

**COMMUNICATIONS  
ALLIANCE LTD**



INDUSTRY CODE

C524:2013

EXTERNAL TELECOMMUNICATION CABLE  
NETWORKS

## **C524:2013 External Telecommunication Cable Networks Industry Code**

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## INTRODUCTORY STATEMENT

The **External Telecommunication Cable Networks** Code (C524:2013) replaces the (unregistered) **External Telecommunication Cable Networks** Code (ACIF C524:2004).

The purpose of the changes are to:

- align with developments in the Australian regulatory arrangements related to the National Broadband Network; and
- update references to Australian and international standards.

The **External Telecommunication Cable Networks** Code is designed to:

- provide guidance on the basic principles of installation, maintenance and safety of External Telecommunication Networks with the purpose of achieving the requirements for electrical, structural and network reliability, as well as setting out the provisions that are considered necessary for the safety of Employees and the public under the specified conditions; and
- set out competitively neutral and non-discriminatory processes between Carriers, CSPs and Utilities.

James Duck  
Chair

**External Telecommunication Cable Networks Revision Working Committee**

JUNE 2013

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# 1 GENERAL

## 1.1 Introduction

- 1.1.1 Section 112 of the *Telecommunications Act 1997* (the Act) sets out the intention of the Commonwealth Parliament that bodies and associations representing sections of the telecommunications industry develop industry codes relating to the telecommunications activities of participants in those sections of the industry.
- 1.1.2 The development of the Code has been facilitated by Communications Alliance through a Working Committee comprised of representatives from the telecommunications industry, the energy networks industry, road authorities and Government regulatory agencies.
- 1.1.3 The Code should be read in the context of other relevant codes, guidelines and standards.
- 1.1.4 The Code should be read in conjunction with related legislation, including:
- (a) the Act;
  - (b) federal and state legislation on the electricity industry;
  - (c) federal and state legislation on the gas industry; and
  - (d) federal and state legislation on work health and safety.
- 1.1.5 If there is a conflict between the requirements of the Code and any requirements imposed on a Carrier or Carriage Service Provider (CSP) by statute, the Carrier or CSP will not be in breach of the Code by complying with the requirements of the statute.
- 1.1.6 Compliance with this Code does not guarantee compliance with any legislation. The Code is not a substitute for legal advice.
- 1.1.7 Statements in boxed text are a guide to interpretation only and not binding as Code rules.

## 1.2 Registration by the Australian Communications and Media Authority

It is not intended to submit the Code to the Australian Communications and Media Authority for registration under section 117 of the *Telecommunications Act 1997 (Cth)*.

## 1.3 Scope

- 1.3.1 The Code applies to the following sections of the telecommunications industry under section 110 of the Act:
- (a) Carriers; and

(b) Carriage Service Providers.

1.3.2 It deals with the following telecommunications activities as defined in section 109 of the Act:

(a) carrying on business as a Carrier; or

(b) carrying on business activities as a Carriage Service Provider; or

(c) supplying Goods or Service(s) for use in connection with the supply of a Listed Carriage Service.

1.3.3 The Code applies to all External Telecommunication Networks whether or not the External Telecommunication Network is:

(a) in service or out of service;

(b) being constructed and has never been Energised or operated in some form;

(c) being constructed on or near other Utility infrastructure; or

(d) constructed on public or private property.

## **1.4 Objectives**

The objectives of the Code are to:

(a) provide guidance on the basic principles of installation, maintenance and safety of External Telecommunication Networks with the purpose of achieving the requirements for electrical, structural and network reliability, as well as setting out the provisions that are considered necessary for the safety of Employees and the public under the specified conditions; and

(b) set out competitively neutral and non-discriminatory processes between Carriers, CSPs and Utilities.

## **1.5 Code review**

The Code will be reviewed every 5 years, or earlier in the event of significant developments that affect the Code or a chapter within the Code.

## **1.6 Powers of the Telecommunications Industry Ombudsman to handle complaints under the Code**

The Code does not confer powers or functions on the TIO under section 114 of the Act.

## 2 ACRONYMS, DEFINITIONS AND INTERPRETATIONS

### 2.1 Acronyms

For the purposes of the Code:

**AS**

means Australian Standard.

**CSP**

means Carriage Service Provider.

**ELV**

means Extra Low Voltage.

**ENA**

means Energy Networks Association.

**EPR**

means Earth Potential Rise.

**ESAA**

means Electrical Supply Association of Australia.

**HV**

means High Voltage.

**LV**

means Low Voltage.

**MEN**

means Multiple Earth Neutral.

**NBN**

means National Broadband Network.

**rms**

means root mean square.

**WHS**

means Work Health and Safety.

## 2.2 Definitions

For the purposes of the Code:

*NOTE: Some of the definitions in this Code may differ from corresponding definitions in the Act. Reason(s) for such differences might include that a Code definition:*

- (a) reflects a working environment which might involve a mix of telecommunications and electrical services (and electrical services are not necessarily covered by the Act);*
- (b) better matches 'in the field' application specific to external telecommunication cable network.*

### **Act**

means the *Telecommunications Act 1997 (Cth)*.

### **Accredited Power Awareness**

means when a person with the appropriate telecommunications training has been able to demonstrate knowledge and competency in undertaking an electrical task.

### **Aerial**

means placed above the ground or water and in the open air.

### **Australian Standard**

means a current Australian Standard, as published and amended by Standards Australia.

### **Carrier**

has the meaning given by section 7 of the Act.

### **Catenary**

in the Code is referred to as Strand Wire.

### **Circuit**

means any number of Conductors connected together for the purpose of carrying electric current.

### **Code or Industry Code**

means this document entitled "Industry Code for External Telecommunication Cable Networks" including the preamble, schedules and appendix.

### **Common Multiple Earthed Neutral System or CMEN System**

means an Earthing System for power and distribution networks which employs a common Neutral Conductor to which the HV and LV earth connections are bonded.

**Communications**

has the meaning given by section 7 of the Act.

**Conductor**

means a wire, cable or form of metal designed for carrying electric current other than wires, cables or other metallic pairs directly used in converting electrical energy into another form of energy.

**Confined Space**

has the meaning given by section 5 of the *Work Health and Safety Regulations 2011 (Cth)*.

**Customer Lead**

means an underground or aerial lead connecting a Telecommunication Line to the customer's Premises that is Insulated in accordance with the relevant Australian Standard or equivalent and may provide:

- (a) a telephony service;
- (b) a broadband service; or
- (c) both a telephony and a broadband service.

*NOTE: An example of an Australian Standard for insulation of a Telecommunication Line is AS1049.1.*

**De-energised**

means not connected to a source of electrical Supply but not necessarily Isolated.

*NOTE: This definition is consistent with ENA publication NENS 04.*

**Dial Before you Dig**

means the Australian Association Of Dial Before You Dig Services Limited.

**Earthed or Earthing**

means connected or connecting to the general mass of earth in a manner specified in the Code.

**Earthing System**

means a system which is used to connect to the general mass of the Earth.

**Electrical Apparatus**

means any equipment including, but not limited to, a Power Line, Service Line, street lighting equipment, generator, machine, transformer or switchgear associated with the supply of electricity, but excludes Supporting Structure.

**Electrical Equipment**

means any equipment that the Carrier installs, operates or maintains (including a cable, generator, machine, transformer, power supply, consumer's terminal box, battery, or switchgear) associated with the provisioning of electrical power, normally sourced from a Supply, for External Telecommunication Network purposes.

**Electrical Protection Systems**

means equipment or a number of equipment items installed specifically to detect or remove by disconnection abnormal electrical conditions imposed on an External Telecommunication Network.

*NOTE: This definition is specific to this document and may have a different meaning in a different context e.g. outside of external telecommunications cable networks.*

**Emergency Installation**

means those activities needed to be carried out without delay in order to protect:

- (a) the integrity of a Telecommunications Network, Supporting Structure, or a Facility; or
- (b) the health or safety of persons; or
- (c) the environment; or
- (d) property; or
- (e) the maintenance of an adequate level of service.

**Employee**

means a person in the employment of a Carrier (whether under a contract of employment or apprenticeship) and includes vendor personnel, a contractor, and a person employed by a contractor, who carries out work for a Carrier.

**Energised**

means connected to a source of electrical Supply.

*NOTE: This definition is consistent with ENA publication NENS 04.*

**Exposed Conductor**

means an electrical Conductor, to which approach or contact is not prevented by a barrier of rigid material or by insulation which is adequate under a relevant AS specification for the voltage concerned and which is in sound condition, (covered Conductors are regarded as exposed where the covering does not provide the insulation as specified).

**External Telecommunication Network**

means an above-ground and/or underground Telecommunication Network installed exterior to and beyond building entry point(s), and is subject to the provisions of the Act and covered by the Scope of the Code.

**Extra Low Voltage (ELV)**

means nominal voltage not exceeding 50 volts (V) rms alternating current (AC) or 120 volts ripple free direct current (DC).

*NOTE: For more information on voltage ranges, refer to AS/NZS 60950.1:2003.*

**Facility**

means:

- (a) any part of the infrastructure of a telecommunications network, including an External Telecommunication Network as described in the Code, or;
- (b) any part of the infrastructure of a Utility's network or system, including Electrical Apparatus and Other Cable System as described in the Code, or
- (c) any line, equipment, apparatus, tower, mast, antenna, tunnel, duct, hole, pit, pipe, pole or other structure or thing used, including Support Structure as described in the Code, or for use, in or in connection with a telecommunications network or Utility network or system.

**Footpath**

means a public way reserved for the movement of pedestrians and of manually propelled vehicles.

**High Voltage (HV)**

means a nominal voltage equal to or exceeding 1000 V AC rms or 1500 V DC.

*NOTE: For more information on voltage ranges, refer to AS/NZS 60950.1:2003.*

**Insulated**

means provisioned with insulating material or medium of the appropriate grade and voltage, and which must be maintained in sound condition.

**Isolated**

means disconnected from all possible sources of electrical Supply by the opening of switches, withdrawal of circuit breakers, removal of fuses, links,

connections and the like and rendered incapable of being made Live unintentionally.

**Limited Power Awareness**

means when a person has some understanding of Power Line identification but is limited in the extent of work undertaken on an External Telecommunication Network in accordance with the Carrier's approved procedures.

**Live**

means connected to a source of electrical energy or subject to hazardous induced or capacitive voltages.

**Low Voltage (LV)**

means nominal voltage exceeding ELV, but not exceeding 1000 V AC rms or 1500 V DC.

<p><i>NOTE: For more information on voltage ranges, refer to AS/NZS 60950.1:2003.</i></p>
---

**Multiple Earthed Neutral System**

means a system of Earthing in which the parts of an electrical installation to be Earthed:

- (a) are connected to the general mass of earth; and
- (b) are connected within the installation to the Neutral Conductor of the Supply system.

**Neutral Conductor**

means a Conductor or a group of Conductors of a multi-wire system of Supply which is maintained at an intermediate and approximate uniform electrical potential in respect of the other Conductors of the same Circuit or the Conductor of a two wire system which is Earthed at its origin.

**Other Cable Systems**

means communication, supervisory and control cables, aerial Earthed cables or electrolysis drainage cables attached to or crossing an electricity supply Utility's overhead Power Line or otherwise in the proximity of the overhead Power Line, but not belonging to a Carrier.

**Point of Attachment**

means the point at which a Telecommunication Cable is fixed to a Supporting Structure.

**Potential Gradient**

means the rate of change of potential difference between unit distance contours of equal potential in a conductive body carrying current (i.e. a voltage difference between two points a distance apart) which may be:

- (a) uniform e.g. a uniform conductor carrying current; or
- (b) non-uniform e.g. as in the case of the spread of current in the earth from an injection point.

**Power Line**

means a Conductor or cable used for the purpose of transmitting, distributing or supplying electricity with any casing, coating, covering to, pipe, bracket or insulator enclosing, surrounding or supporting it or any part thereof or any apparatus connected therewith for the purpose of transmitting, distributing or conveying electricity, but excluding Service Line.

**Premises**

means any house, building or structure including the land associated with it.

**Relevant Authority**

means a statutory body having ownership/responsibility for activities in the particular aspects of the work.

**Roadway**

means any part of a thoroughfare ordinarily used by vehicular traffic.

**Service Line**

means a LV Conductor(s), either underground or overhead, usually Insulated, connecting the Power Line to the customer's Premises.

**Shared Trench or Shared Trenching**

means a single trench to accommodate two or more underground Utility infrastructures.

**Strand Wire**

means an assembly of round wires laid helically in one or more layers around a core to which External Telecommunication Network cable and equipment is or may be subsequently attached.

<i>NOTE: Strand Wire is also commonly termed as Catenary.</i>
---

**Supply**

means supply of LV electricity from Power Lines.

**Supporting Structure**

means a structure such as, but not limited to, a pole, building or customer Premises which will enable the attachment and support of External Telecommunication Network assets, but which may not necessarily belong to the Carrier attaching to it.

**Telecommunications Code of Practice**

means the *Telecommunications Code of Practice 1997*.

**Telecommunication Cable**

means a Telecommunication Line and Customer Lead.

**Telecommunication Line**

means a wire or cable owned by a Carrier which carries telecommunication services including:

- (a) a strength bearer;
- (b) a Strand Wire;
- (c) joint closure(s);
- (d) optical fibre(s); and
- (e) support(s) and fitting(s)

but excluding a Customer Lead.

<p><i>NOTE: Where a Telecommunication Line is Insulated it must be wholly covered with insulating material in accordance with the relevant AS or equivalent.</i></p>
--

**Telecommunications Network**

has the meaning given by section 7 of the Act.

**Transfer Potential**

means the potential between an earth system and a conductor within reach of that system which is connected to a separate Earth.

**Utility**

means a registered company, person or other body providing electricity, gas, water, drainage, public transport, roads, other infrastructure (for example oil) or any combination of such.

**Workcover Authority**

means the State, Territory or Commonwealth workplace health and safety regulator.

## **2.3 Interpretations**

In the Code, unless the contrary appears:

- (a) headings are for convenience only and do not affect interpretation;
- (c) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (d) words in the singular includes the plural and vice versa;
- (e) words importing persons include a body whether corporate, politic or otherwise;
- (f) where a word or phrase is defined, its other grammatical forms have a corresponding meaning;
- (g) mentioning anything after include, includes or including does not limit what else might be included;
- (h) words and expressions which are not defined have the meanings given to them in the Act; and
- (i) a reference to a person includes a reference to the person's executors, administrators, successors, agents, assignees and novatees.

### 3 GENERAL CONDITIONS

#### 3.1 Existing Installations

The Code must not be applied retrospectively so as to alter any previous arrangements a Carrier may have with another Carrier, Utility, or person.

#### 3.2 New Installations and Extensions

3.2.1 The Code is to apply to all new installations, temporary installations and extensions of an External Telecommunications Network, except that the Code provisions may be waived or modified after consultation with all other affected parties, for example other Carriers, Utilities and local government authorities.

3.2.2 Where there is an agreement to waive or modify the provisions of the Code, there must not be a decrease in the levels of safety specified in the Code.

#### 3.3 Waiver

3.3.1 The Carrier who is responsible for an External Telecommunication Network installation may modify or waive rules of the Code in the case of Emergency Installations where it is anticipated that the Emergency Installations will be used for no longer than 6 months.

3.3.2 The Carrier upon whose behalf an Emergency Installation was installed must ensure that the installation is removed, replaced, or relocated, as desired, as soon as reasonably practicable.

3.3.3 The Carrier must ensure that any Emergency Installation which is anticipated to be used for longer than 6 months must be constructed as a permanent construction in accordance with the provisions of the Code.

#### 3.4 Installations Affecting Other Parties

3.4.1 It is recommended that Carriers with underground assets should be members of Dial Before You Dig.

*NOTE: Dial Before You Dig is a free national community service designed to prevent damage and disruption to the vast pipe and cable networks which provides Australia with the essential services we use everyday – electricity, gas, communications and water.*

*Neglecting to dial 1100 before excavating can lead to costly disruption to essential services, and injury or death to workers and the general public. It can also lead to heavy financial penalties.*

*Carriers have a Duty of Care to observe with regard to underground pipes and cables when digging or excavating.*

For more information visit the Dial Before you Dig web site  
[www.1100.com.au](http://www.1100.com.au)

- 3.4.2 Prior to the installation of an External Telecommunication Network on another Carrier's or Utility's Facility, or sufficiently near to cause an impact on another Carrier's or Utility's operations and safety, the installing Carrier must make appropriate technical arrangements with the Facility owner, including agreed notification procedures.

### **3.5 Notifications**

- 3.5.1 In accordance with Commonwealth and State Legislation, a carrier accessing land must give statutory notification in writing to the landowner, occupier of the land, or road authority or local government authority that has care and control of the land or seek appropriate development consent where:
- (a) the installation involves the placement of new or additional plant (e.g. cable, antennas, duct, conduit, pipes, towers, etc.) within existing infrastructure; or
  - (b) the maintenance of any existing facilities is required; or
  - (c) inspection or survey work is required on other than public land; or
  - (d) other activities are proposed by the Carrier that require statutory notification or development consent.
- 3.5.2 Where emergency access is necessary to effect repairs a Carrier may not be required to give formal notice, however as a matter of courtesy, Carriers should as soon as possible after dealing with emergency inform landowners, occupiers of the land, road authorities or local government authorities of the incident and if they have significantly altered the value of the facility as a result.

### **3.6 Obligations under the Acts**

Nothing contained in the Code affects the obligations or rights of a Carrier under the Act, or other relevant legislation or statutory regulations.

### **3.7 Responsibilities**

#### **3.7.1 Work Health and Safety (WHS)**

The Carrier must be responsible for managing work health and safety matters associated with the construction and maintenance of its External Telecommunication Network.

*NOTE: In certain circumstances, legislative and/or contractual provisions may place WHS responsibilities on another party. This does not negate the need for the Carrier to ensure that these issues are appropriately managed.*

**3.7.2 Reporting of Accidents or Incidents**

3.7.2.1 Carriers should be aware of other existing legislation and regulations pertaining to incidents and accidents.

3.7.2.2 If, as a result of any accident/incident:

(a) any person is:

(i) killed; or

(ii) injured and requires medical attention; or

(b) serious property damage or a reduction in the level of public safety has occurred or is likely to occur;

a person to whom the Code applies must report all relevant details within their knowledge regarding the accident/incident to the Workcover Authority and other Relevant Authority(s).

**3.7.3 Work on Another Carrier's Network**

A Carrier must not carry out work on another Carrier's or Utility's Facilities in order to facilitate installing, shifting, rearrangement, reinstating, renewal, testing or preservation treatment of Facilities.

*NOTE: Refer to the Telecommunications in Road Reserves – Operational Guidelines for Installations Industry Guideline (G591) for more information.*

## 4 DESIGN AND CONSTRUCTION – GENERAL

### 4.1 General

A Carrier should take all reasonable steps to ensure that the External Telecommunication Network is designed and constructed so that it is safe for the environment in which it will operate.

### 4.2 Materials

The Carrier must ensure that all materials used for the External Telecommunication Network, their components, accessories and support structures meet or exceed safe operational performance under expected operational conditions.

### 4.3 Electrical Environment

4.3.1 The Carrier must ensure that the External Telecommunication Network is designed and constructed in accordance with Standards and Industry Codes.

*NOTE: For more information on:*  
*(a) the installation requirements for telecommunications customer cabling refer to AS/ACIF S009;*  
*(b) PVC pipes for pressure applications refer to AS/NZS 1477;*  
*(c) conduits and fittings for electrical installations refer to AS/NZS 2053.1;*  
*(d) electrical installations refer to AS/NZS 3000;*  
*(e) earthworks for commercial and residential developments refer to AS/NZS 3798;*  
*(f) designing structures in telecommunications systems involving overhead Power Lines refer to the relevant facilities access agreement and/or AS/NZS 7000; and*  
*(g) the deployment of mobile phone base stations, refer to C564.*

4.3.2 The Carrier must consider in determining the electrical environment under which the External Telecommunication Network will operate the impact of extremes that may occur, the likelihood of their occurrence and the associated risk.

4.3.3 The hazardous electrical occurrences or effects which can develop on or around External Telecommunication Network equipment and cable are summarised under the following categories:

- (a) lightning;
- (b) induction;
- (c) Transfer Potential;
- (d) Potential Gradient;
- (e) line energising; and

(f) Neutral Conductor and Earthing System currents.

- 4.3.4 The Carrier must undertake reasonable design, construction and maintenance practices to avoid danger from electrical occurrences or effects, in particular External Telecommunication Network installed in the vicinity of power installations, including generator stations, sub-stations, and HV transmission structures.

*NOTE: For more information on:*  
*(a) mitigating noise induced into paired cable telecommunications lines from unbalanced HV Power Lines refer to SAA HB 88;*  
*(b) mitigating hazardous voltages induced into telecommunication lines refer to SAA HB 101; and*  
*(c) co-ordinating low frequency induction among power and telecommunications services refer to SAA HB 102.*

- 4.3.5 The Carrier must report voltage difference detected on Electrical Apparatus (including but not limited to poles and street light brackets) with respect to earth and exceeding ELV to the Electrical Apparatus owner.

#### **4.4 Physical Environment**

The Carrier must give consideration, in determining the physical environment under which the External Telecommunication Network will operate, to the impact of extremes and incidents that may occur, the likelihood of their occurrence and the associated risk.

*NOTE: Examples of extremes and incidents include solar radiation, safe physical clearances, vehicular impact, interference from vegetation, animal and bird attack, flooding and weather conditions.*

#### **4.5 Prevention of Unauthorised Access**

- 4.5.1 The Carrier must, as far as is reasonably practicable, design and construct all parts of an External Telecommunication Network which may be at a hazardous voltage such that unauthorised access by any person is prevented.
- 4.5.2 The Carrier should ensure that poles and other structures with attaching External Telecommunication Network, and supporting overhead Power Lines, do not have any projection or device capable of providing a foothold within 3000 mm of the ground. Vertical conduits and associated saddles are acceptable, as are secondary mechanical barriers, such as "mower guards", which are designed to inhibit persons from climbing up a pole.

#### **4.6 Network Construction**

The Carrier must construct an External Telecommunication Network in accordance with documented procedures authorised by the Carrier, which must consider the *Telecommunications Code of Practice 1997*,

*Telecommunications (Low Impact Facilities) Determination 1997, Telecommunications Regulations 2001 and other regulatory requirements listed in Section 13. The Carrier should also consider other relevant regulatory requirements.*

#### **4.7 Environmental Impact**

The Carrier should take all reasonable steps to ensure an External Telecommunication Network is constructed, maintained and operated in such a way that it causes as little detriment and inconvenience, and does as little damage, as is reasonably practical to sensitive areas such as areas of architectural, archaeological and heritage significance, and to native flora and fauna as well as to any established exotic flora of significance, as set out in Schedule 3 of the Act.

*NOTE: This Clause should be read in conjunction with Section 8.3 (Tree Impact).*

#### **4.8 Waste Handling and Disposal**

The Carrier should handle and dispose of all waste generated by construction, maintenance and operational activities in a safe and responsible manner and in accordance with relevant environmental regulatory requirements.

#### **4.9 Public Safety**

The Carrier must give due consideration, in accordance with documented Carrier approved procedures, to ensure that appropriate safety precautions are undertaken for the public, including vehicular traffic and pedestrian movement, near External Telecommunication Network construction and maintenance activity sites.

*NOTE: Refer to AS 1742.3 for more information on traffic control devices for works on roads.*

#### **4.10 Identification of External Telecommunication Networks**

The Carrier should ensure its External Telecommunication Network is identified by using clear visible labels, or some other clearly identifiable form, to indicate Carrier ownership.

#### **4.11 Records**

4.11.1 Carriers must comply with the record keeping record requirements under the Act.

*NOTE: For example, see Schedule 1, Clause 41 of the Act.*

4.11.2 The Carrier should keep construction, operations or maintenance records relevant to personnel and public safety and asset protection.

## 5 AERIAL CONSTRUCTION

### 5.1 Accessibility

The Carrier should ensure that all parts of an Aerial External Telecommunication Network which are attached to a pole are arranged so as to provide adequate climbing space, working space and clearances between all other cables and equipment to enable any necessary work on the pole to be carried out safely and in a practical manner by the Carrier and the Supporting Structure owner.

### 5.2 Cable and Wire Tensions

The Carrier must select cables and wires for use with Aerial External Telecommunication Cables that are based on manufacturer's design specifications to withstand the anticipated mechanical loads experienced during installation and over the designed operational life, under the anticipated environmental conditions.

### 5.3 Supporting Structures

5.3.1 The Carrier should ensure the assessment of Supporting Structures owned and maintained by other Utilities for the suitability of attachment of External Telecommunication Network cable and fittings before the attachment of External Telecommunication Network to the Supporting Structure, unless otherwise agreed by the Supporting Structure owner, and if necessary agreed remedial action undertaken by the owner of the Supporting Structure in accordance with the Supporting Structure owner's reasonable requirements.

**NOTES:**

1. For more information on timber utility poles, their grading and use refer to AS/NZS 3818.1 and AS/NZS 2878, HB 87 and HB 103.

2. For more information on designing structures in telecommunications systems involving overhead Power Lines refer to the relevant facilities access agreement and/or AS/NZS 7000.

5.3.2 Where an External Telecommunication Network is supported on Facilities owned and maintained by a Carrier, those Supporting Structures should be designed and maintained by the Carrier to withstand the mechanical loads over the designed operational life.

5.3.3 The Carrier should consider using attachment fittings which, when facade mounting Telecommunication Lines and associated equipment directly onto walls of Premises, e.g. strip shopping centres, either completely insulate the External Telecommunication Network from the building or have provision to directly connect a local or building earth.

- 5.3.4 The Carrier should ensure that External Telecommunication Network cable and fittings are not attached to any Supporting Structures that are:
- (a) not designed to withstand the loads;
  - (b) not able to be appropriately assessed; or
  - (c) not regularly re-assessed and maintained.

*NOTE: The following is a list (not exhaustive) of Supporting Structures, which are not appropriate:*

- (a) Trees; or*
- (b) Signage.*

## **5.4 Safety Clearances**

### **5.4.1 General**

- 5.4.1.1 A Carrier must ensure Telecommunication Cables are installed in such a way as to maintain safety clearances to the ground, Power Lines, Service Lines, other External Telecommunication Networks and buildings or structures under service conditions determined or anticipated for the External Telecommunication Network.
- 5.4.1.2 A Carrier must ensure that Telecommunication Cable installed over a Roadway, bridge, path or navigable water is installed in a way that will allow normal safe passage by persons, vehicles and vessels.
- 5.4.1.3 Aerial Telecommunication Cables spanning between poles should not be constructed above overhead electric traction or electric distribution cables or wires including street light cables unless a rigorous risk assessment process is undertaken that includes detailed agreement with the asset owner.

### **5.4.2 Clearances to Ground of Aerial Telecommunication Lines**

- 5.4.2.1 A Carrier must ensure Aerial Telecommunication Lines have all cables and wires located in such a way so that the distances to ground in any direction from any position to which any part of such lines either sag at maximum design temperature or move as a result of wind pressure which could normally prevail at the location of the Aerial Telecommunication Line, are not less than the minimum distances specified in Table 1.
- 5.4.2.2 Ground clearances for Telecommunication Lines crossing any designated over dimensional (OD) route must be in accordance with State Road, or other applicable authority or enactment, regulations.

**TABLE 1**  
**Clearances to Ground of Telecommunication Lines**

Telecommunication Line Location	Clearance from ground in any direction (mm)	
	Minimum	Preferred
Over any part of a freeway, primary arterial road, collector road or highway	5500	As high as practical above the minimum ground clearance
Over any part of a carriageway of a Roadway	5000	5500
Over land, other than the carriageway of a Roadway, traversable by road vehicles and by agricultural vehicles and machinery	4600 (Note)	5000
Over land which, due to its steepness, swampiness or other reasons, is not or should not be traversable by road vehicles	3500	4600

*NOTE: There may be instances where lower clearances are justified, (rocky ground, difficult to traverse areas, low population density areas, etc.) when installing Aerial Telecommunication Lines. At these locations a risk assessment should be carried out prior to construction to determine if the integrity of the Aerial Telecommunication Line will be compromised if built lower than 4.6 metres.*

*Such instances include:*

- (a) when an Aerial Telecommunication Line extends under a bridge or underpass where there is a height restriction that is less than the required 4.6m; and*
- (b) connections to residences, sheds, building that may result in a slightly lower clearance and the risk of contact due to this location being low.*

### 5.4.3 Clearances to Ground of Customer Leads

5.4.3.1 The Carrier must ensure Aerial Customer Leads have the line located in such a way so that the distances to ground in any direction from any position to which any part of such lines either sag at maximum design temperature or move as a result of wind pressure which could normally prevail, are not less than the distances specified in Table 2.

5.4.3.2 Ground clearances for Customer Leads crossing any designated OD route must be in accordance with the

appropriate road authority, or other authority or enactment, regulations. Nevertheless Customer Leads should be installed as high as practicable above the minimum ground clearance.

**TABLE 2**  
**Minimum Clearances to Ground of Customer Leads**

<b>Customer Lead Location</b>	<b>Minimum Clearance from Ground in any direction (mm)</b>
Over any part of a freeway, highway, or over-dimensional route	5500
Over the centre of each carriageway of a Roadway	4900
Over any part of a carriageway of a Roadway (other than the centre)	4600
Over a vehicular crossing of a Footpath in a Roadway entering a commercial/industrial Premises (other than a residential driveway)	4300
Over a vehicular crossing of a Footpath in a Roadway for a residential driveway and any other part of a Footpath, and over land not normally traversable by road vehicles	3500
On customer Premises land or over land which, due to its steepness, swampiness or other reason, is not traversable by road vehicles	2700

#### 5.4.4 Clearances from Structures

- 5.4.4.1 The Carrier must ensure the minimum clearance from any structure or support (other than the Supporting Structure supporting the Telecommunication Cable) to any position to which Aerial Telecommunication Cable may swing or sag be such that it prevents injury to persons or damage to property and be not less than the distances specified in Table 3.
- 5.4.4.2 Figure 1 illustrates the application of clearances specified in Table 3 to a particular building.

**TABLE 3**

**Minimum Clearances from Structures of Telecommunication Cable**

Direction from Structure	Minimum Clearance from Structure (mm)	
	Insulated Telecommunication Cable (Notes 1, 6)	Bare Strand Wire
A. Vertically above those parts of any structure normally accessible to persons	2400	2700
B. Vertically above those parts of any structure not normally accessible to persons but on which a person can stand	100	2700
C. In any direction (other than vertically above) from those parts of any structure normally accessible to persons or from any part not normally accessible to persons but on which a person can stand	100	900
D. In any direction from those parts of any structure not normally accessible to persons	100 (Note 2)	300 (Note 3)

**NOTES:**

1. A bare Strand Wire which is Earthed using an adequate local Earthed system may have the same minimum clearances from structures as Insulated Telecommunication Cable.

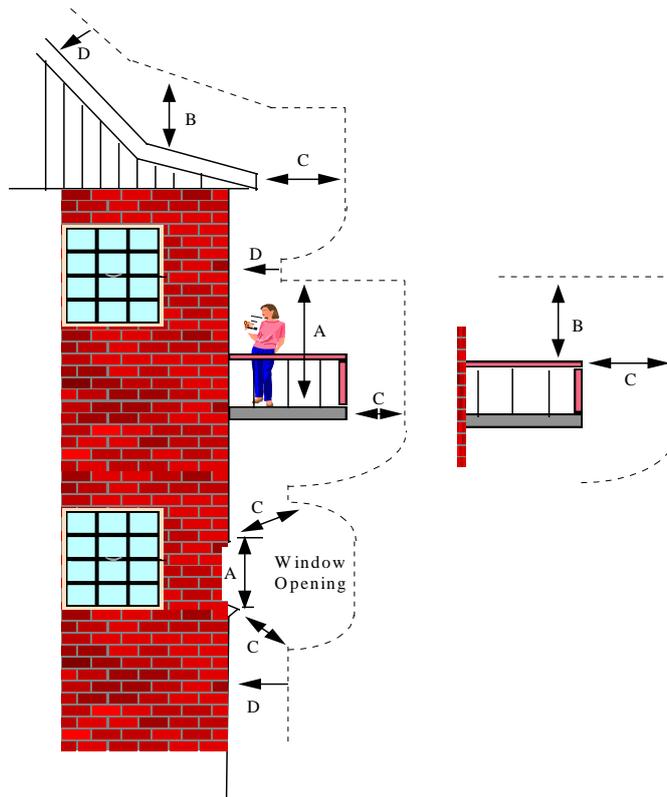
2. This clearance can be further reduced to allow for termination at Point of Attachment.

3. Notwithstanding Note 1, this clearance can be further reduced to allow Telecommunication Cable to swing or sag near a structure provided the bare Strand Wire is Insulated and not connected to the structure.

4. The values in Table 3 above for 'Insulated Telecommunication Cable' are consistent with values in AS/NZS 7000 Table 3.8 for 'Insulated low voltage'.

5. The values in Table 3 above for 'Bare Strand Wire' are consistent with values in AS/NZS 7000 Table 3.8 for 'Bare neutral'.

6. Insulated Telecommunication Cable includes non-conductive or passive communications cables such as self-supporting fibre optic cable.



**FIGURE 1**

**Minimum Clearances from Structures**

*NOTE: The letters A to D refer to distances A to D as set out in Table 3. The left illustration applies if the height of the railing (or similar) in addition to distance B is greater than distance A.*

**5.4.5 Clearances between External Telecommunication Networks of Different Carriers**

5.4.5.1 The Carrier must ensure the arrangement of, and clearances between, its own External Telecommunication Network and External Telecommunication Networks belonging to other Carriers, either attached to a common Supporting Structure, unattached, in shared spans or crossing, are designed for the environmental and electrical conditions likely to be experienced in service. Such conditions can include pole loadings, ice loadings, wind loads and temperature variations.

5.4.5.2 These clearances should be in accordance with the arrangements agreed to between the respective Carriers of the External Telecommunication Networks involved.

5.4.5.3 Notwithstanding the arrangements in clauses 5.4.5.1 and 5.4.5.2, where an existing External Telecommunication Network is attached to a third-party pole under previous arrangements with the pole owner, it is the responsibility

of the Carrier attaching another External Telecommunication Network to maintain a minimum radial clearance of 300 mm from an existing External Telecommunication Network belonging to another Carrier.

**NOTES:**

*1. The minimum radial clearance of 300mm from an existing External Telecommunication Network is required for operations and maintenance purposes where the existing network is lashed to a catenary wire or strand.*

*2. A minimum radial clearance of less than 300mm from an existing External Telecommunication Network that uses self-supporting cable is possible subject to agreement between the relevant parties, including the existing External Telecommunication Network owner and the owner of the third party-pole.*

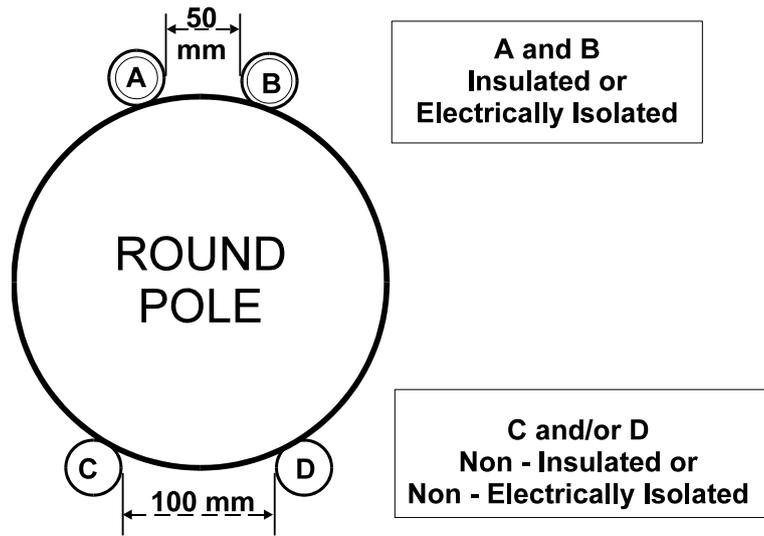
*3. Any agreement to reduce the radial clearance between External Telecommunication Networks to less than 300mm must include an assessment of the effects:*

*(a) of the design of the new network (e.g. to show no adverse cable interference under load conditions, including maximum wind and temperature conditions); and*

*(b) on the operation and maintenance of an existing network.*

5.4.5.4 The Carrier may attach External Telecommunication Network consisting of and limited to riser pipe, wire, cable, and associated fittings vertically through the 300 mm minimum radial clearance zone of another Carrier's existing External Telecommunication Network only on the condition that the Facilities being attached are Insulated or electrically Isolated from any local earth, referred earth, or Neutral Conductor and maintain the minimum radial clearance of 50 mm. (Refer to Figure 2 and 3.)

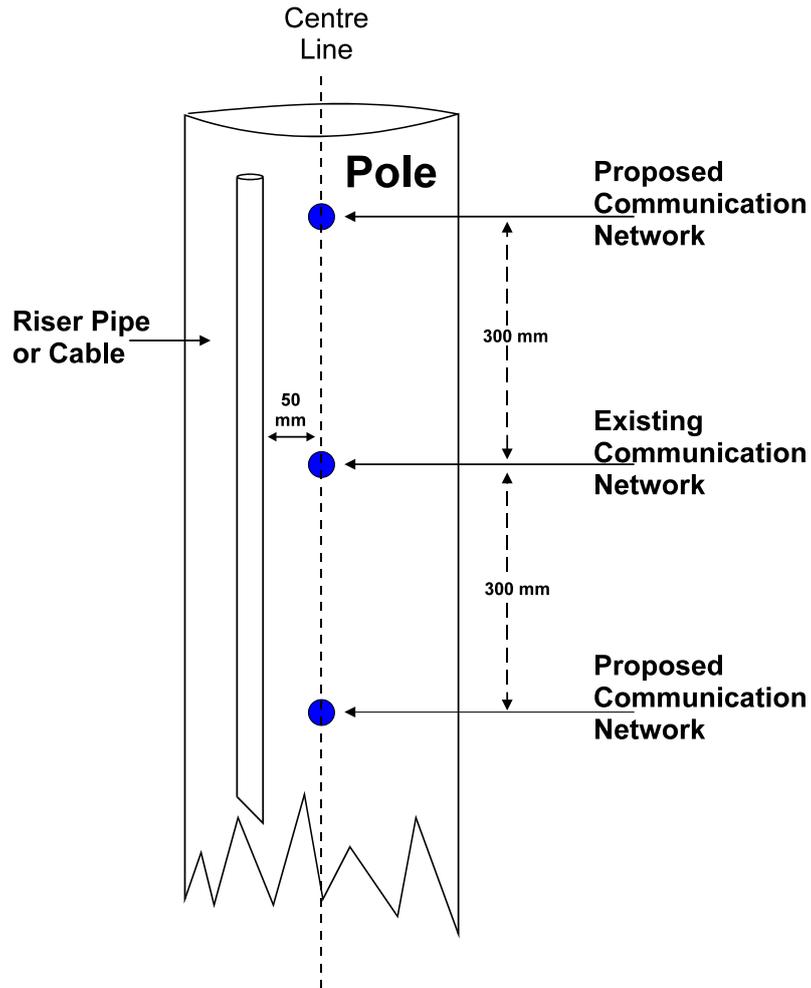
5.4.5.5 The Carrier must ensure its own External Telecommunication Network riser pipe, wire, cable and associated fittings and those belonging to another Carrier, and attached to the same pole outside of a 300 mm radial clearance zone, are separated by a minimum radial clearance of 50 mm provided they are Insulated or electrically Isolated from the existing External Telecommunication Network on the pole. If riser pipe, wire, cable, and associated fittings belonging to one or more Carriers is not Insulated or electrically Isolated on the pole then a minimum radial clearance of 100 mm must be provided between these Facilities. (Refer to Figure 2 and 3.)



Horizontal cross-sectional view of a round pole with attached riser pipe, wire, or cable.

**FIGURE 2**

**Minimum clearances between External Telecommunication Networks belonging to different Carriers on a pole**



Side view of a pole showing different External Telecommunication Network attachments.

**FIGURE 3**

**Minimum clearances between External Telecommunication Networks belonging to different Carriers on a pole**

5.4.5.6 If the shape of the pole, or other aspect of the pole, does not allow specified minimum clearances, as shown in Figures 2 and 3, to be achieved, then the impacted Carriers must agree to apply alternate safe and practical working clearances between External Telecommunication Networks.

5.4.5.7 Where other Facilities exist on a pole, it is the attaching Carrier's responsibility to maintain sufficient accessibility to the existing attached Facilities, in accordance with Clause 8.1 (Accessibility).

**5.4.6 Clearances to Power Lines and Service Lines**

5.4.6.1 The Carrier must ensure the arrangement of, and clearances between, its own External Telecommunication Cables to that of Power Lines and

Service Lines, either attached to a common Supporting Structure, unattached, in shared spans or crossing, are designed for the environmental and electrical service conditions likely to be experienced in service. Such conditions include wind loads and temperature variations.

- 5.4.6.2 The Carrier must ensure these clearances are in accordance with the arrangements agreed to between the Carrier and the respective owner of the Power Lines and Service Lines involved, which unless otherwise agreed with the respective owner of the Power Lines or Service Lines must be no less than 600 mm between bare LV conductors at any point and Telecommunication Line network cabling, e.g. vertically at pole and mid-span.
- 5.4.6.3 Nevertheless, the Carrier must ensure the minimum separation between a Customer Lead and an Insulated Service Line at the Point of Attachment at a customer Premises is 300 mm in any direction, or 600 mm in the case of a non-Insulated Service Lead.

*NOTE: Unless agreed otherwise with the Relevant Authority.*

#### 5.4.7 **Clearances to Other Cable Systems**

- 5.4.7.1 The Carrier must ensure the arrangement of, and clearances between, its own Telecommunication Cables to that of Other Cable Systems, either attached to a common Supporting Structure, unattached, in shared spans or crossing, are designed for the environmental and electrical service conditions likely to be experienced in service.
- 5.4.7.2 These clearances should be in accordance with the arrangements agreed to between the Carrier of the Telecommunication Cables and that of the respective owner of the Other Cable Systems involved.

#### 5.4.8 **Alterations to Ground Levels**

- 5.4.8.1 Where any land above which aerial Telecommunication Cables belonging to a Carrier have been erected undergoes a change of use that varies the ground clearances, the portions of those aerial Telecommunication Cables which are situated over the land must be reconstructed by the Carrier.
- 5.4.8.2 Where alterations to the ground level do negatively impact on the External Telecommunication Network belonging to a Carrier, it is anticipated that the Carrier will seek compensation from the party responsible for the alteration to the ground level.

5.4.9 **Point of Attachment**

- 5.4.9.1 The Carrier should ensure the Point of Attachment of an aerial Telecommunication Cable is capable of withstanding, without damage, any anticipated loading that takes into account the anticipated environment and service conditions.
- 5.4.9.2 The Carrier must ensure the Point of Attachment is so located that it cannot be normally accessible to any person without the use of a ladder or other means to assist climbing.

5.4.10 **Aerial Installation**

- 5.4.10.1 Unless otherwise specified in Clause 5.4 (Safety Clearances), the Carrier must ensure aerial Telecommunication Cables and associated Electrical Equipment are installed in accordance with relevant industry requirements or the Carrier's authorised documented practices and by taking into account local service conditions and the location of other Utility service infrastructure.
- 5.4.10.2 The Carrier should ensure due skill and care is taken during installation to safeguard against:
- (a) the possibility of inadvertent contact with Electrical Apparatus;
  - (b) the hazards of Transfer Potentials when installing cables;
  - (c) the hazards of induced voltages when installing long lengths of cable close to Power Lines; and
  - (d) hazards to working personnel and the general public.

## **6 UNDERGROUND CONSTRUCTION**

### **6.1 Accessibility**

- 6.1.1 The Carrier should arrange its underground External Telecommunication Network so as to provide a reasonable working space around the cables and equipment, adequate clearances between all other cables and equipment to enable any necessary work on the underground External Telecommunication Network to be carried out safely and in as economical a manner as possible.
- 6.1.2 The Carrier should locate its underground External Telecommunication Network equipment and cables so as to not hinder the access of other Utility owners and staff to their own Facilities to carry out necessary work from time to time.
- 6.1.3 Carriers and other parties installing underground telecommunications infrastructure in new real estate development projects should conform to the Fibre Ready Pit and Pipe Specification for Real Estate Development Projects (G645).

### **6.2 Underground Installation**

- 6.2.1 The Carrier must ensure its External Telecommunication Network is installed in a manner that takes into account the local environmental and service conditions, taking into account the location of other Utility Facilities.
- 6.2.2 The Carrier should ensure due skill and care is taken during installation to safeguard against:
  - (a) the hazards of Transfer Potentials when installing cables;
  - (b) encroachment on safe separations from other Utility services;
  - (c) the possibility of mechanical damage to existing cables or joints when excavating or installing cable;
  - (d) damage to the environment; and
  - (e) hazards to working personnel and the general public.
- 6.2.3 Carriers should ensure underground Telecommunications Cables are designed to withstand the mechanical loads experienced during installation and over the designed operational life, without degradation of the cable characteristics.
- 6.2.4 Carriers should give consideration to installing External Telecommunication Network equipment above ground in areas where the ground is regularly or always saturated with water or areas that are known to flood easily, or areas where the soil or ground water is known to be contaminated or polluted.

## 6.3 Accommodation and Enclosures

### 6.3.1 Conduits and Direct Buried/Bored Telecommunication Cable

6.3.1.1 The Carrier should select conduits for the accommodation of Telecommunication Cables based on the manufacturer's design specifications for the mechanical loads experienced during installations and over the designed operational life, under anticipated environmental conditions.

*NOTE: Such conditions include water, salinity, electrolysis and ground stabilisation.*

6.3.1.2 The Carrier should ensure plastic and/or steel pipe materials conform to appropriate AS requirements. Colour of plastic pipes should be in accordance with AS requirements, including AS 1345.

6.3.1.3 The Carrier must ensure conduit bends are designed to allow easy and practical installation of anticipated cable types, taking into consideration relevant cable manufacturer's design specifications and limitations.

### 6.3.2 Cable Location

6.3.2.1 Where installed in conduits in urban environments the route of Telecommunication Cable is suitably determined:

- (a) by observing the alignment of, and/or conduit depths at, pits/manholes;
- (b) through knowledge of standard/agreed alignments and depths of cover and, where in doubt, cable locating devices and/or careful excavation.

6.3.2.2 At road crossings and deviations to normal alignments carriers should mark kerbs (as appropriate) and plan records to enable reasonable determination of the cable/conduit alignment.

6.3.2.3 Where Telecommunication Cable is buried direct into the ground or installed by underground boring, the Carrier should ensure the surface of the ground is marked to indicate the route of the cable using marker posts, plates or similar devices appropriate to the circumstances.

6.3.2.4 Where directly buried and installed by ploughing or trenching, and depending upon the level of risk assessment with the cable route, the location of the Telecommunication Cable should be indicated by an appropriate marker tape to warn others subsequently excavating the trench. If the cable is completely non-metallic, and where practicable the Carrier should

incorporate a metallic element, tracer wire or detectable marker/warning tape laid with and above the cable to facilitate its detection by cable locating equipment. The Carrier should also consider detectable transponders where the environment may cause deterioration of metallic elements and also in earth potential rise (EPR) areas.

*NOTE: For more information on underground marker tape refer to AS/NZS 2648.1.*

6.3.2.5 The Carrier should ensure ownership is identified by visibly marking the outer surface of conduits and direct buried/bored cable, or by the use of identified marker tape.

*NOTE: A Carrier or other asset owner should be aware of the work underway to create an Australian Standard on the classification of sub surface utility information. The draft standard DR AS 5488 was released for comment in 2012.*

### 6.3.3 Access Chambers and Pits

6.3.3.1 The Carrier must ensure access chambers intended for occupation by personnel are designed and constructed to be safe to work within, with specific note taken of the need to:

- (a) withstand expected physical loading;
- (b) meet the requirements of applicable environmental pollution regulations; and
- (c) meet the appropriate requirements of applicable regulations.

*NOTE: Where an underground chamber is determined to be a Confined Space, Confined Space work practices will apply.*

6.3.3.2 The Carrier should ensure access chambers and pits are purpose designed to accommodate cable and equipment requirements in each particular case, and are capable of withstanding expected external loads.

6.3.3.3 The Carrier should ensure installed access chambers and pits are visibly marked on the outside surface to indicate Carrier ownership. Installed access chambers and pits should be distinguishable from other Carriers' or Utilities' plant.

*NOTE: Carrier assets may change ownership (e.g. operation under a nominated carrier declaration), so a check should be made to confirm the owner of the asset (e.g. via the Dial Before You Dig service) prior to commencing work.*

#### 6.3.4 **Other Carriers and Utilities in the Same Access Chamber**

- 6.3.4.1 Where access has been permitted, it must be in accordance with the access or interconnect agreement with the host Carrier.
- 6.3.4.2 Unless otherwise specified by the host Carrier, a Facility belonging to another Carrier or Utility which enters the host Carrier's chamber or pit, must be enclosed in a continuous sealed conduit or pipe which is clearly labelled to identify the service and which extends beyond the outer extremities of the host Carrier's chamber or pit.
- 6.3.4.3 Where the conduit of a Carrier or Utility is to be connected to the conduit network of another Carrier, the connecting Carrier or Utility should ensure;
  - (a) such interconnection only takes place at the host Carrier's access chamber or pit; and;
  - (b) the connection point is sealed to prevent gases or liquids entering one network from another network.

#### 6.3.5 **Ground Mounted Enclosures**

- 6.3.5.1 The Carrier must ensure that ground mounted enclosures containing Telecommunication Cables and associated equipment, located partly underground or on ground level, are installed in such a manner that takes into account the local environment and service conditions of other Utility service infrastructure.
- 6.3.5.2 The Carrier must ensure that where lesser separations would place an Employee at risk of hazard from Potential Gradients and Transfer Potentials associated with Electrical Apparatus or Supporting Structures for Electrical Apparatus and in accordance with the ESAA's Earth Potential Rise Code, such enclosures are to be installed at sufficient distances from those points or structures.

*NOTE: For more information on earth potential rise refer to AS/NZS 3835.1 and AS/NZS 3835.2.*

- 6.3.5.3 The Carrier should ensure installed ground mounted enclosures are visibly marked on the outside surface to indicate Carrier ownership and distinguish them from other Utilities' plant.

#### 6.3.6 **Parts of a Telecommunication Cable Installed above ground**

The Carrier should ensure that Telecommunication Cable is adequately protected where it is located above the surface of the ground in a public area and exposed to the risk of mechanical damage. Where located on a power pole, such

protection should be in accordance with the requirements of Clause 4.5 (Prevention of Unauthorised Access).

## **6.4 Alignments, Reinstatement and Depths of Cover**

### **6.4.1 Plant Alignments**

- 6.4.1.1 The Carrier must ensure underground Telecommunication Cables, whether installed in conduits or direct buried, are installed in accordance with the Telecommunications Code of Practice 1997, G591 and G645 Industry Guidelines and other Codes of Practice and documented agreements.
- 6.4.1.2 In particular, Telecommunication facilities should be located between the surface drain and the road reserves boundary.
- 6.4.1.3 Carriers facilities should not be located between the roadway and any adjacent surface drainage structures in order to minimize potential damage that may result from routine road maintenance activity such as drain clearing, excavation and installation of signs or barriers.
- 6.4.1.4 The main documented agreements on footpath allocations in the various states are listed in Section 13. Where such agreements do not exist, the Carrier should select locations for underground Telecommunication Cables by consulting with relevant utility owners, road and traffic authorities, local government, land owners and land occupiers.
- 6.4.1.5 The Carrier must ensure that where it is necessary to install External Telecommunication Network inside private property, it is carried out in accordance with the Act.

### **6.4.2 Reinstatement**

- 6.4.2.1 Carriers should avoid the opening of surfaced roadway pavements as far as reasonably practicable by the use of thrust boring or similar methods, particularly on roadways carrying high volumes of traffic or those surfaced with concrete or asphalt. Where site conditions or other factors necessitate, open trenching may be appropriate after consultation between the Carrier and the road authority.
- 6.4.2.2 Carriers should observe local agreements and road authority requirements that specify matters such as backfilling or reinstatement of trenches. Such agreed practices may vary from place to place. Where it is not reasonably practicable to achieve the requirements, the Carrier must consult with the relevant road authority to agree on how to proceed in accordance with the appropriate engineering practice and other guidance

as set out in the Telecommunications Code of Practice, 1997.

### 6.4.3 **Depth of Cover**

- 6.4.3.1 For a crossing under any road controlled by a State or Territory Road Authority, the depth of cover should be determined in consultation with the State or Territory Road Authority, whose reasonable requirements should be met. Typically these requirements may vary from 1000 mm to 1200 mm below the roadway surface.
- 6.4.3.2 For other road crossings, the Carrier:
- (a) must ensure that the depth of cover is a minimum of 450 mm below the level of the invert of the kerb or open drain;
  - (b) must consult with the relevant road authority where this depth of cover cannot be achieved. In these circumstances the road authority must give reasonable consideration to a depth of cover less than 450 mm; and
  - (c) should consider other requirements for depth of cover in special circumstances as may be sought, on a project basis, by the relevant road authority.
- 6.4.3.3 For cabling along road reserves, the Carrier should ensure underground Telecommunication Cables in conduit or direct buried are installed with a minimum depth of cover of 450 mm to minimize the potential for damage to the carrier's assets as a result of routine road maintenance activity or interference by other excavators. Notwithstanding this Carriers should consider other requirements for depth of cover in special circumstances as may be sought, on a project basis, by the relevant road authority.
- 6.4.3.4 If the Carrier considers a depth of cover less than 300 mm is necessary within a roadside or footpath area, the Carrier should ensure additional protective covering is installed to enhance the protection of the cable from interference by other excavators.

<p><i>NOTE: Such means as concrete (slab or direct laid), brick, or enclosure in steel pipes may be used.</i></p>
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- 6.4.3.5 The Carrier must ensure the depth of cover below light rail or railway reserves is in accordance with the requirements of the respective rail operator.
- 6.4.3.6 The Carrier should ensure that, in a customer's Premises/private property, the minimum depth of cover is 300 mm or suitable protective covering should be provided.

6.4.3.7 Carriers should consider placing underground Telecommunication Cables at a greater depth than the minimum values mentioned above, particularly in undeveloped areas, and where the importance of the cable justifies the additional immunity from damage.

6.4.4 **Separation from Other Carrier and Utility Services**

6.4.4.1 The Carrier should ensure underground Telecommunication Cables are installed with adequate separation from other Carrier and Utility services in the Footpath so as to ensure that Employees will be able to access the underground cable Facilities without causing damage to Facilities of other Carrier and Utility services, or exposing themselves to hazard as a result of inadvertent contact with other Utility services.

6.4.4.2 In the case of underground Power Lines and Service Lines, reduced separations can be accepted by a Carrier if these cables are equipped with protective covering, for example steel conduit and concrete slabs, to provide an enhanced protection against damage by hand tools. Reduced separations can also be accepted from Power Lines and Service Lines operating at LV due to the lower degree of hazard.

6.4.4.3 Carriers must ensure the minimum clearances set out in Table 4 from other Utility and Carrier services plant, which are considered adequate to provide for a safe working environment. Provision of such clearance does not relieve the Carrier of the need to observe safe working practices and procedures to avoid disturbance or damage to other underground plant items.

**TABLE 4**

**Clearance from other Underground Utility and Carrier Services**

<b>Underground Plant Item</b>	<b>Minimum Radial Clearance from Underground Telecommunications Cable in mm (Notes 1, 4)</b>
Gas Pipe Large Main (Over 110 mm diameter) Small Main (75 mm diameter or less)	300 100
Power Line and Service Lines HV LV	300 (Note 2) 100 (Note 3)
Water Main High Capacity Main Local Reticulation	300 150
Sewer Mains Connections to Mains	300 150 (Note 3)
Other Carriers' Telecommunication Cables	100

**NOTES:**

*1. Lesser separations may be used where all the parties involved concur.*

*2. Where protective covering/barriers have not been provided over HV Power Lines, a minimum separation should be 450 mm.*

*3. LV Customer Leads and Service Lines housed in appropriately coloured pipes may share a common trench or bore on private property and under roadways without specified separation.*

*4. Telecommunication Cable includes non-conductive or passive communications cables such as self-supporting fibre optic cable.*

**6.4.5 Separations from Other Underground Structures**

The Carrier must ensure the horizontal separation between:

- (a) direct buried, or bored, Telecommunication Cable and other underground, or ground mounted, structures; or
- (b) underground, or ground mounted, structures belonging to different Carriers or Utilities

is not less than 300 mm, except by documented agreement between the Facility owners, so as to permit access to and maintenance of either Facility without causing damage to the other.

#### 6.4.6 **Separations and Arrangement in Structures and Tunnels**

Where a number of Carriers and Utilities are accommodated in a structure such as a road or railway bridge, or a tunnel, the method of accommodation and the separation provided between the Facilities of each Carrier and Utility must be in accordance with an agreed design determined in consultation with the owner of the structure or tunnel.

### **6.5 Shared Trenching**

- 6.5.1 The Carrier should, where practicable and by arrangement with other Carriers and Utilities, developers or local government authorities, use a Shared Trench to reduce the cost of provision or refurbishment of Telecommunication Cable networks.
- 6.5.2 Physical separations and arrangements of the Facilities installed in a Shared Trench, including method of installation and construction requirements, should be agreed between the parties and should take into consideration the need for each party to be able to access its plant for future maintenance or augmentation works.
- 6.5.3 The Carrier must give consideration to existing Shared Trenching arrangements between, but not limited to, local, State and National authorities, Utilities and Carriers.
- 6.5.4 Carriers must only carry out maintenance or re-arrangement of another Carrier's External Telecommunication Network in a Shared Trench in accordance with the authorised instructions of the other Carrier that owns the External Telecommunication Network.
- 6.5.5 Carriers should ensure that Shared Trench agreements include the following principles:
  - (a) The Carrier or Utility that re-opens a Shared Trench will take due skill and care to avoid damage to other Carrier or Utility Facilities;
  - (b) It will be the responsibility of the party causing damage to any Carrier or Utility Facilities to restore any damage brought about by working on a Shared Trench; and
  - (c) The Carrier or Utility that has authorised work in an existing Shared Trench will be responsible for all restoration work associated with that Shared Trench.
- 6.5.6 The Carrier should ensure that where its Telecommunication Cable is to be co-located in another Carrier's conduit, it is physically separated from the other Carrier's Telecommunication

Cable in a way that facilitates the installation and removal of Telecommunication Cables with minimum interference with the other Carrier's Telecommunication Cable. The use of subduct is an appropriate method of achieving this physical separation.

## **6.6 Other Documents**

- 6.6.1 The Carrier should note there are other documents that may be relevant to network construction, and in particular to underground network construction.
- 6.6.2 Some reference documents previously published by the Electricity Supply Association of Australia (ESAA) and the Australian Post Office/Australian Telecommunications Commission, now withdrawn but available from ENA include the:
  - (a) ESAA Guide to the Installation of Underground Cables (ESAA C(b)-2-1989);
  - (b) Sharing of Trenches – Arrangements between ESAA and APO (27/08/1973);
  - (c) Recommended Practices for Plant Underground (07/07/1983); and
  - (d) Code of Practice for Earth Return High Voltage Power Lines (1969).
- 6.6.3 Some other reference documents relevant to construction practices include the:
  - (a) Guide to Codes and Practices for Streets Opening (for New South Wales);
  - (b) Tasmanian Public Utilities Information Manual (for Tasmania);
  - (c) Code of Practice for Telecommunications Facilities in Victoria (for Victoria);
  - (d) Co-ordination of Streetworks – Code of Practice (for Victoria);
  - (e) Utility Providers Code of Practice for Western Australia (for Western Australia);
  - (f) The New South Wales Service and Installation Rules; and
  - (g) The Victorian Service and Installation Rules.

## 7 EARTHING AND ELECTRICAL PROTECTION SYSTEMS

### 7.1 General

- 7.1.1 The Carrier must ensure Earthing and Electrical Protection Systems for an External Telecommunications Network are designed and installed to safely manage abnormal conditions likely to be experienced.
- 7.1.2 The Carrier must ensure Earthing and Electrical Protection Systems are designed to ensure, where relevant:
- (a) the reliable passage of fault current;
  - (b) the reliable operation of Circuit protection devices;
  - (c) that Potential Gradients and Transfer Potentials are limited to safe levels;
  - (d) appropriate coordination with other Utility and Carrier systems; and
  - (e) suitability for the environmental and Earthing conditions.
- 7.1.3 The Carrier should ensure Earthing Systems are designed of corrosion resistant, high conductivity materials manufactured for Earthing electrical installations.

*NOTE: Refer to AS/NZS 3015 for more information on electrical installations and in particular ELV direct current power supplies and service earthing within public telecommunications networks.*

### 7.2 Type of Earthing Systems

The Carrier must ensure an Earthing System is a system which will connect to the general mass of the Earth via one or more of the following methods.

- (a) a remote or exchange earth;
- (b) a local driven rod or series of rods;
- (c) a local buried wire, strips, or plates;
- (d) the MEN System;
- (e) the CMEN System; or
- (f) a building protective earth.

### 7.3 Different Earthing Systems

- 7.3.1 Where different Earthing Systems are used at the one location, to ensure electrical safety and to minimize corrosion effects the Carrier must ensure its Earthing System is either bonded to the other Earthing System, Insulated from one another, or adequately

separated from one another in an agreed manner between the Carrier and the party who owns the other respective Earthing System. In the absence of agreement, the Carrier must ensure its Earthing System does not occupy the same location as a different Earthing System.

- 7.3.2 The Carrier must ensure it does not install its External Telecommunication Network power supply transformer, regardless of whether it has an Earthing System or not, to an existing pole Facility supporting another External Telecommunication Network power supply transformer.
- 7.3.3 A Carrier must ensure it does not remove, relocate, rearrange or alter in any way the existing Earthing System owned by another Carrier, unless otherwise agreed to by the Carrier who owns the existing Earthing System.

## **7.4 Installation of Earthing and Electrical Protection Systems**

The Carrier must ensure Earthing and Electrical Protection Systems comply with the following:

- (a) terminations to earthing conductors and joints must be of a type which utilise materials and techniques developed for Earthing electrical systems;
- (b) Earthing Conductors and other components of an Earthing System must be installed in a manner which provides protection against likely mechanical damage, inadvertent interference, fault currents and chemical deterioration; and
- (c) all Earthing Conductors located on poles must be protected from mechanical damage from ground level to a height not less than 2400 mm unless otherwise informed by the Relevant Authority.

## **7.5 Prevention of Back-Feeding**

The Carrier must take all necessary steps to ensure that Electrical Equipment will not cause current flow or earth potential rise by back-feeding through the Electrical Equipment into the electricity distribution Supply.

## **7.6 Customer Premises Electrical Hazard Protection**

The Carrier should take all reasonable measures at customer Premises, when carrying out a telecommunication design and installation activity, to mitigate risk of injury to people or damage to property, or disruption to the customer's services.

## **8 MAINTENANCE OF EXTERNAL TELECOMMUNICATION NETWORKS**

### **8.1 General**

- 8.1.1 Taking into account the associated risks the Carrier must take all reasonable steps to ensure safety to persons and reliability of service in the maintenance of External Telecommunication Networks. The Carrier should refer to the relevant documents listed in Section 13 for the maintenance of an External Telecommunication Network.
- 8.1.2 Where appropriate, the Carrier's system of maintenance should consist of the following elements:
- (a) a record of network Facilities and their respective locations;
  - (b) a schedule of maintenance activities; and
  - (c) a record of maintenance work carried out.

### **8.2 Maintenance of External Telecommunication Network Assets**

- 8.2.1 Carriers must comply with the maintenance requirements under the Act.

<i>NOTE: For example, see Schedule 1, Part 6 of the Act.</i>
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- 8.2.2 The Carrier should ensure Telecommunication Cables, including any Supporting Structures, fittings and accessories, are maintained in a safe operating condition, including avoiding contact with Electrical Apparatus. The integrity of Insulated Telecommunication Cables should be maintained by the Carrier.
- 8.2.3 Where appropriate, the Carrier's system of maintenance for the External Telecommunication Network, including any Supporting Structures belonging to the Carrier, should consist of:
- (a) scheduled inspection and/or testing programs;
  - (b) scheduled maintenance programs; and
  - (c) scheduled replacement programs for components approaching the end of their serviceable life.
- 8.2.4 Where a Supporting Structure is to be removed, other Carrier and Utility services on that structure should be relocated within the timeframe requested by the Facility owner where reasonably practicable. Alternatively an agreement may be established to permit the Facility owner to move the other Carriers' or Utilities' services/plant if accredited to do so safely.

### **8.3 Tree Impact**

8.3.1 Where the Carrier determines that the safety and/or integrity of any External Telecommunication Network is directly affected by any tree or vegetation:

- (a) the cutting down or lopping of any tree, or
- (b) the clearing or removal of undergrowth or vegetation;

as the case requires, is to be carried out in accordance with the requirements of the Act.

8.3.2 Activities involving the cutting down or lopping of any tree may be carried out in accordance with Australian Standard AS 4373 – Pruning of amenity trees.

8.3.3 Activities involving Telecommunication Cable excavation within a tree 'drip zone' may be done in a manner which minimises impact on tree roots.

8.3.4 In the conduct of any maintenance works along a road corridor the Carrier should first consult the road authority concerning vegetation and flora habitat to ensure endangered or valued species are not impacted.

8.3.5 Debris from maintenance activities should be disposed of in an environmentally sustainable manner with safety of the public in mind.

## 9 TRAINING

### 9.1 General

This Section applies to Employee training for any work activities engaged by the Carrier on its External Telecommunication Network. The Carrier must ensure the requirements of this Section can be applied to its Employees prior to the engagement of any related work activities on its External Telecommunication Network.

### 9.2 Qualifications and Training – General Requirements

No work to which the Code applies must be carried out unless the Employee:

- (a) has been accredited by a recognised training organisation for the type of work concerned or has been authorised by the Carrier that the required training has been satisfactorily completed;
- (b) is capable to safely perform the work required to be undertaken; and
- (c) has received appropriate practical and instruction procedures that are relevant to the nature of the work and may include but not limited to:
  - (i) first aid;
  - (ii) Cardio Pulmonary Resuscitation (CPR);
  - (iii) rescuing a person from a pole, structure or elevating work platform;
  - (iv) rescuing a person from a Confined Space;
  - (v) escape from an elevated work platform; and
  - (vi) hazard assessment.

### 9.3 Carrier Responsibility

- 9.3.1 The Carrier must determine that appropriate accreditation or training courses have been undertaken for the respective Employees to ensure that they can carry out the required tasks safely and competently.

*NOTE: The accreditation or training courses must be consistent with the requirements of a Carrier or a Utility (e.g. as described in an agreement) before working on the assets of the Carrier or the Utility.*

- 9.3.2 The Carrier should consider the following:
  - (a) accreditation of the courses;

- (b) accreditation of the trainer;
- (c) the relevance to the tasks to be performed;
- (d) national competency benchmarks or industry equivalent;
- (e) the course syllabi;
- (f) the facilities for training;
- (g) assessment criteria for the issue of certificates;
- (h) a linkage between in-school and on-the-job training;
- (i) whether the training provider has a Quality Assurance system in place; and
- (j) recognition of prior learning.

## **10 RELATED WORK ACTIVITIES**

### **10.1 General**

- 10.1.1 This Section applies to the following activities likely to be experienced on External Telecommunication Networks:
- (a) risk assessment;
  - (b) risk control and emergency procedures;
  - (c) use of protective clothing;
  - (d) work in Confined Spaces;
  - (e) operating work; and
  - (f) tools and safety equipment.
- 10.1.2 The Carrier must ensure the requirements of this Section can be applied to its Employees prior to the engagement of any related work activities on its External Telecommunication Network.

### **10.2 Risk Assessment**

- 10.2.1 The Carrier must ensure that an appropriate hazard identification and risk assessment be undertaken, as relevant to the nature of the work and site location, in accordance with its documented procedures.
- 10.2.2 The risk assessment should be audited by the Carrier to ensure compliance.

### **10.3 Risk Control and Emergency Procedures**

- 10.3.1 The Carrier must ensure appropriate risk control measures and emergency procedures are adopted for any identified hazard in accordance with its documented procedures.
- 10.3.2 If a hazard is identified at the work site, a hazard assessment should be undertaken by the Carrier prior to commencing any work.

### **10.4 Protective Clothing**

- 10.4.1 The Carrier must ensure clothing worn by Employees working on its External Telecommunication Network, as relevant to the nature of the work and site location, gives appropriate protection to the head, body, arms, legs and feet. This may comply with visibility requirements for worker safety.
- 10.4.2 The Carrier must ensure Employees working on or near a Roadway or a railway wear highly visible clothing in accordance with relevant industry practices.

- 10.4.3 The Carrier must ensure Employees working near Electrical Apparatus wear clothing in accordance with relevant electrical regulatory requirements.

## 10.5 Work in Confined Spaces

- 10.5.1 The Carrier must ensure Employees who work in a Confined Space, which is not controlled by the Carrier, carry out the work in accordance with the documented procedures of the controller of the Confined Space.

*NOTE: For more information on:  
(a) confined spaces refer to AS/NZS 2865; and  
(b) explosive gas atmospheres refer to AS/NZS 60079.10.1.*

- 10.5.2 Work in a Confined Space controlled by the Carrier must be carried out in accordance with the Carrier's documented procedures. For work in any Confined Space the Carrier must consider the following:
- (a) an assessment of the Confined Space and the hazards involved:
    - (i) A restricted means of entry or exit; or
    - (ii) an atmosphere that contains potentially harmful levels of contaminants; or including but not limited to an atmosphere that does not have safe levels of oxygen;
  - (a) authorisation for an Employee to enter the Confined Space;
  - (b) an atmospheric check of the Confined Space before entry, and continual monitoring of the atmosphere while the confined space is occupied;
  - (c) a suitable rescue procedure;
  - (d) relevant AS requirements listed in Section 13; and
  - (e) use of emergency communications devices/lines.

## 10.6 Operating Work

- 10.6.1 The Carrier must ensure all operational work on its External Telecommunication Network is in accordance with the Carrier's documented procedures, which must ensure:
- (a) the safety of Employees;
  - (b) the safety of the public; and
  - (c) the correct operation of the External Telecommunication Network.

10.6.2 The Carrier must authorise Employees and contractors before they operate on the Telecommunication Network.

## **10.7 Tools and Safety Equipment**

The Carrier must ensure that appropriate tools and safety equipment are used on its External Telecommunication Network with due regard to the following:

- (a) all tools and safety equipment must be selected for their technical suitability for the task and the environment involved;
- (b) all tools and safety equipment must be periodically inspected and tested to ensure their safety for use; and
- (c) any defective tools or safety equipment must be withdrawn from service.

## 11 ELECTRICAL WORK PRACTICES

### 11.1 General

This Section applies to work on External Telecommunication Networks near Electrical Apparatus. The Carrier must ensure the requirements of this Section can be applied to its Employees prior to the engagement of any related work activities on its External Telecommunication Network.

*NOTE: Refer to AS/NZS 4836 for more information on safe working on or near LV electrical installations and equipment.*

### 11.2 Safe Electrical Provisions

#### 11.2.1 Basic Safety Principles

11.2.1.1 The Carrier must regard all Electrical Apparatus and Electrical Equipment as Live until Isolated and proved to be De-energised in accordance with documented procedures.

11.2.1.2 The Carrier must only consider working on Live Electrical Equipment when other means are inappropriate and only when risk assessment process has been undertaken by the Carrier.

#### 11.2.2 Minimum Safe Working Distances – Aerial Infrastructure

The Carrier must ensure no part of a person's body and no material or equipment not Insulated for the voltage concerned comes closer than the minimum safe working distances for Live exposed aerial Electrical Apparatus and Exposed Conductors specified in Table 5, unless procedures documented by the Carrier, including fixing barriers, obstacles or live working techniques, are utilised.

**TABLE 5**

**Minimum Safe Working Distances from exposed aerial Electrical Apparatus and Exposed Conductors**

Nominal Voltage (AC)	Minimum Safe Working Distance (mm)	
	With Accredited Power Awareness training	With Limited Power Awareness training
LV	500	1000
HV not exceeding 11 kV	700	1200
HV greater than 11 kV but not exceeding 22 kV	1000	1500
HV greater than 22 kV but not exceeding 66 kV	1500	2000
HV greater than 66 kV but not exceeding 132 kV	2500	4500
HV greater than 132 kV but not exceeding 275 kV	4000	6000

**NOTES:**

1. Safe approach distances are covered in Energy Networks (ENA) publication ENA NENS 04 for authorised and instructed persons. Increased clearances may apply for authorised persons using vehicles and working in an elevated work platform.

2. At the time of publication the content of Table 5 is understood not to conflict with ENA NENS 04.

3. A Carrier should contact the Relevant Authority to check if it has any additional requirements on minimum safe working distances.

## 11.3 Work on Electrical Equipment

### 11.3.1 General

The Carrier must ensure any work on its Electrical Equipment, whether under Live or De-energised conditions, is carried out in accordance with the Carrier's documented procedure and only carried out by Carrier authorised personnel.

### 11.3.2 Live Electrical Equipment

The Carrier must ensure any work on its Live Electrical Equipment is carried out in accordance with the Carrier's documented procedure, with due regard to the following:

- (a) that the electrical operating conditions of the Electrical Equipment has been correctly identified; and
- (b) that precautions have been taken to avoid inadvertent contact with other Live Conductors or Earth; and
- (c) that the Employee is trained in the safe execution of the work.

### 11.3.3 **Aerial Work Near Electrical Apparatus**

11.3.3.1 The Carrier must ensure Aerial work on its External Telecommunication Network near Electrical Apparatus is carried out in accordance with the Carrier's documented procedure, and in particular with Section 11.2.2 (Minimum Safe Working Distances – Aerial Infrastructure) of the Code, and only carried out by suitably trained personnel.

11.3.3.2 In addition to the other requirements of the Code the Carrier should:

- (a) identify the Power Line voltage(s) at the point where the work is carried out;
- (b) check the soundness of poles or structures;
- (c) identify and safeguard against the electrical hazards that are present on the site. These can include, but are not limited to, Live Electrical Equipment, induced voltages, Potential Gradients, and Transfer Potentials;
- (d) prevent a bare Strand Wire in the course of construction from becoming Energised; and
- (e) safeguard Employees in the event of the Telecommunication Cable becoming Energised in the course of construction.

## 11.4 **Work Near Underground Power and Service Lines**

11.4.1 The Carrier must ensure work on its External Telecommunication Network near underground Power Lines and Service Lines is in accordance with the Carrier's documented procedures.

11.4.2 The Carrier must ensure work on its External Telecommunication Network near Power Lines and Service Lines does not commence unless the Power Lines and Service Lines have been identified.

11.4.3 The Carrier must ensure the following precautions are taken before working on its External Telecommunication Network on or near underground Power and Service Lines:

- (a) identify and safeguard against the electrical hazards that are present on the site. These can include, but are not limited to, Live Electrical Equipment, induced voltages,

Potential Gradients, Transfer Potentials and the possibility for faults on adjacent cables and joints; and

- (b) identify and safeguard against the physical hazards that are present on the site. These can include, but are not limited to, lack of ventilation, dangerous gases, high temperatures, traffic hazards and other services.

- 11.4.4 An Employee must not physically handle a Service Line, whether sheathed or screened or not, unless the cable is warranted to be De-energised by the power authority or Carrier documented work procedures are used.

*NOTE: The References Section lists currently available industry guidelines on issues related to safe electrical work practices.*

## 12 OPTICAL FIBRE EQUIPMENT WORK PRACTICES

### 12.1 General

This Section applies to all work activities on optical fibre equipment. The Carrier must ensure the requirements of this Section can be applied to its Employees prior to the engagement of any related work activities on its External Telecommunication Network.

### 12.2 Qualifications and Training

12.2.1 The Carrier must determine that appropriate training courses have been undertaken by the respective Employees to ensure that they can carry out the required tasks safely and competently.

12.2.2 The Carrier should give due regard to the following:

- (a) an outline of potential hazards associated with optical fibre transmission systems and test equipment;
- (b) mandatory safety rules to be applied during installation, testing and maintenance of optical fibre systems;
- (c) laser emissions levels, classification of lasers and location hazard levels to ensure that maximum permissible exposure levels are not exceeded; and
- (d) description of warning signs and labels associated with optical fibre transmission equipment system installations.

*NOTE: For more information on the safety of laser products refer to AS/NZS IEC 60825.1:2011 and AS/NZS 2967.*

### 12.3 Installation of Optical Fibre Equipment

The Carrier must ensure optical fibre equipment, including cables, associated with the Carrier's External Telecommunication Network is installed and maintained in accordance with the Carrier's documented practices.

### 12.4 Correct Labelling of Optical Fibre Equipment

The Carrier must ensure optical fibre equipment associated with the External Telecommunication Network is labelled with clearly visible safety/warning labels to AS/NZS IEC 60825.

### 12.5 Optical Fibre Cable Disposal Procedures

12.5.1 The Carrier must ensure optical fibre cable, including components and accessories of optical fibre cable are disposed of in a safe and responsible manner.

12.5.2 The Carrier must advise their Employees to consider the following when disposing of optical fibre cable, including components and accessories of optical fibre cable:

- (a) complying with any regulations on the disposal of optical fibre cable, including components and accessories of optical fibre cable;
- (b) using a commercial bin or preferably a sealed container for the disposal of optical fibre off-cuts;
- (c) not leaving any pieces or off-cuts in public areas; and
- (d) not disposing of items in public bins.

## 13 REFERENCES

Publication	Title
<b>Standards</b>	
AS 1049.1-2008	Telecommunication cables - Insulation, sheath and jacket – Materials <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=1087961">http://infostore.saiglobal.com/store/Details.aspx?productID=1087961</a>
AS 1074-1989	Steel tubes and tubulars for ordinary service <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=208183">http://infostore.saiglobal.com/store/Details.aspx?ProductID=208183</a>
AS 1345:1995	Identification of the contents of pipes, conduits and ducts <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=224345">http://infostore.saiglobal.com/store/Details.aspx?ProductID=224345</a>
AS 1742.3-2009	Manual of uniform traffic control devices - Traffic control for work on roads <a href="http://infostore.saiglobal.com/store/details.aspx?productid=1092039">http://infostore.saiglobal.com/store/details.aspx?productid=1092039</a>
AS 4373-2007	Pruning of amenity trees <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=313772">http://infostore.saiglobal.com/store/Details.aspx?ProductID=313772</a>
DR AS 5488	DRAFT Classification of Subsurface Utility Information (SUI) <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=1545666">http://infostore.saiglobal.com/store/Details.aspx?ProductID=1545666</a>
AS 3798-2007	Guidelines on earthworks for commercial and residential developments <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=304347">http://infostore.saiglobal.com/store/Details.aspx?ProductID=304347</a>
AS 3818.11-2009	Timber – Heavy structural products - Visually graded - Utility poles <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=1381272">http://infostore.saiglobal.com/store/Details.aspx?productID=1381272</a>
AS/CA S009:2013	Installation requirements for Customer Cabling (Wiring Rules) <a href="http://commsalliance.com.au/Documents/all/Standards/s009">http://commsalliance.com.au/Documents/all/Standards/s009</a>
AS/NZS 1477:2006	PVC pipes and fittings for pressure applications <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=358763">http://infostore.saiglobal.com/store/Details.aspx?productID=358763</a>

AS/NZS 2053.1:2001	Conduits and fittings for electrical installations – General requirements  <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=362938">http://infostore.saiglobal.com/store/details.aspx?ProductID=362938</a>
AS/NZS 2648.1-1995	Underground marking tape - Non-detectable tape  <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=366068">http://infostore.saiglobal.com/store/Details.aspx?ProductID=366068</a>
AS/NZS 2865-2009	Confined spaces  <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=1137140">http://infostore.saiglobal.com/store/Details.aspx?ProductID=1137140</a>
AS/NZS 2878:2000	Timber – Classification into strength groups  <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=366481">http://infostore.saiglobal.com/store/Details.aspx?productID=366481</a>
AS/NZS 3000:2007	Electrical installations (known as the Australian/New Zealand Wiring Rules)  <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=366926">http://infostore.saiglobal.com/store/details.aspx?ProductID=366926</a>
AS/NZS 3000:2007/Amdt 1:2009	Electrical installations (known as the Australian/New Zealand Wiring Rules)  <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=1129855">http://infostore.saiglobal.com/store/Details.aspx?productID=1129855</a>
AS/NZS 3015:2004	Electrical installations - Extra-low voltage d.c. power supplies and service earthing within public telecommunications networks  <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=367060">http://infostore.saiglobal.com/store/details.aspx?ProductID=367060</a>
AS/NZS 3835.1:2006	EPR protection of telecommunications network user, personnel and plant code of practice  <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=375170">http://infostore.saiglobal.com/store/Details.aspx?ProductID=375170</a>
AS/NZS 3835.2:2006	EPR protection of telecommunications network user, personnel and plant, application guide  <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=375183">http://infostore.saiglobal.com/store/details.aspx?ProductID=375183</a>
AS/NZS 4836:2011	Safe working on or near low-voltage electrical installations and equipment  <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=1461740">http://infostore.saiglobal.com/store/details.aspx?ProductID=1461740</a>
AS/NZS 7000:2010	Overhead line design – Detailed procedures  <a href="http://infostore.saiglobal.com/store2/Details.aspx?ProductID=1439262">http://infostore.saiglobal.com/store2/Details.aspx?ProductID=1439262</a>

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AS/NZS 60079.10.1:2009	Explosive atmospheres - Classification of areas - Explosive gas atmospheres (IEC 60079-10-1, Ed.1.0(2008) MOD) <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=1137925">http://infostore.saiglobal.com/store/Details.aspx?productID=1137925</a>
AS/NZS 60950.1:2003	Information technology equipment - Safety - General requirements <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=390597">http://infostore.saiglobal.com/store/details.aspx?ProductID=390597</a>
AS/NZS IEC 60825.1:2011	Safety of laser products - Equipment classification and requirements <a href="http://infostore.saiglobal.com/Store2/Details.aspx?productid=1499979">http://infostore.saiglobal.com/Store2/Details.aspx?productid=1499979</a>
AS/NZS IEC 60825.2:2011	Safety of laser products - Safety of optical fibre communication systems (OFCS) <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=364711">http://infostore.saiglobal.com/store/details.aspx?ProductID=364711</a>
HB 87-1997 (CJC 1)	Joint use of poles: The placement on poles of power lines and paired cable telecommunications lines <a href="http://infostore.saiglobal.com/store/Details.aspx?DocN=esaa000016141">http://infostore.saiglobal.com/store/Details.aspx?DocN=esaa000016141</a>
HB 103-1997 (CJC 7)	Coordination of power and telecommunications – Crossings Code: The arrangement of overhead power and telecommunications lines, pole stay wires, and suspension wires <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=566030">http://infostore.saiglobal.com/store/Details.aspx?ProductID=566030</a>
HB 103-1997 (CJC 7) / Amdt 1-1998	Coordination of power and telecommunications - Crossings Code: The arrangement of overhead power and telecommunications lines, pole stay wires, and suspension wires <a href="http://infostore.saiglobal.com/store/Details.aspx?productID=566032">http://infostore.saiglobal.com/store/Details.aspx?productID=566032</a>
SAA HB88-1997 (CJC 2)	Unbalanced high voltage power lines: Code of practice for the mitigation of noise induced into paired cable telecommunications lines from unbalanced HV power lines <a href="http://infostore.saiglobal.com/store/Details.aspx?ProductID=569150">http://infostore.saiglobal.com/store/Details.aspx?ProductID=569150</a>
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<b>Industry Codes</b>	
C564:2011	Mobile Phone Base Station Deployment Industry Code  <a href="http://commsalliance.com.au/Documents/all/codes/c564">http://commsalliance.com.au/Documents/all/codes/c564</a>
ESAA C(b)-2-1989	ESAA Guide to the Installation of Underground Cables  This publication is withdrawn. Please contact ENA to obtain a copy: <a href="http://www.ena.asn.au/">http://www.ena.asn.au/</a>
ESAA – Australian Post Office	Sharing of Trenches – Arrangements between ESAA and APO (27/08/1973)  This publication is withdrawn. Please contact ENA to obtain a copy: <a href="http://www.ena.asn.au/">http://www.ena.asn.au/</a>
ESAA – Australia Telecommunications Commission	Recommended Practices for Plant Underground (07/07/1983)  This publication is withdrawn. Please contact ENA to obtain a copy: <a href="http://www.ena.asn.au/">http://www.ena.asn.au/</a>
ESAA – Australia Telecommunications Commission	Code of Practice for Earth Return High Voltage Power Lines (1969)  This publication is withdrawn. Please contact ENA to obtain a copy: <a href="http://www.ena.asn.au/">http://www.ena.asn.au/</a>
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The New South Wales Streets Opening Conference 2009	Guide to Codes and Practices for Streets Opening  <a href="http://www.streetsopening.com.au/SOC_Guide_2009.pdf">http://www.streetsopening.com.au/SOC_Guide_2009.pdf</a>
State of Victoria, Department of Sustainability and Environment  July 2004	Code of Practice for Telecommunications Facilities in Victoria, Prepared by Local Government Association of Victoria.  <a href="http://www.dpcd.vic.gov.au/_data/assets/pdf_file/0004/41827/Telecommunications_reissue_2004.pdf">http://www.dpcd.vic.gov.au/_data/assets/pdf_file/0004/41827/Telecommunications_reissue_2004.pdf</a>
-	Utility Providers Code of Practice for Western Australia  <a href="http://www.mainroads.wa.gov.au/UsingRoads/RoadTrafficInformation/Pages/WorksOnMainRoads.aspx">http://www.mainroads.wa.gov.au/UsingRoads/RoadTrafficInformation/Pages/WorksOnMainRoads.aspx</a>

Dec 2007	The New South Wales Service and Installation Rules <a href="http://www.trade.nsw.gov.au/energy/electricity/network-connections">http://www.trade.nsw.gov.au/energy/electricity/network-connections</a>
VESI	The Victorian Electricity Distributors Service and Installation Rules Available at <a href="http://vesi.com.au">vesi.com.au</a> and <a href="http://www.victoriansir.org.au/Download-SIRs.aspx">http://www.victoriansir.org.au/Download-SIRs.aspx</a>
VESI The Green Book	Victorian Electricity Supply Industry (VESI) Code of Practice 'The Green Book' <a href="http://www.vesi.com.au/Committees/Green-Book/Download1.aspx">http://www.vesi.com.au/Committees/Green-Book/Download1.aspx</a>
VESI	Safety & Compliance Training Requirements for Telecommunications Work on VESI Network Operator Assets Available at <a href="http://www.vesi.com.au">www.vesi.com.au</a>
VESI	Code of Engineering Practice for Shared Use of Poles 27 Feb 1996 Available at <a href="http://www.vesi.com.au">www.vesi.com.au</a>
<b>Industry Guidelines</b>	
G591:2006	Telecommunications in Road Reserves – Operational Guidelines for Installations Industry Guideline <a href="http://commsalliance.com.au/Documents/all/guidelines/g591">http://commsalliance.com.au/Documents/all/guidelines/g591</a>
G645:2011	Fibre Ready Pit and Pipe Specification for Real Estate Development Projects <a href="http://commsalliance.com.au/Documents/all/guidelines/g645">http://commsalliance.com.au/Documents/all/guidelines/g645</a>
ENA NENS 04-2006	National guidelines for safe approach distances to electrical and mechanical apparatus <a href="http://infostore.saiglobal.com/store/details.aspx?ProductID=589399">http://infostore.saiglobal.com/store/details.aspx?ProductID=589399</a>
<b>Legislation and Regulation</b>	
<i>Telecommunications Act 1997</i> <a href="http://www.comlaw.gov.au/Series/C2004A05145">http://www.comlaw.gov.au/Series/C2004A05145</a>	
<i>Telecommunications Code of Practice (Commonwealth) 1997</i> <a href="http://www.comlaw.gov.au/Series/F2004B00451">http://www.comlaw.gov.au/Series/F2004B00451</a>	
<i>Telecommunications (Low-impact Facilities) Determination 1997</i> <a href="http://www.comlaw.gov.au/Series/F2004B00455">http://www.comlaw.gov.au/Series/F2004B00455</a>	
<i>Telecommunications Regulations 2001</i> <a href="http://www.comlaw.gov.au/Series/F2001B00124">http://www.comlaw.gov.au/Series/F2001B00124</a>	

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Work Health and Safety Act, Queensland 2011

<http://www.legislation.qld.gov.au/LEGISLTN/SLS/2011/11SL240.pdf>

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<http://www.legislation.sa.gov.au/LZ/C/A/WORK%20HEALTH%20AND%20SAFETY%20ACT%202012.aspx>

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Work Health and Safety Act, Tasmania 2012

[http://worksafe.tas.gov.au/whs\\_laws](http://worksafe.tas.gov.au/whs_laws)

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Work Health and Safety Act, ACT 2011

<http://www.legislation.act.gov.au/a/2011-35/default.asp>

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Work Health and Safety (National Uniform Legislation) Act, NT 2011

<http://www.worksafe.nt.gov.au/Legislation/Pages/Acts-and-Regulations.aspx>

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Electricity Safety (Network Assets) Code, Victoria 1996

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Electricity Supply Act, NSW 1995

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Electricity (Safety Plan) Regulations under the Act, NSW 1997

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Electricity Asset Management Code, NSW

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Electricity Regulations, Queensland 1994

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Electricity Act, WA 1945

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Electricity Act Regulations, WA 1947

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Electricity Industry Safety and Administration Act, Tasmania 1997

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Electricity Commission Act, NT 1996

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Electricity By-Laws under the Act, NT 1992

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## **PARTICIPANTS**

The Working Committee responsible for the revisions made to this Code consisted of the following organisations and their representatives:

<b>Organisation</b>	<b>Membership</b>	<b>Representative</b>
Australian Communications and Media Authority (ACMA)	Non-voting	Rob Pruyzers
Australian Communications and Media Authority (ACMA)	Non-voting	Chris Wong
Austroroads (Roads and Maritime NSW)	Voting	David Shatford
BICSI (Sinclair Knight Merz)	Voting	Lawrie McKenna
Energex	Voting	Colin Lee
Jemena	Voting	Mark Gardiner
NBN Co	Voting	Haydn Dale
SingTel Optus	Voting	Chris Willis
SingTel Optus	Non-voting	Don Blue
Telstra	Voting	Craig Hedges
Telstra	Non-voting	Greg Cosgriff

This Working Committee was chaired by James Duck of Communications Alliance who also provided project management support.

Communications Alliance was formed in 1997 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.



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