T G.657A but cable must meet appropriate fire regulations i.e. be Flame-Retardant, Non Corrosive, Low Smoke, No Halogen (FRNC/LSNH). |
| Connector Type | Fibre terminations must be SC/APC type connectors (complying with the IEC 61754-4 standard) or alternatively LC/APC type connectors (complying with the IEC 61754-20 standard) as appropriate. |
| Optic Path | Laser types and path characteristics expected to be designed to a minimum standard which are contained in the documents IEEE 802.3 Section 5 standard or ITU-T G.984. |
| Fibre Testing | Testing for power loss will be at 1310 and 1550 nm. The wavelengths of 1625nm and 1650 nm are reserved for testing purposes, compliant with ITU-T L.41. |