New Property Technical Requirements - SDU and RoW (Volume 2)

Network Deployment Standard

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1. Introduction

1.1.1. Objectives of Manual

The objective of this Manual is to provide the design and deployment standards for developers for new property developments or subdivisions within Chorus' UFB areas and areas with existing Chorus fibre infrastructure. This document is separated into 4 volumes which covers different topics of the network.

This document is Volume 2 which covers:

- SDU and RoW infrastructure deployment
- The pathway from the green lead-in pipe to the home distributor hub.

1.1.2. Artefact Constraints

This Process and Procedure is constrained by the Design Rules OR Deployment Standard in the following Chorus internal artefacts. These documents will not be publicly available and only to be referenced by Chorus personnel and their contracted partners.

Document No.	Document Title
ND0629 Vol 1	UFB Ready Property Guidelines - General Fibre Network Guidelines
ND0545	UFB Network Design Rules
ND0588	UFB Premise Boundary Deployment Standards
ND0574	UFB MDU Design and Installation
ND0563	NGA Provisioning and Assure Task Handbook
ND0635	UFB MDU Cable and Terminals Installation Handbook
ND13006	UFB Aerial Road Crossing, RoW and Infill Technical Guide
ND13159	Network Depth and Separations
ND13161	Electric Lines Safety

1.1.3. Intended Audience

The intended audience of this document are Chorus, service companies personnel, service providers, property developers and their contractors involved with the design and installation of optical fibre networks in new properties or property subdivision. Where developer is listed, this can mean their agents e.g. builder, electrician or anyone acting on their behalf.

1.1.4. Chorus Network Specified Product (CNSP)

CNSP is an assessment and approval pathway for particular types of product and test equipment to ensure that a product meets criteria for:

- Whole of life performance
- Longevity, and
- Durability

Where a product is listed within the CNSP process, Chorus service companies must use that product from the approved supplier.

1.1.5. Contractual Reference

This document may be provided to Chorus partners, service companies, Chorus customers and 3rd party service providers for use alongside the relevant contracts for service or the relevant Standard Terms Determination.

Throughout this document, Chorus New Zealand is referred to as Chorus.

This document does not, in any way, vary the terms of the main contract between Chorus and the service company. If there is any conflict between the relevant contract and statements made in this document, the terms of the relevant contract shall prevail.

This document does not, in any way, vary the terms of the main contract between Chorus and the Service Company, developers or any other parties.

1.2. Related Reference Material

It is the responsibility of the contractor to research, understand and abide by the relevant national or local compliance standard as applicable to the location and tasks. The table below lists the national and international standards that may be associated or referenced within this standard. This list is not exhaustive and is not in place of the Building Code Compliance.

Document No.	Document Title
AS/NZS 1367	Coaxial cable and optical fibre systems or the RF distribution of analogue and digital television and sound signals in single and multiple dwelling installations
AS/NZS 3000	Electrical Installations
AS/NZS 11801.1:2019	Information technology - Generic cabling for customer premises Part 1: General requirements (ISO/IEC 11801-1:2017, MOD)
ANZS3084-2003	Telecommunications Installations standard
AS/NZS 3085	Telecommunications installations - Basic requirements
AS/NZS 3086	Telecommunications installations – Integrated telecommunications cabling systems for small office/home office premises
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS ISO / IEC 15018	Information technology - Generic cabling for homes
AS/NZS ISCO / IEC 24702	Telecommunications installations - Generic cabling - Industrial premises
IEEE 802.3 2012	Power over Ethernet
ECP 34	Electrical Code of Practice for Electrical Safe Distances (ECP 34:2001)
	TCF Premises Wiring Guide – tcf.org.nz
ND13005	Chorus Service Provider Health & Safety Plan

1.3. Glossary of Terms Used

The following list describes some of the terms used in this document:

Term	Description
ABF	**Air Blown Fibre** Refers to an installation method where a fibre cable is blown into a microduct
ABFFP	**Air Blown Fibre Flexibility Point** An enclosure which is installed in an underground pit. The enclosure houses an optical fibre splitter which acts as a flexible fibre network connectivity point.
ABFU	**Air Blown Fibre Unit** A small bundle of fibre that is installed through a 5/3.5mm microduct by using the air blown method. Chorus deploys a 2-fibre and a 12-fibre ABFU in the fibre network.
ATA	**Analog Telephone Adapter** A device that connects regular telephones to a broadband network for voice over IP (VoIP) service. The ATA delivers dial-tone, manages the call setup and provides the conversion between voice signals from an analogue telephone and IP packets.
BDD	**Buried Distribution System** An oval underground pit which provides a storage and connectivity point for microducts or FATs
BUDI I-FFP	**Building Distribution Internal Fibre Flexibility Point** A wall-mounted enclosure which houses optical fibre splitters which acts as a flexible fibre network connectivity point. Typically used for MDU with up to 48 premises.
CCA	**Copper Clad Aluminium** A type of sub-standard wire used in Ethernet cable that is **NOT** recommended by Chorus. Such cable type will not achieve the performance requirements for high speed broadband.
CNSP	**Chorus Network Specified Product** A list of products which are technically approved by Chorus to ensure network compatibility and reliability.
CO	**Central Office** An exchange building which houses Chorus transmission equipment
Drop Cable	A 2 fibre (2F) cable installed from the FFP or FAT in the Chorus distribution network. This is typically also referred to as the Service Lead.

Term	Description
Ducting	The green PVC pipe we use to get a route from A to B. It can be called duct, pipe, or conduit. It comes in a range of sizes, most commonly 20mm, 50mm, 100mm or microduct.
ETP	**External Termination Point** An outdoor enclosure mounted on the side of a premise which provides a point of connectivity from the service lead cable and the premises cable. This unit stops water ingress into the building and allows Chorus access for maintenance.
FAT	**Fibre Access Terminal** An enclosure which provides breakout access of Chorus' cables to the lead-in cables into premises.
FFP	**Fibre Flexibility Point** An enclosure which provides a connectivity point between the feeder fibres from the CO to the distribution fibre to premises.
FTTP	**Fibre To The Premise** Optical fibre network constructed pursuant to the UFB Initiative
GPON	**Gigabit Passive Optical Network** A type of telecommunications network that uses a point-to-multipoint FTTP which uses unpowered optical splitters to enable a single feeder optical fibre to serve multiple premises.
GPX I-FFP	**GPX Internal Fibre Flexibility Point** A wall-mounted enclosure which houses optical fibre splitters which acts as a flexible fibre network connectivity point. Typically used for MDU with more than 48 premises.
Hand hole	A small pit that is installed at the premises boundary as the location where the lead-in pipe into the premises is terminated. It is also used as a location to join microducts.
Home Distributor Hub	An in-wall networking cabinet that houses Chorus, ISP and home owner devices for connecting the incoming signal from the broadband provider to the internal network. This is usually where the ONT is installed, and needs to be non-metallic for modem transmission.
IBDN	**In Building Distribution Network** The optical fibre distribution network within a building premise.
ID	Internal Diameter
I-FFP	**Internal Fibre Flexibility Point** An FFP which is installed indoors, typically in a TER
IFDB	**Internal Fibre Distribution Box**, a fibre management access terminal used by Chorus to connect between 2 and 6 customers down a RoW. It is housed in a light green rectangular pillar adjacent to the communal driveway.
Infill	A new property where the address is created after UFB roll-out in the street and requires a new connection e.g. 1 existing lot subdivided into 2.
Internal Cables	All cables installed by the developer from the Home Distributor Hub, Comms Room, or similar, within a premises. These must be Low Smoke Zero Halogen (LSZH) and are not suitable for use outside.
ISAM	**Intelligent Services Access Manager** A node equipment that provides access services such as DSL and GPON.
ISP	**Internet Service Provider** Communication companies who use Chorus' optical network to create retail services which are sold to residents, businesses, schools and health premises.
ITP	**Internal Termination Point** An indoor enclosure installed in the HDH or on a wall which provides a point of connectivity from the service lead fibre to the ONT.
Lead-in Pipe	A dedicated green service lead-in pipe from the premises boundary to the dwelling. Specifically, when a 20mm internal diameter green lead-in pipe is used, it is for a single lead-in to an SDU, not for multiple connection lead-ins.
LFC	**Local Fibre Company** The operator of the local optical fibre network
LSZH	**Low Smoke Zero Halogen** A type of plastic used in cable jacketing. This material produces minimal smoke and has low toxicity when exposed to fire, which is suitable for installation inside buildings.
MDCC	**Microduct Clamp Closure** A type of closure that is used to drop off one or more 1-way ruggedized microduct service lead from a microduct bundle

Term	Description
MDU	**Multi Dwelling Unit** A building which has two or more premises such as an apartment building. This can be horizontal or vertical and generally has one lead-in which then feeds the various tenancies
Microduct	A small specially manufactured tube that is used for fibre installation through the blowing technique.
Micronet	A Hexatronic System consisting of microducts and cables used by Chorus for the optical fibre distribution network.
NPD	New Property Development also known as Greenfield or subdivision
NZCCPTS	New Zealand Committee for the Co-ordination of Power and Telecommunication Systems
OD	Outer Diameter
OFDF	**Optical Fibre Distribution Frame** An optical fibre distribution frame installed in the CO to provide connectivity between the Chorus active transmission equipment to the outside network.
OLT	**Optical Line Terminal** A GPON Access Node installed in Chorus' CO that provides for the delivery of UFB services. The GPON OLT is installed in Chorus exchange buildings
ONT	**Optical Network Terminal** A GPON network equipment installed in the customer premise that provides for the delivery of UFB services.
PE	Poly Ethylene
RLG	**R.L. Grant**, a Post Office engineer who designed the telecoms copper distribution network
RGW	**Residential Gateway** Equipment installed in the premise connected to the ONT which is used to centralise communications.
Ribbonet	A Hexatronic System consisting of microducts and cables used by Chorus for the optical fibre distribution network.
RoW	**Rights of Way** More than one premises with separate ownership sharing a common access to the public roads.
RSP	**Retail Service Provider** A company that provides a telecommunication or broadband service to the end customer
SDU	**Single Dwelling Unit** A premises which has a single customer connection. This can include a single, or multiple detached or attached dwelling(s)
Service Lead	A Service Lead is a cable that connects from the Chorus distribution network to the ETP/ITP.
TER	**Telecoms Equipment Room** (also known as Comms Room / Utilities Room) A location in an MDU where the lead-in cable terminates into an I-FFP and where the IBDN converges.
TV	Television
UFB	**Ultra-Fast Broadband** FTTP broadband service providing high speed internet connectivity.
UPS	**Uninterrupted Power Supply** Battery pack which provides backup power supply to keep critical devices powered in the event of a power outage.
UTP	**Unshielded Twisted Pair** A type of twisted pair copper cabling used for carrying transmission signals
VOD	**Video On Demand** Video service where the end user is able to order videos on demand.
VoIP	**Voice Over IP** A methodology for the delivery of voice communication over IP network such as the internet.

2. SDU Greenfield or Subdivision

2.1. SDU & RoW Greenfield or Subdivision Process

As part of the Chorus strategy to improve efficiencies to deploy fibre-ready buildings, the following section outlines the process and scope of work between Chorus and the property developer/builder.

Section	Area of Responsibility	Demarcation of Responsibility
General Network Design	- Lead-In Network Design - Feeder and Distribution Network Design - Customer Premises Network Design	**Chorus, Developer & Builder** will work together to understand the development scenario and work out the fibre capacity and the number of lead-ins required. **Developer/builder** is responsible for the customer premises network design with consideration for the cabling pathway and the location of the ETP, ITP and ONT.
Feeder and Distribution Network (communal) outside of the development	Supply and installation of materials: Pipes, Ducts, cables, enclosures, hand holes, marker posts	**Chorus** will be supplying and installing the ducting, microducts, and cabling for the communal network, up to the existing street boundary of the development. To supply the hand holes for installation by the developer. **Developer/builder** is responsible for the installation of the hand holes or marker posts at the premises boundary
RoW Network (communal) within the RoW	Supply and installation of materials: Ducting, cables, enclosures, hand holes, marker posts	**Developer/builder** is responsible for completing all civil works, and pick up and install Chorus supplied network items between the existing street boundary and individual property boundaries. Items to install could include ducting, microducts, hand holes or pits (not including FFP pit and closure) as specified on design plans. **Chorus** will be supplying all the ducting, microducts, pits and hand holes or marker posts for the RoW network, and install and commission any associated cabling. Install the FFP pit & closure. **Optional Products:** If the developer has ordered the 'Material Delivery' product, then Chorus will deliver the materials to the development site. If the developer has ordered the 'Open Trench Install' product, then Chorus will deliver the materials and lay them in an open trench provided by the developer.
If the Developer is also building the individual premises as part of the development, then following will also apply		
Lead-In pipe	Installation of lead-in pipes	**Developer/builder** are responsible for providing the trench and installing 20mm green lead-in pipe in the trench, extending the RoW ducting from the premises boundary (for RoWs) or from the communal network (SDUs) to out of the ground at the premises wall, at the ETP location with a white or grey 20mm pipe. **Chorus** can supply the 20mm green lead-in pipes, or these can be purchased through an electrical wholesaler. Chorus will supply the 50mm or 100mm ducting if required. At time of customer provisioning, Chorus will install cable through the green pipes from the communal network to the premises ETP.
ETP to ITP and ONT	Supply of materials & installation	**Developer/builder** are responsible for installing a conduit from the ETP location to the ITP that is to be housed in a home distributor hub. An optical cable, composite cable, Cat6 or pull cable is installed through the conduit with at least 1.5m of cable slack to be coiled or used as a pull cable. In the event there is more than two swept bends in the conduit, the composite cable or LSZH microduct can be installed directly in the wall cavity. Sound cable management practices must be observed without any kinks or hard bends. The ONT location must have one power point available for the ONT, and one power point available for the RSP's RGW.

Section	Area of Responsibility	Demarcation of Responsibility
		Chorus will install the ETP at time of provisioning (if not already installed by the developer at their own expense), and install a cable through the conduit or terminating to the Chorus compliant cable already in the conduit. An ITP and ONT will be installed at the other end in a home distributor hub or wall mounted as required.
Customer Premises	Supply of materials, installation, and termination	**Developer and builder** are responsible for installing all non-Chorus fibre related internal premises cabling, termination including testing and commissioning. A star wiring configuration is highly recommended. Please refer to Volume 4 of this document and the TCF wiring standard.
Network Testing	End-to-End testing of the Chorus communal network	**Chorus** will perform a quality audit and test the optical performance from the Chorus communal network to each premises.
Customer Premises Network Testing	Testing of the Ethernet/telephony cabling in each premise	**Developer or builder** are responsible for all testing and commissioning of the Ethernet/telephony cabling in each premises.

Table 1. SDU & RoW Deployment Responsibility Demarcation

2.2. UFB Underground Deployment

For an underground deployment in developments of more than a single new lot, a Channell hand hole is to be installed at the premises boundary for hard surfaces, and marker posts for soft surfaces. The Channell hand hole or marker post is usually installed at the boundary of two adjacent premises and is shared.

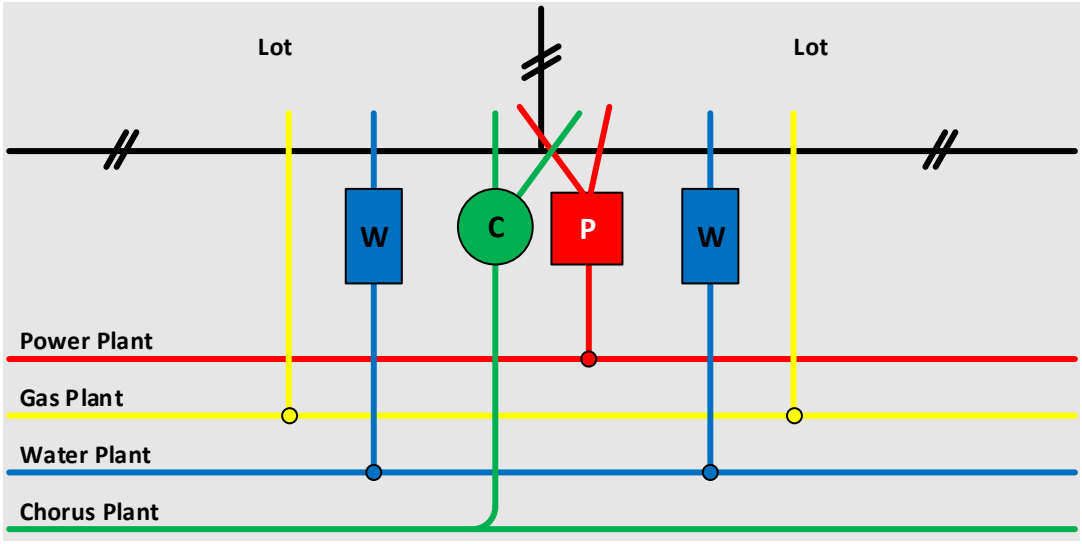


Figure 1. Channell Hand hole at the Premises Boundary

Please refer to Volume 1 of this document for the full detail and instructions about the deployment of our network within new developments of more than 1 lot, including the following sections about Microduct and Pit and Pipe systems.

2.2.1. Single lot SDU developments

For bare lot SDU developments, the developer is not typically expected to install any of our network within that new lot – it is expected that the builder or agent will be responsible for installing the Chorus green lead-in pipe from the street to the new premises.

If the developer is building the new premises(s) as part of the development, then the relevant Sections 3 and 4 of this document will apply.

For a new single rear section down a long driveway, if the developer is installing all the services down to the end of the driveway, then this would be treated as 'RoW' for deployment purposes. The developer is to install a 20mm green lead-in pipe down the driveway from a hand hole or marker post at the street boundary.

If this is not the case, then the developer is to install a hand hole in a suitable location for the future provisioning of the service lead and take the extended communal network into the hand hole.

2.2.2. Microduct Deployment

A distribution microduct bundle is deployed along the front of the premises and a single microduct tube is allocated to each SDU. This deployment method is the most common in Greenfield areas where there is no existing Chorus distribution network.

The following outlines the deployment at the premises boundary:

- One microduct is laid to each premises boundary into a Channell hand hole or marker post. The hand hole or marker post is usually installed at the boundary of two adjacent premises and is shared.

The following outlines the requirement for the property developer from the boundary to the premises:

- A 20mm green lead-in pipe is installed from the Channell hand hole or marker post at the boundary to each of the premises.
- At the boundary, each 20mm pipe is brought into the Channell hand hole or marker post.
- At the premises, the 20mm pipe is transitioned above ground into a grey or white 20mm pipe up to the location where an ETP is to be installed.

The ETP will be installed during provisioning when the customer requests for service from their ISP, or when we complete pre-built fibre so that there is an intact ONT left for the new owner/tenant. You can purchase the Chorus approved ETP from an electrical wholesaler. Further information about how to install is available in Vol 4.

2.2.3. Pit & Pipe Deployment

A pit & pipe system is used if it is an existing infrastructure is a pit & pipe system. A 20mm green lead-in pipe is installed from the nearest pit.

In a new area where there is no existing Chorus distribution network, the microduct system is usually deployed as outlined in the previous section. There are mainly two scenarios of deployment for a 20mm green lead-in pipe in a development which are:

- Allocated to each SDU from the Chorus pit & pipe system
- Allocated to each SDU from the pole closest to the premises.

In either of the scenarios above, Chorus deployment is as follows:

- A 20mm green lead-in pipe is deployed to the premises boundary into the Channell Hand hole or marker post.

Other scenarios, such as a commercial SDU, a 50mm or 100mm lead-in pipe may be installed, but this will be outlined in the design plan from our service company dependent upon the requirements of the development.

3. RoW Greenfield or Subdivision

3.1. RoW Infrastructure Requirement

Premises within the RoW are treated similar to SDUs in the communal network. Chorus deployment to the street boundary of the RoW is similar to the SDU with an increased capacity depending on the number of premises. The requirement on the property developer from the street boundary to the premises boundaries are as shown in the flowchart below.

The design of the lead-in network down the RoW to the premises boundary depends on:

1. The number of premises within the RoW
2. Whether it is a greenfields development or an Infill
3. If an Infill, whether the existing lead-in network can be repurposed.

At the street boundary of the RoW, a Channell hand hole is installed. The Chorus communal network will be installed into the hand hole. Depending on the number of premises within the RoW, either 20mm green lead-in pipes are installed to each premises boundary from the hand hole or a 50mm duct is installed to FATs within the RoW, with 20mm green lead-in pipe split off to the premises boundary from there.

The 20mm green lead-in pipes will end inside each section in a suitable position for its future extension to the premises when they are built, with a preformed 90deg swept bend and short vertical section of white PVC pipe taken above ground level at that point to indicate the end of the 20mm pipes. If, however, the developer is also building the individual premises as part of the RoW development, then the 20mm pipes will be extended to the new premises boundary – please refer to section 4.

For more than 4 premises in the RoW, it is preferable for one or more FATs are to be installed within the RoW. The number of premises served from a single FAT depends on the FAT capacity. Depending on the number of premises, the lead-in cable can be a 12F ABFU, a higher fibre count ABF cable or fixed fibre cable.

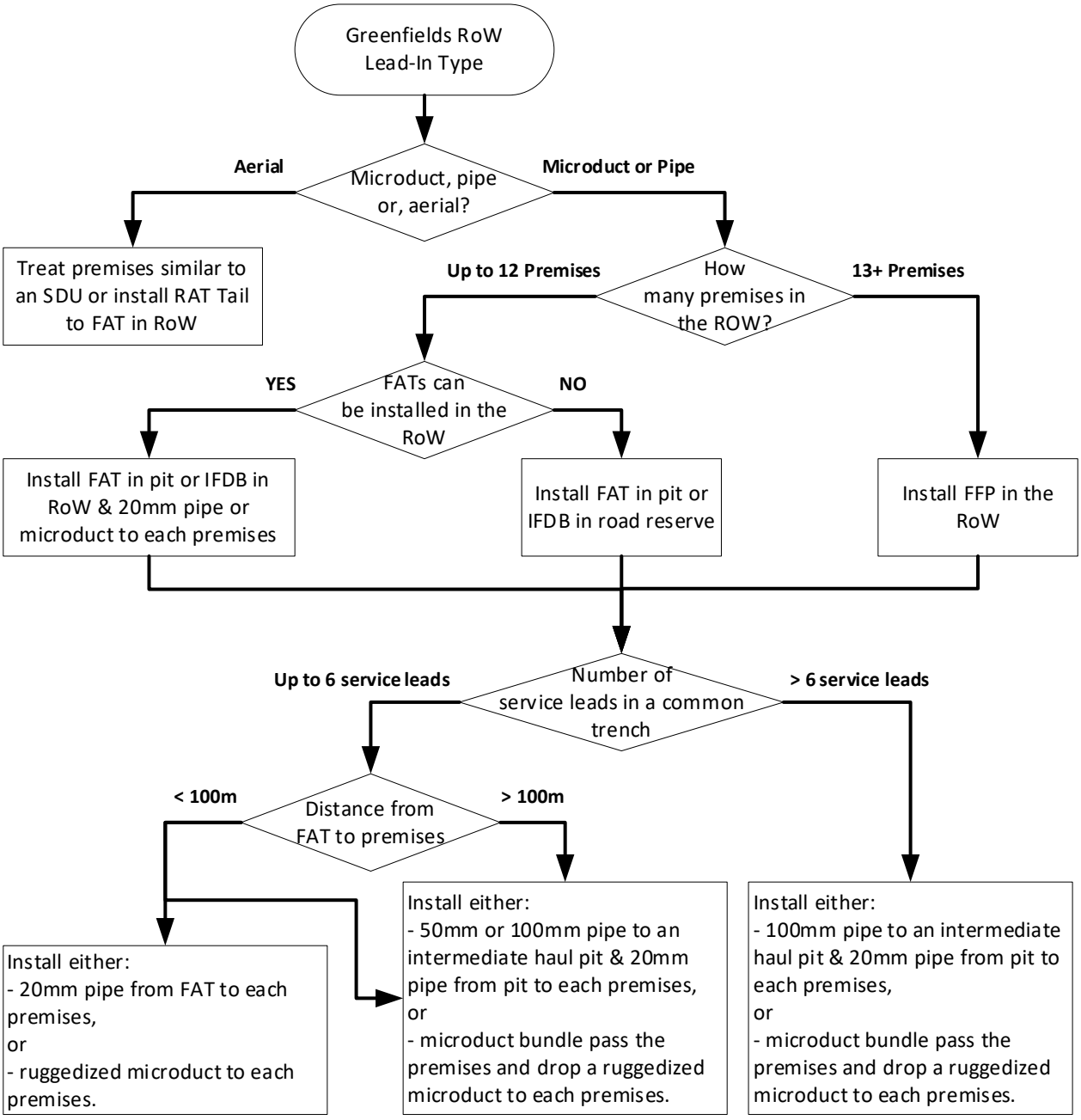
Depending on the network design the FAT may be installed underground in a pit, such as an OFDC closure, or may be an above ground terminal, such as an IFDB. The selection of enclosure of the FAT is determined by:

- its placement with respect to accessibility
- network protection against damage from external factors such as traffic

Where there are multiple buildings on 1 lot having a shared access way e.g. attached townhouses, there are different possibilities of providing the network to the individual premises. The Chorus designers will provide the clarification at point of design.

***Note1**: The distribution cable to an IFDB must be a ruggedized 1-way Ribbonet with a 12F ABFU. Only the OFDC can be terminated with loose fixed fibre or ABF microcable.*

***Note2**: For the scenario of an Infill in an existing UFB built area, there may be a limited number of spare microducts available to individually feed multiple premises. In this case, the existing lead-in (>20mm pipe) may be repurposed to feed multiple premises.*

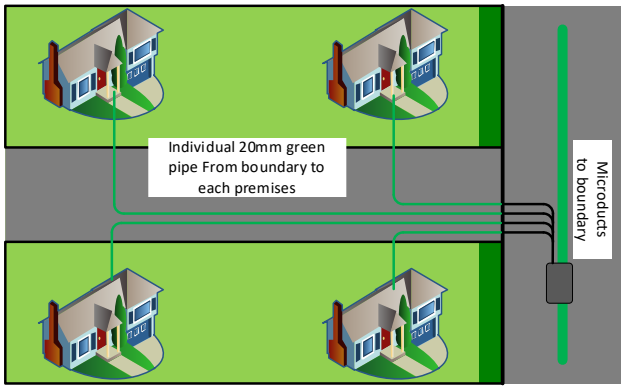


Note:

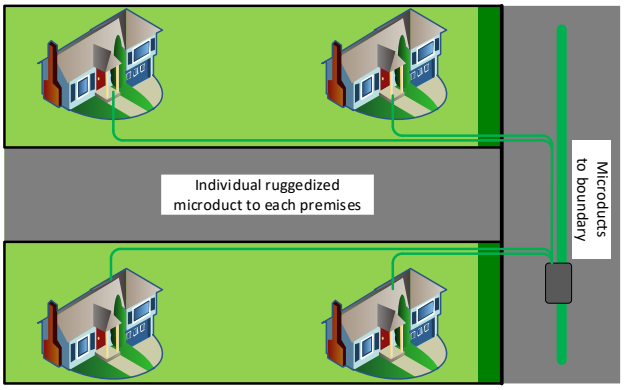
1. If pits cannot be installed in a location from wheel tracks, roadway strength pits must be used. Refer to document ND13066 for more information.
2. BULK 0 pits can be used for up to 4x premises. BULK 2 pits can be used for up to 6 premises.
3. 20mm pipes for service leads must not be more than 100m from pit to premises
4. No more than 6x 20mm pipes to be installed from any one pit
5. Microduct bundle drop-off to ruggedized microducts must not be done under hard surfaces

Figure 2. RoW Infrastructure in RoW Flowchart

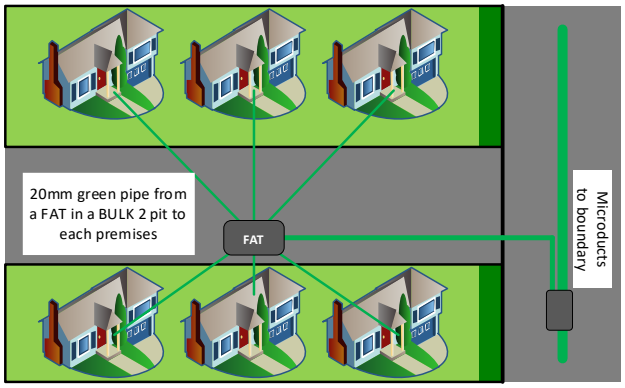
Example of 20mm pipes to RoW with 4x premises



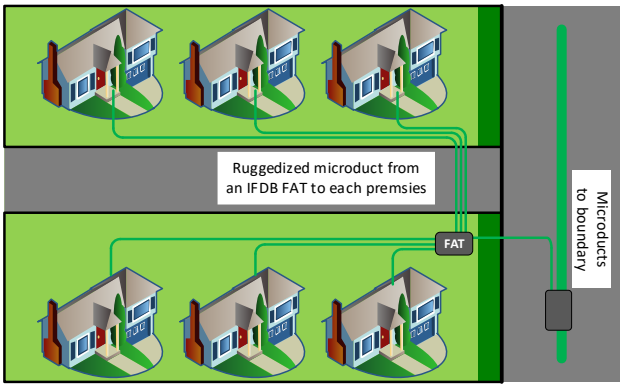
Example of ruggedized microduct to RoW with 4x premises



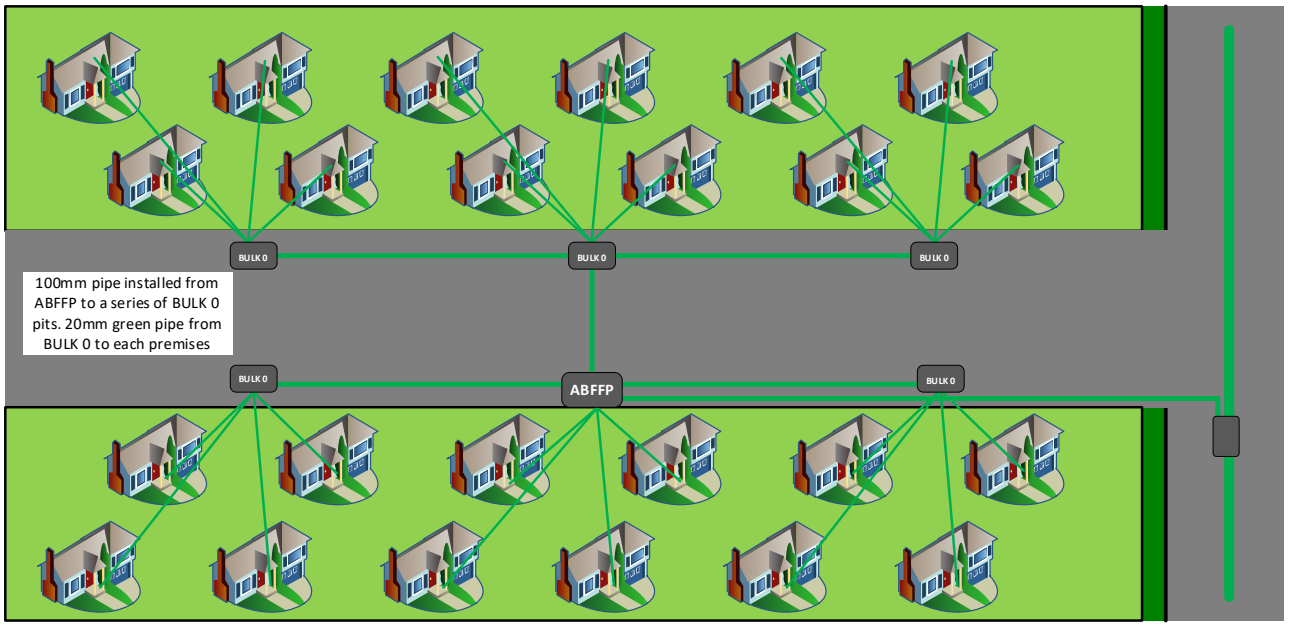
Example of 20mm pipes from BULK2 pit housing a FAT in RoW with 6x premises



Example of ruggedized microducts from IFDB FAT in RoW with 6x premises



Example of 100mm pipe from ABFFP to a series of BULK 0 pits with up to 4x 20mm pipes from each BULK 0 pit in RoW with >12 premises



Example of microduct bundle from ABFFP with a ruggedized microduct drop-off to each premises in RoW with >12 premises

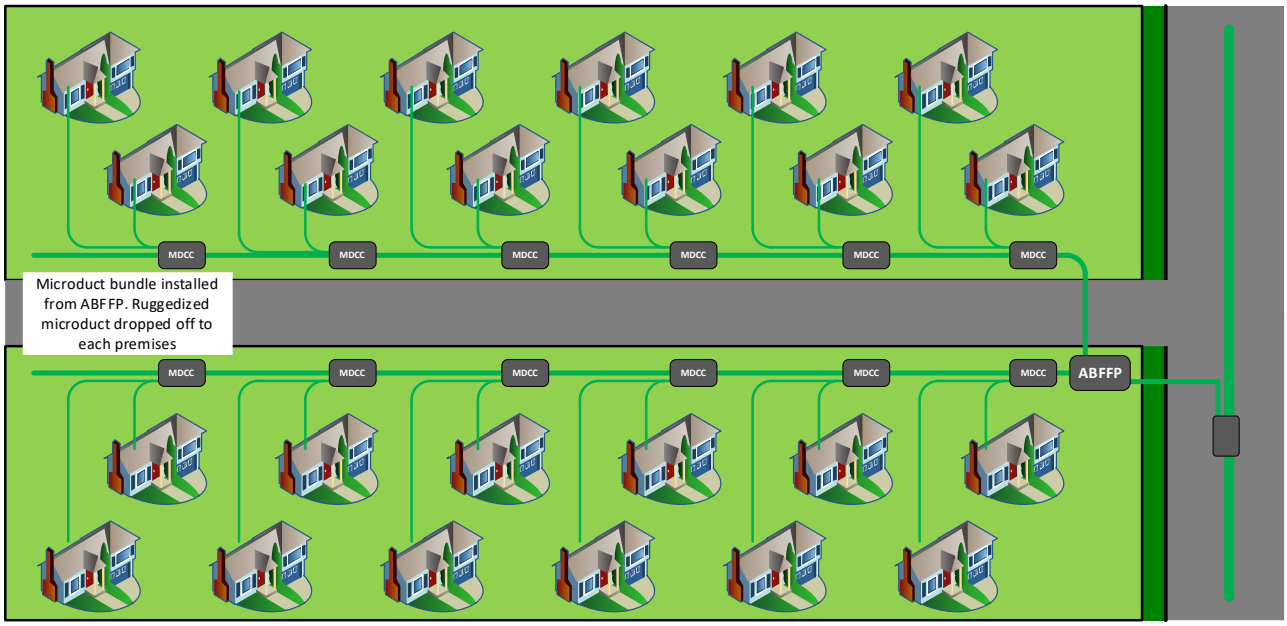


Figure 3. Examples of Greenfield Subdivision RoW Infrastructure

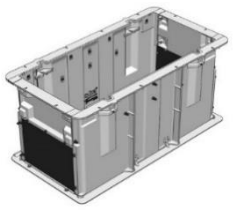
NOTE: *A single rear section down a long driveway is not classed as a RoW if that driveway doesn't carry any other services etc for another premises. In this situation, the rear section is typically classed as an SDU and the SDU deployment rules would apply. If, however, the developer is in fact installing all the services to the end of the driveway, then this would be treated as a 'RoW' for deployment purposes, with the developer installing a 20mm pipe down the driveway from a hand hole out at the street boundary.*

3.1.1. Pit Requirements

If an underground FAT is installed in the RoW, the recommended pit size is L762 x W432 x D609mm. An example is the Channell Bulk 3 plastic pit and polymer concrete lid. This pit has a Class B bolt down lid which suitable for footpaths. As such, it must be not be installed in the road or driveway.

If the pit needs to be installed on a driveway, a SIKA 1200 x 600 x 700H chamber with a Class D.

Description	Photo
Bulk 0 – L305 x W305mm x D305mm Used as a hand hole	
Bulk 2 – L559 x W324 x D476mm Used as intermediate hauling pit or turning pit	
Bulk 3 – L762 x W432 x D609mm Used as turning pit and for FFP or FAT installation	

SIKA Aluminium Chamber 120 x 600 x 700H Class D 210kN (Roadway) design load.	

***Note**: Some pit types may change due to lifecycle changes and will be replaced with a pit with relative equivalent description and specifications.*

Table 2. Pit Types, Use & dimensions

3.1.2. Connectivity at the Premises

Each premises within the RoW will be treated similar to an SDU – refer to Section 4.

4. Network to ETP Lead-In

4.1. Overview

If the developer is also building the premises within the development, then this section will apply.

A lead-in pipe is needed to get the network cable from the point on the boundary where the Chorus communal network is situated to the point on the building where the internal cabling needs to connect to the External Termination Point (ETP).

4.1.1. Boundary to ETP

The following outlines the requirement on the property developer from the boundary to the premises, or in the case of a large RoW, from the pit to the premises:

- A 20mm green lead-in pipe with associated pre-formed bends are installed from the Channell hand hole or marker post at the boundary or pit in the RoW to each of the premises.
- A draw tape must be installed in the lead-in pipe to facilitate cable installation when the premises are connected. Depending on the Chorus communal network, there are different cable or microduct choices. The draw tapes are used to haul the correct cable or microduct to the property.
- All buried joints must be glued
- At the premises, the 20mm pipe is transitioned above ground via a preformed 300mm radius bend into a white or grey 20mm pipe up to a location where an ETP is to be installed and capped.
- The ETP is the connection point between the inside and outside cabling. The ETP should be positioned as close as possible to the front of the building at a minimum height of 300mm above finished ground level (with a maximum height of 1500mm).

The ETP will be installed during provisioning when the customer requests for service from their ISP or when we complete pre-built fibre so that there is an intact ONT left for the new owner/tenant.

4.1.2. ETP Location and Installation

The ETP is to be installed a minimum of 300mm and not more than 1,500mm above the finished ground level, measured from the bottom of the ETP. Fixings used on a building must be appropriate for the type of wall that it is mounted. Either galvanised or stainless steel fittings can be used but they must not be mixed as the different metal types will react and rust over time.

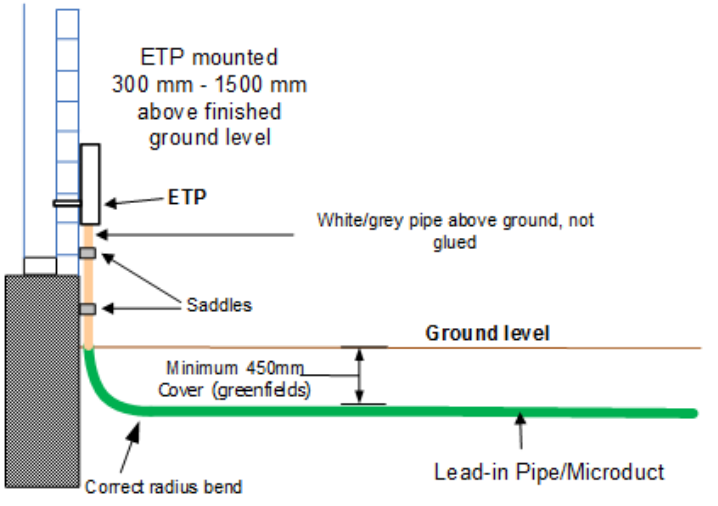


Figure 4. Lead-In Pipe and ETP Installation

4.1.2.1. Gas Regulator Exclusion Zone

Various AS/NZS standards detail an exclusion zone for gas regulators for reticulated gas supply and for gas cylinders housed outdoors. No potential sources of ignition can be installed within this zone. A telecommunications ETP (fibre or copper) cannot be installed within the gas regulator exclusion zone.

In order to comply with AS/NZS Standards no new fibre or copper ETPs can be installed within the Gas Regulator Exclusion Zone.

- ASNZS 3000 - Electrical Installations (known as the Australian/New Zealand Wiring Rules) outlines the Exclusion Zone measurements for Gas Cylinders and Reticulated Gas Supply regulators.
- ASNZS 4645 – Gas Distribution Networks outlines the requirement for gas regulators to have sufficient safe clearances from various building features including sources of ignition.
- ASNZS 60079 – Explosive Gas Atmospheres defines sources of ignition.

Any network transitioning the exclusion zone is required to be housed in continuous duct without any joints or junctions.

There are two types of gas regulators used in New Zealand. They are the 'Vented' and the 'OPSO' (Over Pressure Shut Off). They each have different clearance requirements. They are identified by their colour. The vented is **light brown**, and the OPSO is **light grey**.

Gas regulators and meters often (but not always) have a white metal cover with windows in the front and side. The colour of the regulator should be able to be seen through one of these windows. If not, the cover can be removed to allow the technician to observe the regulator colour. If in doubt, treat as a vented regulator.

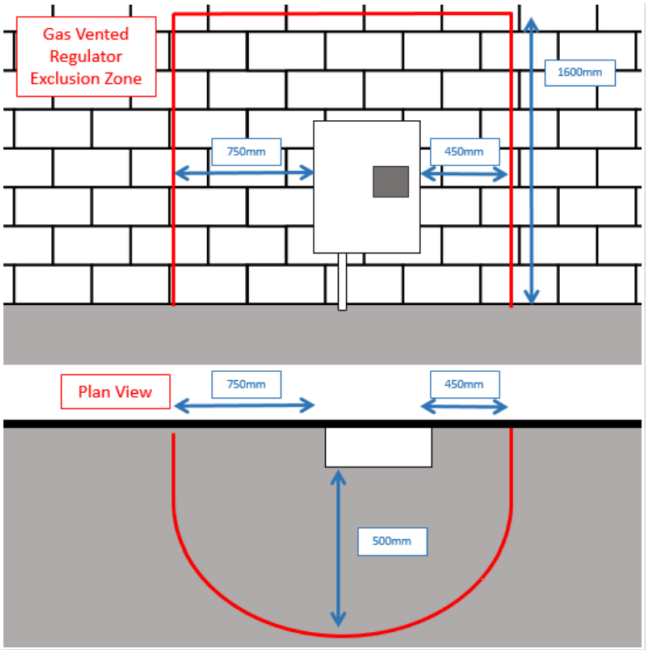


Figure 5. Vented Gas Regulator Exclusion Zone