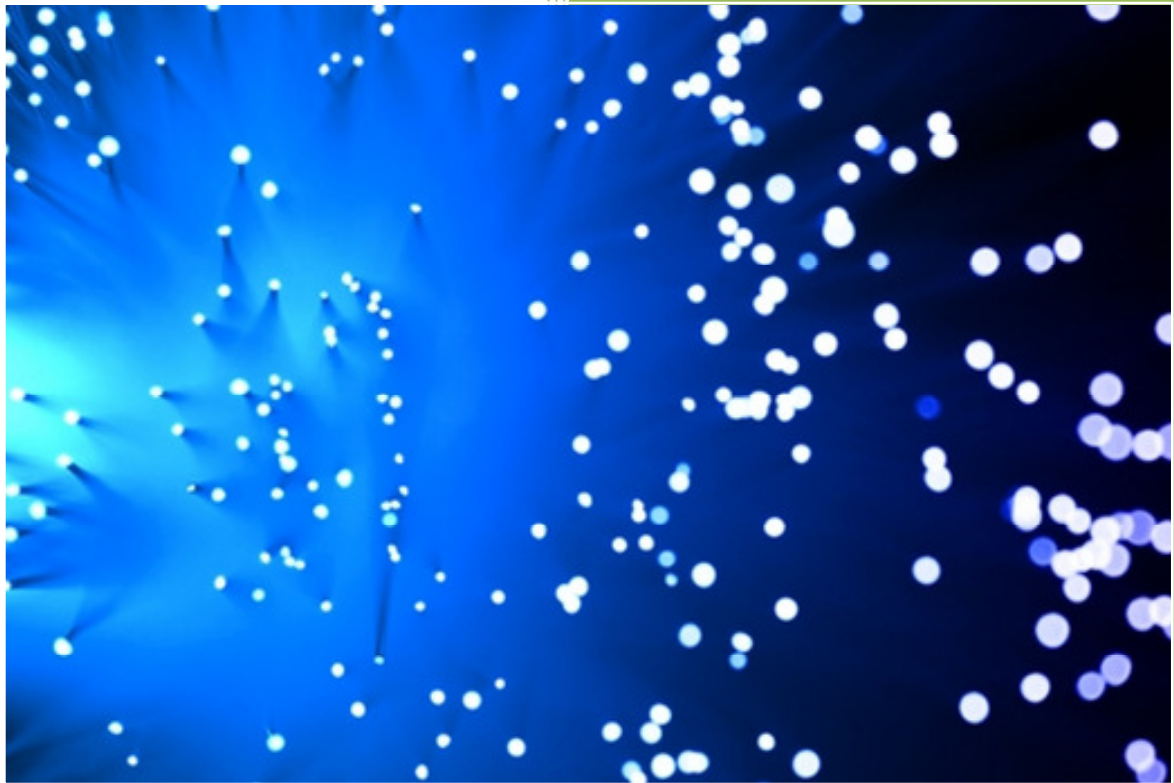




# Cable Entry Guide



Document No: TG-001

Issue Date: 19/04/2012

Version: 2.7

## Document Control Sheet

### Record of Issue

Issue	Date	Description
A	16-Nov-08	First draft document issued for discussion
1.0	14-Jan-08	
2.0	14-Feb-09	Removed references to different types of conduit size.
2.1	20-Mar-09	General updates. Telecommunications Cabling Advice.
2.2	2-Sep-2009	Update of Conduit sizing & Pay TV requirements
2.3	16-Apr-2010	Minor updates and corrections
2.4	4-Mar-2011	Added address table to Checklist
2.5	23-May-2011	Added Earth and NTD location Information, edits to OptiComm Customer Contact Information Desk
2.6	25 Nov 2011	Changed reference to 20mm/Add references re: contractors not hauling Lead In Fibres
2.7	19-Apr-2012	Internal ONT

### Acceptance and Approval

Issue	Name	Position	Signature	Date
A	S. Davies	GM, Operations		16-Nov-08
1.0	S. Davies	GM, Operations		14-Jan-08
2.0	S. Davies	GM, Operations		14-Feb-09
2.1	S. Davies	GM, Operations		20-Mar-09
2.3	S. Davies	GM, Operations		23-Apr-2010
2.4	S. Davies	GM, Operations		04-Mar-2011
2.5	S. Davies	GM, Operations		23-May-2011
2.6	S. Davies	GM, Operations		25-Nov-2011
2.7	S. Davies	GM, Operations		19-Apr-2012

In the event of any enquiries with respect to this document, please contact:

Name	Position	Phone	Email
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## **1.0 PURPOSE**

The aim of this document is to outline what is required for homeowners and their builders, or developers to connect to telecommunication networks based on Fibre to the Home (FTTH) technology.

## **2.0 SCOPE**

This document extends to detached or semi-detached buildings that are being built for residential or small business use. It covers requirements of connection from the telecommunications pit to the Home Distribution Unit.

## **3.0 THINGS YOU SHOULD KNOW**

### ***3.1 Introduction***

Modern technology has brought many changes to the way we live, specifically in communications where many new services are being introduced that require high-speed delivery infrastructure. New Digital Telephone, Ultra-High Speed Internet and Television Services (including pay and free to air) offer greatly enhanced performance when compared to older technology. To accommodate these changes, residential developments must move forward with technology and provide infrastructure that will have the capacity for not only today but also for future technological advancements.

In standard residential areas, the incumbent carrier meets the basic communication needs of the community. At OptiComm, our commitment is about being at the forefront of the education and broadband revolution, and as such we provide advanced fibre optic communication infrastructure as a replacement for the traditional copper network.

### ***3.2 Services***

Fibre communication network will provide a range of services, including reticulation of the analogue and digital free to air television signals, Pay TV, Ultra-HighSpeed Internet, and a Standard Telephone Service. Additional services, such as Community Intranet, security monitoring, gate control, and new entertainment services such as IPTV and Video-on-Demand, are all possibilities with this latest technology.

### 3.3 Connection

A fibre optic enabled community allows for you to connect to the network that runs past your property. A fibre optic lead in cable connects to a connection box on the external wall of your home. This is called a Premises Connection Device (PCD) and it is where the internal Optical Fibre cabling joins the Fibre cabling from the street. An Optical fibre cable is run from the PCD to the Network Termination Device (NTD) inside the house and it is where the optical signal (light) is converted to an electrical signal and retransmitted on twisted pair and coaxial cable to your Home Distribution Unit (HDU). The following illustration shows the various elements of the connection to the Optical Fibre Network and the in home cabling and the responsibilities of both OptiComm and the Builder/owner.

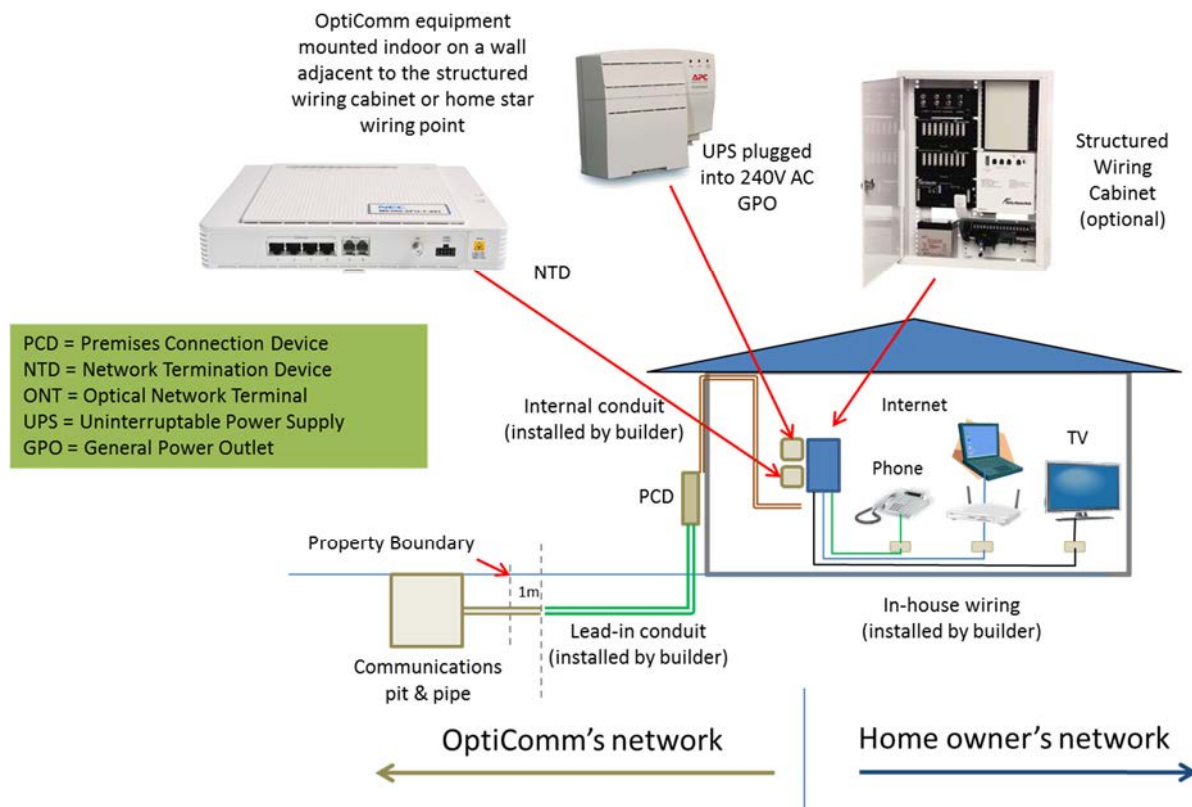


Figure 1 – Example of Responsibilities for Builder / Owner and OptiComm

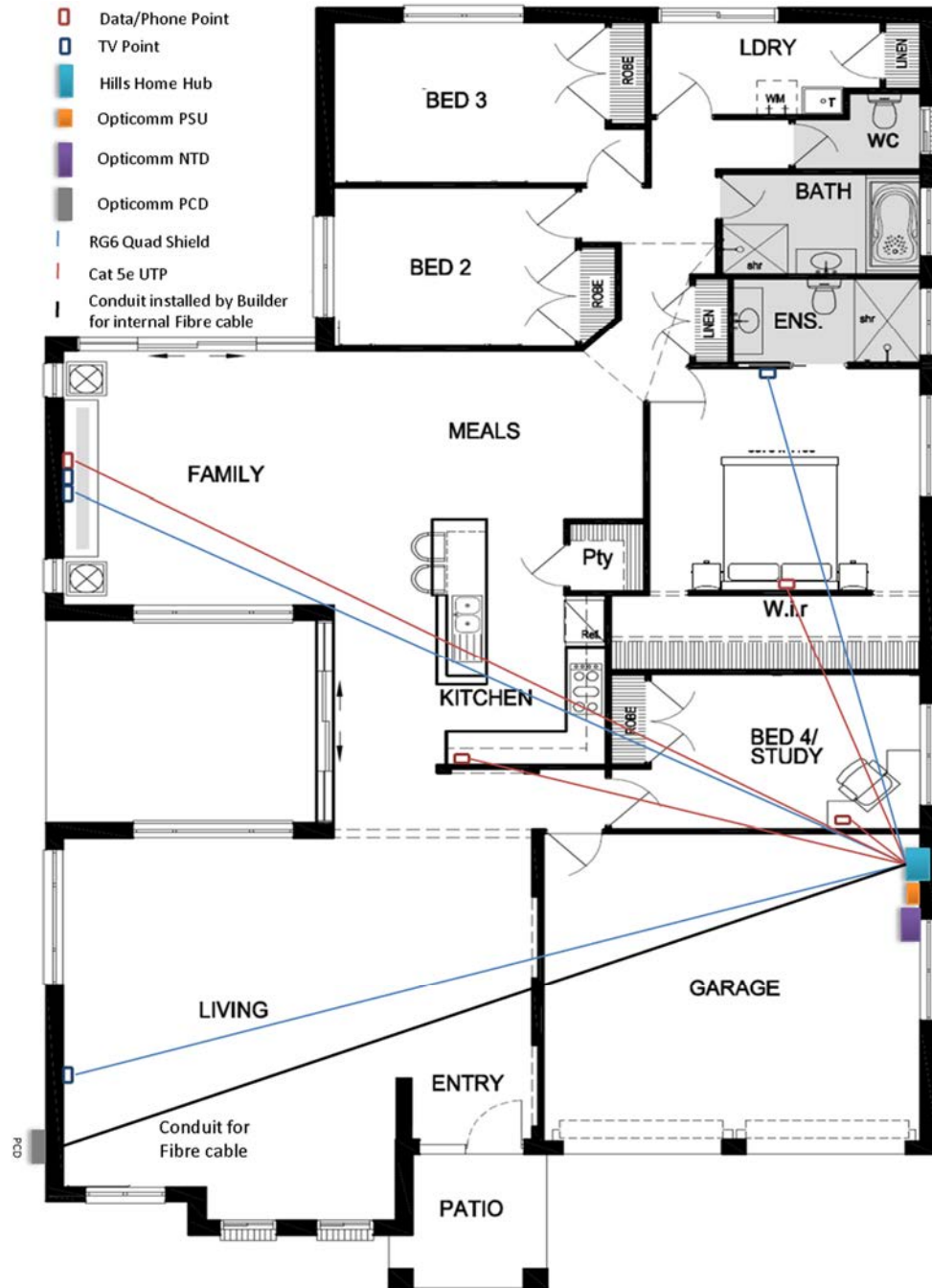


Figure 2 - Example of a typical building cabling system

To be able to connect to the OptiComm Optical Fibre Network, you must wire your home in accordance with this document. This specification outlines the materials to use and recommends smart wiring in your home. Your Builder / Telecommunications Contractor must follow the specifications and not substitute “equivalent” materials at any point in time. If you are about to commence construction, wiring your home correctly during initial construction will save you considerable expense when compared to the cost of rewiring your home once you have moved in.

It is also mandatory during construction of your home that the Builder or Telecommunications Contractor provides the appropriate continuous conduit between

your home and the communications infrastructure running down the street. This conduit will be used to pull through a fibre optic cable and connect your home to the rest of the world, enabling you to receive telephone, internet and television services.

### **3.5 Outdoor Antennas**

In your community the Local Structure Plan and Restrictive Covenants may prevent you from installing an outdoor antenna for television reception. If your estate developer has implemented this Covenant then once your home is connected to the fibre network, you will receive perfect quality high definition digital television signals which can be reticulated throughout your home.

### **3.6 Satellite Dishes**

As with outdoor antennas restrictive covenants may restrict the installation of satellite dishes. If your estate developer has implemented this covenant the fibre optic network will reticulate the major Pay-TV channels throughout your estate enabling you to deal directly with your preferred operator and providing superior quality reception.

### **3.7 More Information**

As a homeowner you are responsible for organising installation of your connection and all costs associated with that connection. For more information contact the OptiComm Customer Connection Information Desk below:

**For more information contact the  
OptiComm Customer Connection Information Desk  
on 1300 137 800  
Or via email [ccid@opticomm.net.au](mailto:ccid@opticomm.net.au)**

For multi dwelling lots please contact OptiComm as you will require additional services and pipework installed (at your cost) within the property boundary.

## **4.0 EQUIPMENT DESCRIPTION**

### **4.1 Conduit**

A “lead-in” conduit is required to run from the telecommunications pit in the street to a Premises Connection Device (PCD) installed on the outside wall of the house. The conduit used must be ACA approved conforming to AS2053.1:2001. The nominal inside diameter must be 25mm, made of PVC, be white in colour, and marked with “Communications” or “Telecommunications” for easy identification.

**It is the home owner's or builder's responsibility to ensure this lead in conduit is installed prior to OptiComm attending the site for installation of the PCD.**

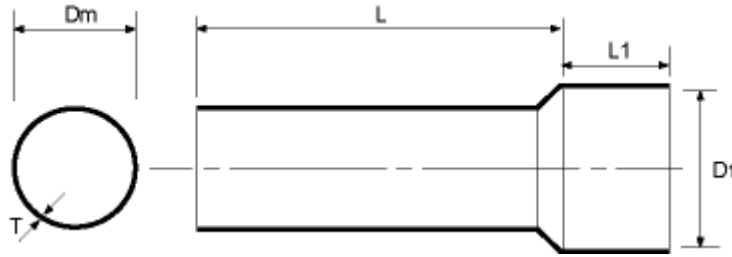


Figure 3 - Rigid conduit(Vinidex, 2008)

Below are details of two vendors who supply conduit meeting the above requirements. However you are free to select any vendor who supplies conduit to the same specification.

Pipe size (mm)	Product Code		Outer Diameter (min)	Wall Thickness (min)	Bore (mm)
	Vinidex	Iplex			
20	11715	CTCO20	26.7	1.8	23.3

Table 1 - Conduits available

Product	Product Code		Size (mm)	Degree	Centreline Radius (mm)	Length (mm)
	Vinidex	Iplex				
Bends	32570	CT73271	20	90	305	572
Slip Couplings	30205	P00720	20			70

Table 2 - Conduit Fittings

Any bends required in the “lead in” must be 90-degree sweep bends (**not elbow bends**) with a minimum radius of 300mm. The conduit must be a single continuous vessel between the pit and the location on the side of the house where the PCD will be installed.

OptiComm normally installs a 20mm starter conduit leading out of the telecommunications pit to the property boundary. The builder should locate this starter conduit and couple it to the conduit they are installing.

During building construction, conduits should be installed for the PCD cabling at the owner’s cost. These must be ready for use but not provide a path for water or termites to enter the building.

If the lead in conduit is to be installed under a driveway or retaining wall, it is recommended it is run within a 90mm storm water or irrigation pipe. This functions for two purposes;

- To protect the communications conduit from damage;
- To allow the future installation of other services (e.g. water reticulation pipes and wires)

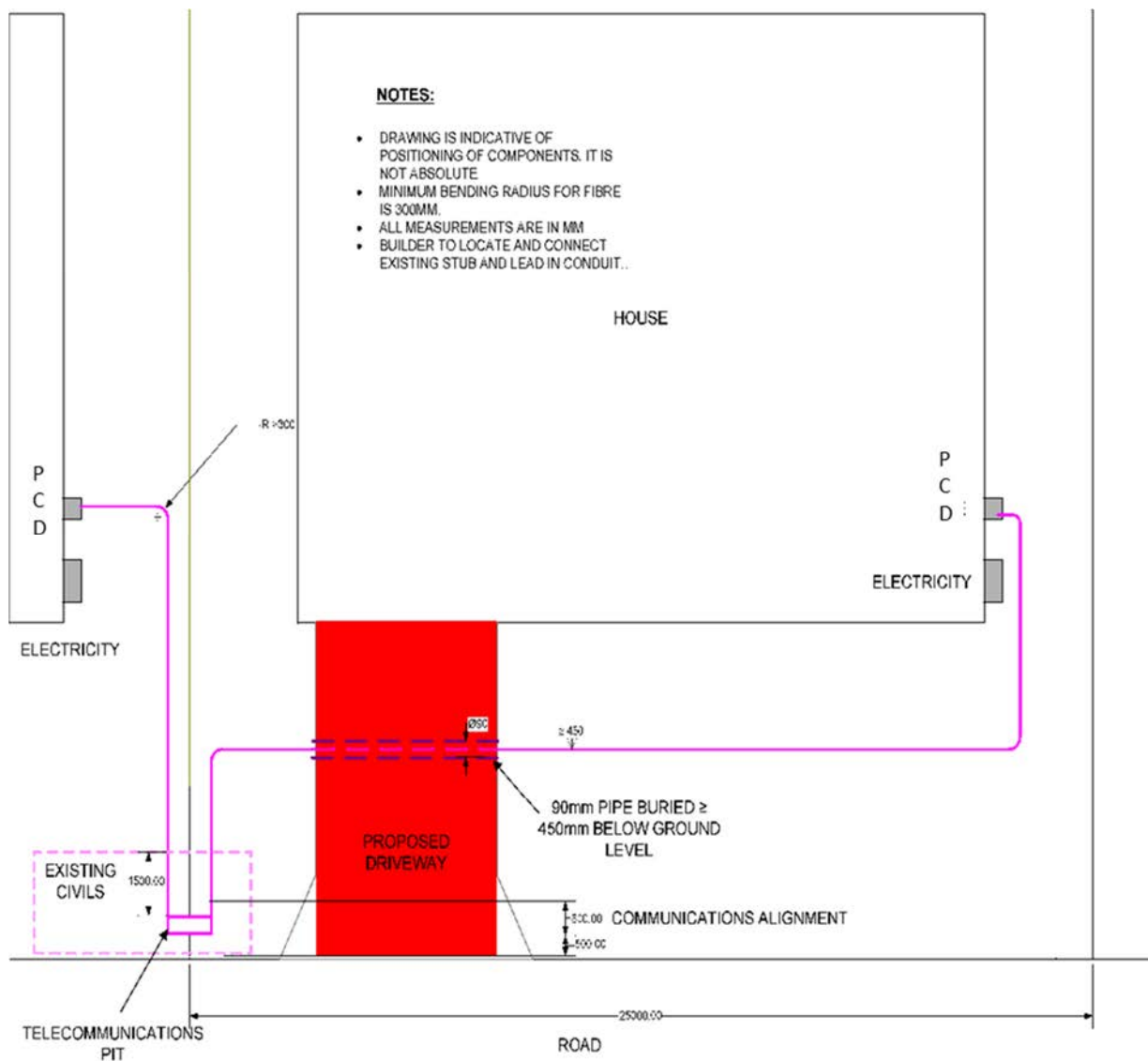
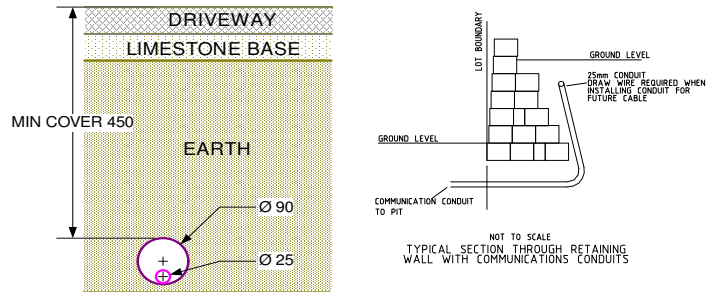
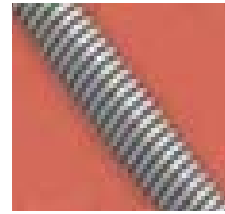


Fig 4 - A Typical lead in arrangement from street to house



Flexible 25mm Inside Diameter conduit may be used where the cable is above ground, such as running up the wall. The minimum bend radius must be observed, as well as having an inside diameter of 25mm. It must be grey or white in colour and non-metallic. It can be purchased from any electrical supplier.



### **4.2 Premises Connection Device (PCD)**

This is the termination box installed by OptiComm on the outside of the building to connect the street distribution fibre to the internal distribution fibre. It is normally located near the electricity enclosure. This box will be supplied by OptiComm at time of installation.

### **4.3 Network Termination Device (NTD)**

Network Termination Device is also known as an Optical Network Transceiver (ONT). This marks a network boundary point connecting the homeowner's equipment to the fibre optic network. The NTD is mounted on an internal wall next to a GPO and where the wiring hub or house star TV and communications wiring is located.

### **4.4 Uninterruptable Power Supply (UPS)**

The homeowner must supply a 10 Amp 240 Volt General Purpose Outlet (GPO) to power a basic plug pack or UPS for the NTD. The UPS is usually located near the structured wiring Hub and NTD preferably located in the garage.

The PSU must be installed between 1800mm and 300mm above the floor level of the building. 1000mm to 1300mm is ideal. For adequate ventilation and access to the unit allow a space of 340W x 295H x 125D inside the HDU.

### **4.5 Fibre Optic Cable**

A pre-connectorised fibre cable will be installed by OptiComm from the network pit to the PCD on the outside wall of the customer premises.

A second fibre cable will be installed from the PCD location on the outside of the house, through the internal conduit installed by the owner/builder to the NTD location.

These cables will be supplied and installed by OptiComm at time of connecting the house to the rest of the network.

#### **Warning:**

**Under no circumstances should the resident, builder or electrical contractor attempt to pull the optical fibre lead-in cable from the OptiComm Network pit through the lead-in conduit. The Optical Fibre lead-in cable is relatively inflexible and if it is damaged by unauthorised parties its replacement cost will be billed to the resident and paid for before the service connection will be completed. Typical cost for replacement of a lead-in cable is in the vicinity of \$440.00 including GST.**

## 5.0 BUILDING ENTRY ARRANGEMENTS

### 5.1 Conduits

The lead-in conduit must **not** go through the concrete slab. Underground, it is to be rigid pipe and must connect properly to the existing 1.5m of starter pipe from the communications pit. A coupler or bell end must be used to connect the pipe together with appropriate solvent cement. Bends with a minimum radius of 305mm must be used. The lead in must be installed in such a way that it has minimal impact on the property. Whenever possible, the path must be underground until it is close to the PCD position. The conduit must not cross over the top of structures like retaining walls.

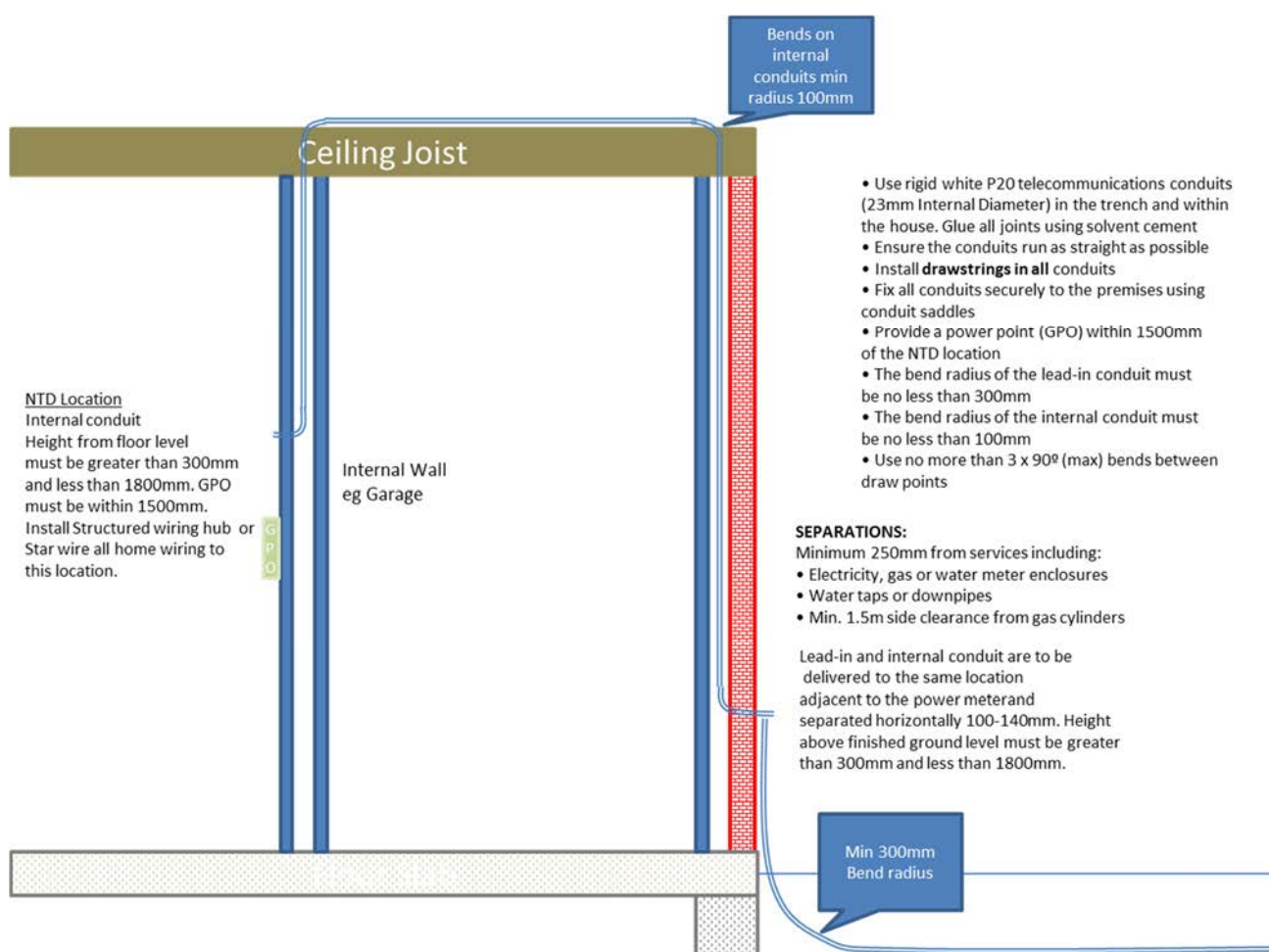


Figure 5 – Lead-in and internal conduit details

### 5.2 Communications Pit

Every effort should be made to keep the communications pit on the boundary easement accessible at all times. This will aid installation and maintenance of the network. Consider landscaping of the property and the level of the ground. Contact OptiComm if you wish to raise the ground level above the pit level.

Any damage to the pit servicing a property will be repaired by OptiComm at the homeowner's expense.

### 5.3 Premises Connection Device (PCD)

After construction of the building is complete and all required conduits have been installed, OptiComm will install the PCD on your home, on an external wall near the meter box.

The PCD must be installed on the outside of the building. This cannot be a separate structure such as a detached building, separate garage or fence.

The PCD will be mounted no lower than 300mm from ground level and no higher than 1800mm to the top of the PCD. The PCD dimensions are 400 mm (H) x 300 mm (W) x 150 mm (D). The conduit entry is always from the bottom of the PCD and the connection to the internal conduit is via the rear of the PCD. **It is important that the builder takes into consideration the location of the proposed exit point for internal fibre conduit from the wall and also the location of the lead in conduit at the wall along with other services that may also be located in this vicinity. eg: Hot Water Systems, water taps, gas meters, reticulation timer enclosures and any other externally mounted items.**

#### SEPARATIONS:

Minimum 250mm from services including:

- Electricity, gas or water meter enclosures
- Water taps or downpipes
- Min. 1.5m side clearance from gas cylinders

### 5.4 Network Termination Device (NTD)

The builder should install all the inside telecommunication and Television cabling presenting all the cables at an approximate location near the internal fibre conduit and GPO provided for the UPS for connection into the NTD.

#### OptiComm will supply and install at the time of Network connection

- The service drop cable from the communications pit to the PCD location
- The PCD
- The internal fibre optic cable from PCD to the Fibre Wall Outlet (FWO)
- The Fibre Wall Outlet
- The NTD
- The UPS

#### The Builder or Homeowner will

- Supply and install all internal building cabling to Telephone, TV, and Data Wall outlets.
- Make connection from the NTD outlets to the building cabling.

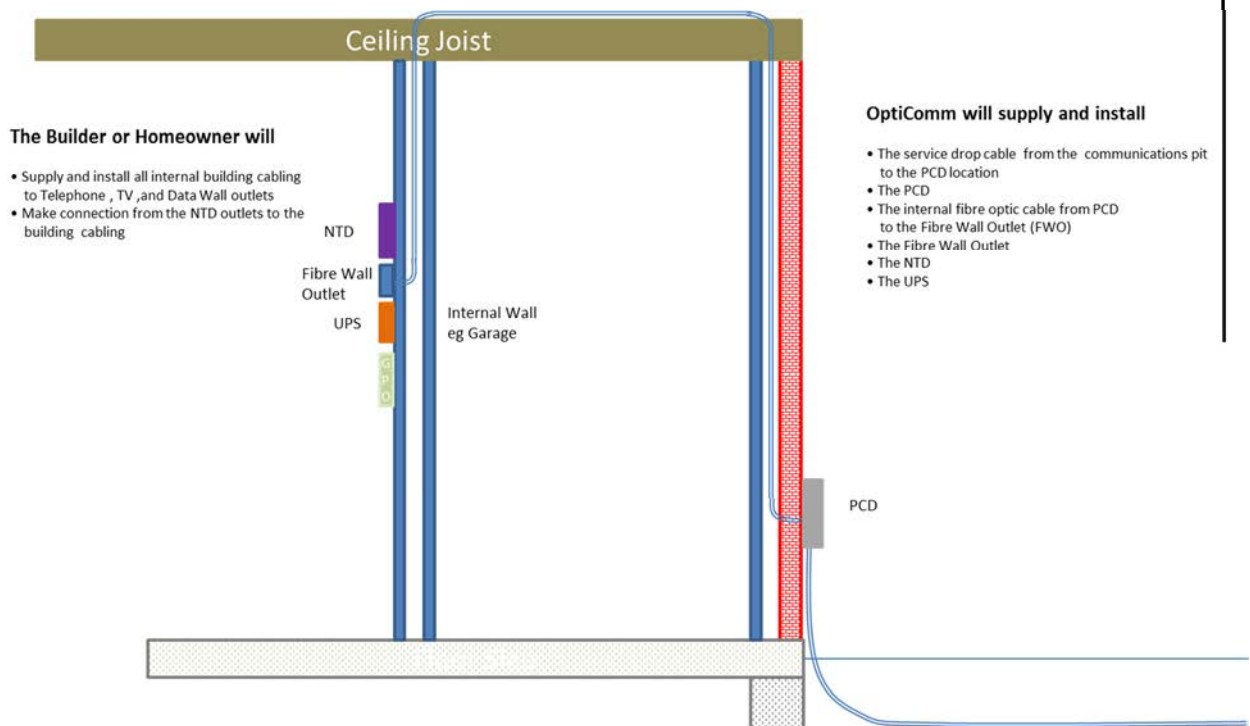


Figure 6 – Network Termination Device connection

### 5.5 Multi Dwelling Lots

Multi dwelling lots may require a different installation. If it is a duplex or triplex it may be as simple as running two lead-ins to the pit and treating them as separate buildings. However if it is a large complex like a commercial precinct, a lifestyle village or an apartment block, there may need to be more civil infrastructure (such as conduit and pits) and design changes made to the network. It is best to contact OptiComm before construction to discuss requirements. Please refer to the OptiComm Website [www.opticomm.net.au](http://www.opticomm.net.au) for contact details or email [sales@opticomm.net.au](mailto:sales@opticomm.net.au) with details of your enquiry including your contact details.

## **6.0 CABLING REQUIREMENTS TO NTD**

### **6.1 Introduction**

It is the home owner's / builder's responsibility to ensure all appropriate cabling is provided from the Home Distribution Unit or Wall Outlet locations to the Network Termination Device. While not necessary, these cables can be run inside a flexible or rigid conduit.

### **6.2 General Purpose Outlet**

To power the NTD, OptiComm will install a Power Supply Unit (PSU) inside your home, near the wiring cabinet. It is a requirement to ensure you have a 240 volt GPO installed next to your wiring cabinet or other suitable location so it can power the NTD and the equipment inside your cabinet.

### **6.3 Television**

There needs to be one (1) RG6 Quad cable installed between the HDU and the NTD. From the HDU one RG6 Quad cable needs to be installed to each TV / PAY TV point. Both TV and PAY TV are available at each point however PAY TV providers require a dedicated point for connection to their set top box.

### **6.4 Pay-TV**

PAY TV providers require a dedicated point for connection to their set top box. FOXTEL have specific requirements as to what materials are to be used in the wiring from the ONT up to and including the wall plate. Cable and connectors MUST be FOXTEL approved if you intend to have a FOXTEL connection. A list of approved FOXTEL components and a FOXTEL wiring guide can be downloaded from

<http://www.foxtel.com.au/support/Getting-Started/Connecting-Cabling/default.htm>

### **6.5 Telephone**

There needs to be one (1) Cat5e cable installed between the HDU or telephone point and the NTD to provide telephone services. The one cable can be used for up to 4 telephone lines.

### **6.6 Internet**

There needs to be at least two (2) Cat5e cables installed between the HDU or activity room/office and the NTD to provide data services. One is dedicated to Internet service; a second can be installed for future services eg IPTV.

## Checklist

The following is a checklist of what must be performed by the builder or home owner prior to OptiComm installing the NTD at the premises. Failure to make these arrangements will result in additional costs to the home owner.

Please complete this checklist and fill out the address of the property, sign and fax to 07 5582 5284 or scan and email to [ccid@opticomm.net.au](mailto:ccid@opticomm.net.au).

### Property Address details

<b>Lot #</b>		<b>House #</b>	
<b>Street Name</b>			
<b>Suburb</b>		<b>State/Postcode</b>	
<b>Print Name</b>		<b>Signature</b>	

- Installation of a continuous 20mm (nom ID 23.3mm) (and undamaged) conduit from the stub conduit leading out of the telecommunications pit to the area near the meter box.
  
- Installation of a continuous 20mm (nom ID 23.3mm) (and undamaged) conduit from the PCD location near the meter box to the NTD location inside the house.
  
- Ensure use of rounded bends (**No 90 Degree bends**) when installing the lead in conduit.
  
- Install a minimum of Three Cat5e, one RG6 and a Figure of 8 16AWG power cable between the HDU and the NTD location or.
  
- If no Structured Cabling System is used, install two (2) Cat5e through to the office for the internet and spare, a Cat5e through to the kitchen (or other location) for the telephone, a RG6 to the living room for the TV.
  
- Have a completed Telecommunications Cabling Advice notice (TCA1 Form)

**Warning!** All customer premises cabling work MUST be performed by a registered cabler. If a cabler is registered, they will have a card which proves that they can legally perform cabling work.

The cabling work must comply with the Cabling Provider Rules, which detail the minimum requirements for telecommunications cabling installations to ensure that network integrity and the health and safety of end-users, other cablers, and carrier personnel is protected.

The cabling is required to have adequate separation or segregation from electrical cabling to avoid creating a dangerous situation.

Failure to use a registered telecommunications cabler may result in fines of up to \$13,200.

# Telecommunications Cabling Advice (TCA1)



Australian Government  
Australian Communications and Media Authority

Copies required for customer, cabler and employer (if applicable)

## Instructions for completion

### Requirements

A registered cabling provider must complete this form after each cabling job (except for certain exemptions). Cablers must retain a copy of this form for at least 12 months and pass a copy to the customer and/or employer.

Print clearly. Illegible, unclear or incomplete application forms may delay processing.

Where proposed works may be compromised by existing cabling, a TCA2 form should be completed.

### Enquiries

For advice on completing this form, please go to ACMA's website at [www.acma.gov.au](http://www.acma.gov.au) (go to For licensees & industry: Service & technical requirements > Telecommunications : Cabling requirements > TCA forms > How to complete TCA forms).

Technical enquiries about cabling should be directed to:

Email: [cablingqueries@acma.gov.au](mailto:cablingqueries@acma.gov.au)

Tel: 1300 850 115

## Registered cabling provider

Name

SURNAME
GIVEN NAMES

Address


Contact details

WORK ( )
MOBILE
Registration number
Name of registrar

## Employer (IF APPLICABLE)

Name of company

--

Contact details

WORK ( )
MOBILE

Address

POSTCODE

## Description of work (INCLUDING ANY SUPERVISION)


## Customer details

Name

--

Address

POSTCODE

Contact details

WORK ( )
FAX ( )

## Certification

I hereby certify that the cabling work described in this advice complies with the Wiring Rules (AS/ACIF S009:2006 or its replacement).

SIGNATURE
DATE

PRINT FULL NAME
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